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Forest law compliance in the High-Forest Zone of Ghana: an analysis of forest farmers' livelihoods, their forest values, and the factors affecting law compliance behaviour

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Academic dissertation

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ABSTRACT

Illegal forest activities are increasingly recognised as one of the major sources of deforestation and the degradation of the world's tropical forests. International recognition of and response to the problem of illegal forest activities—most notably illegal logging—have significantly increased since the 1990s, with numerous international, regional and bilateral initiatives emerging across the globe. The international response to illegal forest activities is largely focussed on illegal logging (i.e., the harvesting of timber in violation of national laws) and the enforcement of forest regulations as the major strategy for addressing illegal forest activities and non-compliant behaviour.

This PhD thesis assesses the relationships between law enforcement and the livelihoods, individual motivations and contextual factors that inform compliance with forest rules. The research builds on a case study of the law compliance of forest farming communities inhabiting the fringes of forest reserves in the High-Forest Zone of Ghana. The study first explores the concept of forest communities' livelihoods and the potential implications of the EU Forest Law Enforcement, Governance and Trade (FLEGT) voluntary partnership agreement (VPA) for forest communities' livelihoods (Article I). Second, it examines farmers' forest values and the potential role of these values in farmers' compliance with forest rules (Article II). Third, it explores the motivations and factors that influence farmers' compliance with a number of formal or state forest rules (Article III). Finally, Article IV proposes an analytical framework for forest law compliance, outlining a set of factors and variables that affect compliance behaviour at the individual and group levels.

The study results are derived from an expert questionnaire survey concerning the forest communities' livelihoods in the FLEGT VPA in Ghana and an interview survey with farmers in the High-Forest Zone of Ghana concerning farmers' forest values and their compliance with a number of forest rules. The study results suggest that the implementation of the FLEGT VPA is likely to have both positive and negative impacts on forest communities' livelihoods. Further, it suggests that farmers ascribe major importance to those forest values, which directly contribute to their livelihoods, including forests' subsistence, environmental and economic values. Concerning law compliance, it is found that farmers' compliance with forest rules is determined by a myriad of factors, including the perceived fairness and legitimacy of the rules and ruling authorities, social and cultural norms, fear of sanctions, and the need for resources for their livelihoods and for domestic use. Further, the study suggests that farmers' forest values may, to some extent, influence their compliance with forest rules. Finally, based on the theories of rule compliance and available literature on the sources of non-compliance in forestry, the study identifies a set variables influencing compliance behaviour at the individual level (e.g., instrumental incentives, legitimacy and social and personal norms), and group or societal level (e.g., regulatory constraints, political capacity, corruption, property rights and markets).

Keywords: Ghana, forest communities, livelihoods, forest law compliance, forest governance

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Joensuu, June 2012

Sabaheta Ramcilovic-Suominen

LIST OF ORIGINAL ARTICLES

This thesis is a summary of the following articles, which are referred to in the text by their Roman numerals I-IV. The articles are reprinted with the kind permission of the publishers.

I Ramcilovic-Suominen, S. Gritten, D., Saastamoinen, O. 2010. Concept of livelihoods in the FLEGT voluntary partnership agreement and the expected impacts on the livelihood of forest communities in Ghana. International Forestry Review. Vol.12(4):361-369. doi: http://dx.doi.org/10.1505/ifor.12.4.361

II Ramcilovic-Suominen, S., Matero, J., Shannon, M. 2012. Do Forest Values Influence Compliance with Forestry Legislation? The Case of Farmers in the Fringes of Forest Reserves in Ghana. Small-scale Forestry, 2012. doi: 10.1007/s11842-012-9209-z.

III Ramcilovic-Suominen, S., Hansen, C. Why some forest rules are obeyed and others violated: instrumental and normative perspective of forest law compliance in Ghana. Forest Policy and Economics (2012), doi:10.1016/j.forpol.2012.07.002.

IV Ramcilovic-Suominen, S., Epstein, G. Towards an analytical framework for forest law compliance. International Forestry Review Vol.14(3):326-336. doi: http://dx.doi.org/10.1505/146554812802646611

The author's contribution:

Sabaheta Ramcilovic-Suominen has the main responsibility for the work done in the four articles. The co-authors contributed by commenting on the respective manuscripts. In addition, Dr. Jukka Matero assisted in data analysis for the article II, and Graham Epstein provided a significant input with regards to institutional theory, for the article IV.

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ACRONYMS AND ABBREVIATIONS

DFID - Department for International Development
EC – European Commission
EU – European Union
FLEGT – Forest Law Enforcement Governance and Trade
FORIG – Forest Research Institute of Ghana
G8 – The Group of Eight (The forum of the governments of the eight largest economies of the world)
GoG – Government of Ghana
HFZ – High Forest Zone
MTS – Modified Taungya System
NGO – Non Governmental Organisation
OECD - Organisation for Economic Co-operation and Development
SL – Sustainable Livelihood
SLF – Sustainable Livelihood Framework
UN – United Nations
UNDP – United Nations Development Programme
VPA – Voluntary Partnership Agreement

1. INTRODUCTION

1.1 Linking governance, the rule of law, and individual law compliance

The rule of law can play a central role in promoting good governance and ultimately sustainable development. Zaelke et al. (2005:30) propose a straightforward relationship between the concepts as follows: "*sustainable development depends upon good governance, good governance depends upon the rule of law, and the rule of law depends upon effective compliance*". The role of good governance in promoting sustainable development has been increasingly recognised, especially after the Rio Summit in 1992 and the UN Millennium Summit in 2000 (Shannon 2002, Humphreys 2006, Saastamoinen 2009, Rayner et al. 2010).

Governance is a dynamic process, and as such, it is difficult to define and observe. Therefore, as Graham et al. (2003) discuss, scholars of governance focus on the governance system, or the framework upon which the process rests—including agreements, procedures, norms, rules, conventions and policies that define who holds power, how decisions are made and how accountability is rendered. Good governance is a term adopted among scholars to emphasise the normative perspective on governance (UNDP 1997), and is broadly defined in the context of the coordination of human behaviour towards common purposes and goals (Zaelke et al. 2005, Rayner 2010). In more detail, it addresses how actors in a society—including governments—mutually interact, relate, and make decisions. The sets of good governance principles proposed by international and intergovernmental organisations such as UNDP, OECD and the EU all include the rule of law as one of the principles of good governance (OECD 1997, UNDP 1997, EC 2001).

Formal and informal law—along with social norms, principles and sets of values—are important mechanisms for guiding and controlling human behaviour in conflicting situations, such as the management of human-nature interactions and natural resources including forests (Ostrom 1990, Rayner 2010). A primary difference between law and other mechanisms (e.g., social norms) is that a law is highly centralised, enacted and enforced by a third party—usually the state (Posner 1996, Cialdini and Trost 1998)—whereas social and personal norms are decentralised, emerging at local levels, and are "enforced" internally without the interference of a third party. Assuming the importance of the rule of law in promoting good governance, the question then arises as to how to encourage law compliance at different levels, from individual to global and in different contexts. However, this question, in the case of natural resources in general and in forestry in particular, has gained insufficient attention (Schmithuesen 2003, Bernstein 2005, Cashore 2002, Hansen 2011). With the rise in global environmental problems and the consequent emergence of international environmental laws and policies, such as the EU FLEGT Action Plan (EC 2003), there is an elevated interest in the concept of law compliance in forestry (Contreras-Hermosilla and Peter 2005, Blaser 2010). The concept of forest law compliance has a central place in the EU FLEGT Action Plan, as the Plan is given effect through strengthening compliance with forestry laws among actors and stakeholders at the domestic level (Bernstein and Cashore 2010).

In the context of international forest policy, there is a need to move away from the notion of the state as the only actor and authority towards multiple actors and authorities, including firms and citizens (Shannon 2002, Tikkanen et al. 2002, Bernstein 2005,

Saastamoinen 2009). The question of law compliance in this case also moves away from traditional state enforcement and compliance towards firm and individual compliance. Understanding the factors determining individual law compliance behaviour is a prerequisite for establishing effective strategies to promote compliance with forest laws. Multidisciplinary theoretical approaches to compliance, as well as empirical research on compliance in other fields (e.g., fisheries, tax compliance) can provide fertile ground for the study of compliance in the forest sector.

1.2 Illegal logging: definition, extent and impacts

Ambiguities in defining illegalities in forestry and the phenomenon of illegal logging are as well known as the phenomena themselves. A narrow and a broader way of defining illegalities in the forest sector can be distinguished—the former being commonly used among policy makers and the latter among scholars. Policy makers tend to focus only on timber harvesting, introducing the term of 'illegal logging', i.e., *"harvesting of timber in violation of national laws"* (see, e.g., EC 2003). Scholars, on the other hand, argue that there is a need to consider a wider range of illegal activities in forestry along with logging, thus introducing the term of 'illegal forest activities'. The term encompasses a vast range of unlawful activities at different stages of the forest goods production chain and beyond—from planning, management, the allocation of land rights, logging, transport and timber processing to trade and the allocation of benefits—performed in violation of national (and in some cases international) regulations and conventions (Contreras-Hermosilla 2002, Tacconi et al. 2003, Contreras-Hermosilla and Peter 2005). In this research, the focus is on a wide range of forest-related activities performed in violation of national legislation in Ghana.

Illegal logging takes place in developing as well as developed countries (Contreras-Hermosilla 2002, SCA&WRI 2004); nevertheless, the extent and impacts of illegal logging tend to be more widespread and more severe in developing tropical countries (SCA&WRI 2004, Tacconi 2007, Brown et al. 2008). Most of the studies on the extent of illegal logging focus primarily on the so-called 'high risk countries' (i.e., the top ten countries that are believed to export the largest quantities of illegal timber), suggesting a range of illegal logging from 20% (e.g., in Russia) to 90% in the Brazilian Amazon (Contreras-Hermosilla 2002, SCA&WRI 2004). Similarly high rates of illegal logging (70-90% of total log volume) are reported for Indonesia and some Central and West African countries (SCA&WRI 2004, Turner et al. 2007). However, these figures, besides being slightly outdated, are also rather debatable considering the uncertainty and variations of the definitions and statistical methods used.

Illegal logging in Ghana is recognised as a considerable issue, gaining primary attention in the national forest policy debate. According to Repetto (1990), the country lost 78% of its original tropical forest in the period from 1900 to 1989. A study conducted with data from 1999 estimates that 70% of the total harvested timber in Ghana is harvested illegally (Birikorang et al. 2001). This estimate was more recently confirmed by Hansen and Treue (2008), who also further suggest that most of it (75%) is accounted for by the informal sector (chainsaw operators), which produce for the domestic market. Over the period from 1996 to 2005, the annual timber harvest in Ghana has ranged between 3.3 and 3.7 million m^3, compared to an annual allowable cut of 1.0 million m^3 (Hansen and Treue 2008).

The prominence of illegal logging in the global forest policy debate largely owes to the well-documented negative impacts of illegal logging. Some of the most acknowledged negative impacts include (i) loss of governmental revenues and depression of forest product markets (SCA&WRI 2004, Brack 2007); (ii) deforestation, forest degradation, loss of biodiversity, emission of greenhouse gasses and reduction of forest-related environmental services (Contreras-Hermosilla 2002, Houghton 2003, Tacconi et al. 2003, Curran et al. 2004, Damnyag et al. 2011); and (iii) contributions to poverty and national and regional armed conflicts (Global Witness 2001, SAMFU 2002, Kaimowitz 2003).

Although the extent and negative impacts of illegal logging have gained considerable attention in the forest policy debate as well as in research, the drivers of illegal logging and the motivations for the violation of forest laws are considerably less well understood. Some initial efforts to study the sources of non-compliance, and thus the sources of forest illegalities, have identified a list of broad and highly overlapping, context-specific drivers of illegal logging. The major sources are summarised by Contreras-Hermosilla and Peter (2005), Tacconi (2007a) and Blasser (2010) and include flawed policy and legal frameworks, institutional problems, lack of enforcement capacity, corruption, profit-seeking by forest companies, the economics of forest illegalities, and the role of the timber trade. Understanding the sources of illegal logging is a precondition for formulating effective strategies for combating illegal logging (Contreras-Hermosilla and Peter 2005, Palo and Lehto 2012). Thus, an appropriate and comprehensive scholarly work on sources of non-compliance in forestry is needed.

1.3 Illegal logging as an international policy issue, forest law enforcement and the EU FLEGT Action Plan

The problems of deforestation, forest degradation and illegal logging have long been present in the forest policy agenda at national levels. However, with increased globalisation, global environmental problems, and the fading of the conventional political boundaries of the nation-state, the problems have increasingly gained international relevance (Schmithuesen 2003, Humphreys 2006, Brown et al. 2008). In the 1990s, owing to the growing environmental activism and pressures from non-governmental organisations (NGOs), as well as the limited success of previous schemes to address the problem of deforestation in timber-producing countries (Schmithuesen 1976, Cashore et al. 2006), the interest in forest legality and forest law enforcement reached a new peak (Humphreys 2006, Brown et al. 2008, Ogle 2008). Initially, donors and industrialised countries took a leading role, setting the future policy agenda on illegal logging at the global scale. Major international policy initiatives – among numerous bilateral and multilateral agreements – include the G8 Action Programme on Forests in 1998 and the US President's Initiative Against Illegal Logging in 2003 (Gulbrandsen and Humphreys 2006, Ogle 2008).

Following these developments, in the early 2000s, the European Commission began to develop its own contribution to the halting of illegal logging in timber-producing countries. As a result, the EU FLEGT Action Plan was developed (EC FLEGT briefing notes 2004-2007). The Action Plan aims to combat illegal logging and strengthen the enforcement of forestry laws in timber-producing countries by ending the import of timber that has been defined as 'illegal' from timber-producing FLEGT partner countries into the EU's borders. Through legal reforms, the EU FLEGT also intends to strengthen forest governance and build capacity in these countries, which is hoped to eventually cause positive social

impacts and poverty reduction (EC 2003, 2005, EC-Ghana 2009). The FLEGT takes advantage of the EU's influential role in the international timber market, leveraging the potential to influence the forest policy and behaviour of timber-producing countries through trade. It is therefore understood that the Plan involves an innovative approach towards counteracting illegal logging, involving market instruments, trade restrictions, forest governance reforms and capacity building (EC 2003, 2005, Brown et al. 2008). The two main pillars within the FLEGT are a timber legality assurance system and support for governance reform (EC 2005, Brack 2006, Gulbrandsen and Humphreys 2006, Brown et al. 2008).

The central component of the FLEGT Action Plan is the bilateral voluntary partnership agreement (VPA) between the EC (representing the EU member states in trade matters) and individual timber-producing countries (EC-Ghana VPA Brief 2009). The main elements of the VPA include a definition of legality, a timber-licensing scheme, the verification of legality, and monitoring of the system (Attah and Beeko 2008, Attah et al. 2009, EC-Ghana VPA Brief 2009). The VPA begins with an informal discussion between the European Commission and the partner country, whereby the partner country is asked to consider entering into such an agreement, after which follows a negotiation among the stakeholders in the partner country. Upon the partner country's agreement, the formal negotiation process begins, whereby a definition of legality and further measures regarding how to achieve production and trade of legal timber are negotiated. Negotiations should eventually result in the signing and ratifying of a bilateral VPA, after which follows a 'transitional phase' to set up technical and policy tools to ensure the proper implementation of the VPA. Finally, with the ratification of the VPA, the agreement becomes a binding law for both sides—the EU countries and the concerned partner country.

1.4 Beyond illegal logging, legality, and law enforcement: legal pluralism and barriers to legality

The international policy debate on illegal logging is largely centred around the following issues: the harvesting of timber, timber legality, the timber trade and the social, environmental and economic impacts of illegal logging at the global scale. The empirical research, however, reminds us that any comprehensive strategy to address the phenomenon of forest illegality should embrace the larger context and the complex nature of the phenomenon at the local scale. Fieldwork-based research shows that illegal logging at the local level is hardly a simple case of criminal behaviour but rather a complex socio-economic and political system that includes multiple dimensions and stakeholders—from the local population to government authorities (Contreras-Hermosilla 2003, Richards et al. 2003, Casson and Obidzinski 2007, Darko-Obiri and Damnyag 2011, Palo and Lehti 2012). Addressing such a problem requires insights into some fundamental issues that go beyond the discourse of legality and law enforcement. Some of these issues raise the question: *why is there non-compliance and illegal logging in the first place, which in turn requires the enforcement of enacted laws?* What are the motivations and reasons urging the actors to disobey the authorities and their decisions, rules and laws? Is it only economic and monetary interests that drive illegal forest behaviour, or do other factors such as social norms, values and the legitimacy of the governing authorities play a role as well? Such questions are important for constructing effective policies and laws that can be implemented with a minimum of effort and cost (Tyler 1990, May 2005, Murphy 2005);

thus, their answers should not be assumed and taken for granted in the forest policy instruments addressing illegal logging.

To provide some examples of the complexity of the issues surrounding timber legality, it is worth mentioning the concepts of legal pluralism and barriers to legality—two challenges to legality common for most tropical timber-producing countries. The concept of legal pluralism is generally defined as the coexistence of two or more legal systems applicable in the same social field and the same situation (Griffith 1986, Larson et al. 2010). The concept primarily deals with the nature and origin of rules, distinguishing between state vs. traditional or indigenous authorities and rules. Prior to colonial rule, in many societies such as those in the African continent, the indigenous population maintained social order using a rich variety of instruments including social pressure, custom, customary law and judicial procedures (Merry 1988). The colonisation of these societies and imposition of European law resulted in modifications of the existing indigenous legal systems, the integration of the two systems, or in some cases—such as in Ghana—the parallel existence of the two systems (Merry 1988, Larbi 2006, Larson and Ribot 2007). As indigenous governance institutions and rules are generally unwritten, including them in the formal definitions of timber legality, which is based on written statutory laws, is a challenge. Omitting them, on the other hand, is likely to cause dissatisfaction, resistance and non-compliance with formal rules and laws (Scott 1985, Peluso 1992, Larson and Ribot 2007).

Barriers to legality is a wider concept that, in addition to the legal inconsistency of the existing rules, involves inconsistencies of rules with the common practices, socio-economic conditions and capacities at the local level (Contreras-Hermosilla 2003, Richards et al. 2003, Wells et al. 2007). A clear example of barriers to legality is the chainsaw ban in Ghana. The ban criminalises the use of chainsaws for harvesting, transporting, and marketing lumber for commercial purposes (TRMA 1997/Act 547, TRMR 1998/L.I 1649). In response, the regulation proposes that all sawmills supply 20% of their lumber production to the domestic market. However, 20% of the total wood production from sawmills is estimated to be approximately 200 000 m^3, whereas the domestic timber demand in Ghana is estimated to be between 1 and 3 million m^3 (Marfo and Azu 2009, Hansen and Treue 2008). In addition, chainsaw operations support the rural economy by supplying lumber, employment and direct income, employing *"...nearly the same amount of people as the formal timber industry"* (Adam et al. 2007, Marfo and Acheampong 2009, Darko-Obiri and Damnyag 2011). Thus, despite the chainsaw ban, chainsaw lumbering continues to respond to the domestic demand for timber and has further increased after the inaction of the regulation (Adam et al. 2007, Darko-Obiri and Damnyag 2009). These two examples indicate that the problem of illegality in forestry requires more appropriate and fitting solutions than a strict enforcement of the existing, often unrealistic, laws.

1.5 Aims of the Study

This research has two primary objectives: first, to explore the concept of livelihoods and the implications of forest law enforcement under the FLEGT VPA in Ghana, and second, to explore and understand the factors that determine farmers' compliance with the existing forest rules in Ghana. The research focuses on the law compliance behaviour of forest farming communities inhabiting the fringes of the forest reserves in the High-forest Zone of Ghana.

Forest communities' dependence on forests for their livelihoods, poverty, agricultural expansion and traditional land use practices such as slash-and-burn agriculture, shifting cultivation and cattle ranching are often quoted among the primary drivers of deforestation, forest loss and degradation of the tropical forest in developing countries (FRA 1993, Appiah et al. 2009), as well as a source of forest illegalities (World Bank 2006). Ghana forms an interesting case due to the high rate of illegal forest activities and non-compliance (Hansen and Treue 2008) on the one hand and its ongoing efforts to combat illegality and strengthen forest law enforcement by engaging in the EU FLEGT Action Plan (EC 2003, 2005) on the other.

Within this context, this study aims to:

- To explore the concept of livelihoods in the EU FLEGT VPA in Ghana and to assess the potential impacts of the VPA implementation on the livelihoods of forest communities (Article I)
- To explore the reasons why forest farmers value the forest and to assess the potential role of farmers' forest values in their compliance with a regulation on tree felling (Article II).
- To explore the reasons and factors that influence farmers' compliance with the three formal forest rules—regulations on felling trees, farming, and the regulation of bushfires (Article III).
- To integrate theories of rule compliance with the research on compliance in forestry, in order to propose an analytical framework for forest law compliance (Article IV).

2. THEORETICAL FRAMEWORK AND CONCEPTUAL BACKGROUND

2.1 Sustainable livelihood framework, the theory of access, and the bundle of rights and powers

Since the 1990s the international agenda on poverty reduction has significantly increased (UN 1992, UN 2000); and so has the importance and acceptance of sustainable livelihood approaches, as tools for designing of development interventions and assessment of their impacts (Alterelli and Carloni 2000, Brocklesby and Fisher 2003). Sustainable livelihood approaches go beyond the traditional definition and notion of poverty and livelihoods to emphasise the non-monetary aspects, such as vulnerability, seasonality, shocks, change and buffers (Chambers and Conway 1992). Although numerous definitions on livelihoods have been used, these definitions mostly build on a common notion that a livelihood comprises capacities, assets and activities required for a living (Chambers and Conway 1992:6). A livelihood is sustainable when it can cope with and recover from stresses and shocks, and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base (Scoones 1998:5).

Sustainable livelihood (SL) framework developed by the United Kingdom's Department for International Development (DFID) has largely influenced the SL approaches and frameworks developed by other organisations, such as CARE International or UNDP (Brocklesby and Fisher 2003). We use the DFID's SL framework as the model of SL in this

research. The SL framework is an analytical tool within the sustainable livelihood approaches, designed to direct interventions and assess livelihood impacts (DFID 2001). The SL framework consists of five elements (DFID 2002). First, the *livelihood assets*, including natural (e.g. natural resource stocks), social (e.g. social networks and relationships of trust), human (e.g. skills, knowledge), financial (e.g. savings, income) and physical assets (e.g. infrastructure, transport). Second, the *vulnerability context*, including shocks (e.g. floods, storms, civil or natural resource conflicts), trends (i.e. more predictable events, such as availability of food stocks), and seasonal shifts in prices, employment or food availability. Third element is the *livelihood strategies*, i.e. combination of activities and choices that people make, in order to achieve positive *livelihood outcomes* (e.g. increased wellbeing, food stocks or income). Finally, *transforming structures and processes (also known as policies, institutions and processes)* is an element, which in the SL framework is broadly defined to include laws, policies, institutions, cultures, levels of governance and private sector (Carney 1998, DFID 2002). Policies, institutions and processes are held to shape peoples' *access* to livelihood assets (Thomson 2000, DFID 2002). In summary, according to the SL framework, availability of natural, human, physical, social and financial assets, within the given vulnerability and political contexts will define the quality of livelihoods.

While the SLF is widely used and well-established methodology, some potential inconsistencies with other literature in this field should be acknowledged. One such an inconsistency concerns definition of access. The SL framework defines access to resources as people's *right*, stated within certain policy and legal framework (Thomson 2000); acknowledging therefore the *de-jure* or the legal aspects of gaining access to assets and resources. Defining access only in terms of legal rights has been criticised by Ribot (1998) and later on, by Ribot and Peluso (2003), who argue that access transcends the *de*-jure, or the legal framework. Ribot (1998:310) defines access as "the ability of people to make use of (benefits, assets or resources)"; while rights are "acknowledged – formal or informal – claims that society approve of (e.g. laws, customs or conventions)". Rights are only one of the ranges of mechanisms used to gain access to resources. Access to resources, or the ability of people to make use of these, is not only gained through legal rights, but through a wider range of mechanisms and processes that depends on the existing practices, social identities and relations (Ribot 1998). The bundle of these mechanisms is also described as a *bundle of powers*. Following the theory of access, in some cases, the bundle of rights is futile without the bundle of powers. The bundle of powers is defined by the established state and non-state rules (e.g. laws, norms, conventions), but also by the whole range of non-rule based structures, mechanisms and processes (e.g. values, social interactions, social relations) (Ghani 1995, Peluso 1992). The bundle of powers includes the ability to *obtain, maintain and control* one's own access and the access of other players.

2.2 Forest values and influence of values on behaviour

In sociology, values are regarded as social phenomena and factors explaining human action (Karppinen 2000). This broad understanding of value is adopted in the thesis; with a general distinction between held and assigned values. Held value is a concept more typically used in the field of psychology, which portrays value as a part of personality (Rokeach 1972, 1973). Held value is understood as an ideal, a conception that subjects (an individual or group) hold towards objects (e.g. forest, nature). Assigned value, on the other

hand, is more commonly used in the field of economics and refers to the value or worth of a specific object (Bengston 1994). It denotes a relative importance that the subjects assign to objects (for instance, the importance that the communities assign to the forest or the watershed). Following Brown (1984) held and assigned values are linked in the relational realm of value, which is concerned with the valuation process; in other words people apply their basic values to the task of valuing objects. This valuation process can be driven by an individual preference (Brown 1984), social obligations and norms, or functions or usefulness of the object (Andrews and Waits 1978).

Literature on values in forestry largely builds on the Rokeach's universal value theory (e.g. Bengston 1994, Vaske et al. 2001, Ford et al 2009). Rokeach (1973:5) defines a value as: 'an enduring belief that a specific mode of conduct is personally and socially preferable to an opposite mode of conduct or an end-state of existence"; wherein value is an ideal or held value. Following Rokeach's definition, held forest values have been defined as relatively enduring and fundamental concepts of the good related to forest and forest ecosystems; whereas assigned value is defined as relative importance of objects related to forest and forest ecosystems (Bengston 1994).

People's held and assigned values can be used as predictors of their behaviour in specific situations (Ajzen 1991, Karppinen 1998, Vaske and Donnely 1999, Brown and Reed 2000, Vaske et al. 2001). There are, however, various theoretical and empirical assumptions concerning the way in which values influence behaviour, as well as the extent and conditions where values explain behaviours. The value-belief-norm theory (Stern et al. 1995, Stern 2000) suggests that basic values provide foundation for higher orders of cognition, such as attitudes and behaviour. This proposition is closely related to the cognitive hierarchy model outlined and tested, among others, by McFarlane and Boxal (1999) and Vaske and Donnely (1999). The theory's central proposition is that values are basic and fundamental traits of personality, which influence higher orders of cognition – such as basic beliefs, attitudes and norms – which in turn influence specific behaviours (i.e. behaviours in specific situations). On the other hand, the theory of planned behaviour (Ajzen 1991) emphasises the role of more immediate 'behaviour-specific factors'. The proposition is that values influence specific behaviours, by influencing some of the factors that are more closely linked to the behaviour in question (Ajzen and Fishbein 1980, Ajzen 1991). Common for these two theories is the assumption that values influence specific behaviours indirectly, through higher order of cognition (attitudes, beliefs), or by influencing other more immediate factors surrounding the specific behaviour (e.g. specific motivations and intentions).

Alongside the theoretical framework, the empirical research have tested and confirmed that peoples' values can be used as predictors of their behaviour (Keeney 1994, Karppinen 1998, Manning et al. 1999, Brown and Reed 2000, Ford et al. 2009). One component of the current study focuses on the values that forest farmers assign to forest – forest values of farmers, and the influence of these values on farmers' law compliance behaviour (compliance with the rule that prohibits farmers to fell trees). For this purpose, based on the literature, first a classification of forest values was established (Rolston and Coufal 1991, Bengston and Xu 1995, Manning et al. 1999, Moyer et al. 2008) (Appendix I). Second, further considerations of the law compliance theory were made.

2.3 Theoretical perspectives of compliance and models of rule compliance

The theories of compliance deal with the fundamental question: why people obey the law? Two general perspectives are possible to distinguish: instrumental and normative perspective of law compliance (Tyler 1990, Honneland 1999). According to the instrumental perspective, people are rational individuals who obey laws because of expected costs and benefits of compliant and non-compliant behaviour (e.g. expected illegal gain vs. expected fear and extent of sanction). This perspective is based on the logic of rational choice and emphasises the role of deterrence and coercive measures on the individuals' compliance behaviour (Becker 1968). The normative perspective, on the other hand, maintains that people obey laws because of normative reasons, such as values and norms. The normative perspective in particular emphasises the role of norms, and more recently the role of legitimacy on compliance behaviour. Norms can be defined as commonly accepted rules that prescribe desirable behaviour, and forbid behaviour that have been deemed undesirable (Posner 1997, Cialdini and Trost, 1998, Hatcher and Pascoe 2006). Legitimacy, on the other hand, is about the support given to a political authority or authorities to direct behaviour, to enact and implement laws, decisions and regulation. Tyler (1990) proposes that legitimacy of an authority is judged based on persons' normative, not instrumental reasons. It should be noted that the instrumental perspective is also known as 'the logic of consequence', and the normative one as 'the logic of appropriateness' (Zaelke et al. 2005a).

The assumption that peoples' values may influence their law compliance behaviour is based on the normative perspective of compliance; more specifically on the assumption that social and personal norms may influence behaviour. As explained below, social and personal norms, as principles and morals adopted at group and individual level, effectively guide and constrain behaviour without the use of formal laws and sanctions (Cialdini and Trost 1998). In summary, compliance behaviour is determined by the following factors of compliance: (i) instrumental factors, such as costs and benefits, sanctions and inducement or rewards for compliance; (ii) norms or morals, e.g. personal values, tradition, culture, group behaviour; and (iii) legitimacy, e.g. general satisfaction with authorities and their decisions, participation in decision making process (Tyler 1990, Honneland 1999, Nielsen 2003).

While factors of compliance emphasised in the theories of law compliance are related to individual-level motivations for compliance (e.g. costs, benefits, norms and personal values), the emerging research on compliance in forestry emphasises the role of external and context-specific factors (e.g. market and trade, regulatory and legal constraints, ownership rights, corruption) (Contreras-Hermosilla and Peter 2005, World Bank 2006, Tacconi 2007a, Blasser 2010, Palo and Lehti 2012). The contextual factors appear to be associated with higher structural levels, going beyond individual, to include factors associated to a group, community, state, and ultimately the globe.

2.3.1 The instrumental model of compliance behaviour

The instrumental compliance model proposes that individuals respond to the distribution of potential benefits and costs associated with compliant vs. non-compliant alternatives. It is also commonly known as the 'general deterrence model' (Becker 1968, Nostbakken 2008), since compliance is typically encouraged by influencing the costs, through a combination of monitoring and sanctioning to deter individually rational, but socially inferior outcomes.

Rigid interpretations of this model suggest that individuals will only comply when the expected costs, calculated as the product of the perceived probability of detection and expected sanction, exceed the expected benefits of the non-compliant alternative (Ehrlich 1973, Young 1979). While most behavioural scholars acknowledge that instrumental motivations play a role in the compliance decision, observations of higher than expected levels of compliance in a wide array of public goods (e.g. tax compliance) and common-pool resources settings (e.g. community forestry) refutes the universality of the instrumental model (Gezelius 2002, Nielsen and Mathiesen 2003, Murphy 2005, Viteri and Chávez 2007). Nevertheless, the instrumental model retains its dominance, particularly in the situations where interpersonal communication and mutual trust are absent (Ostrom 1998, Ostrom *et al.* 1999).

2.3.2 Institutional and norm-oriented model of compliance behaviour

Many scholars seeking to explain discrepancies between the instrumental model and field observations highlight the role of institutions – the socially constructed rules and norms of human society. While some institutionalists conceptualize institutions as constraints (North 1990); others view them as normative preferences that individual's value in-and-of themselves (Andreoni 1989). These models build upon the rational-choice tradition, but involve normative parameters to the calculation of individual benefits and costs. They often lead to similar predictions using distinct theoretical paths, or in other cases complement each other.

Scholars that conceptualize institutions as constraints would highlight the role of social norms and sanctions (e.g. peer-pressure) in the compliance decision (Coleman 1987, Posner 1996). The self-interested actor that dominates this school considers instrumental benefits and costs, but adjusts these values to reflect costs of the non-compliance alternative such as the loss of social status, exclusion, or other forms of social sanctions. Compliance occurs when groups adopt norms that attach sufficient social sanctions to overcome the instrumental difference between compliant and non-compliant alternatives. The institutions as preferences school would counter this argument by suggesting that individuals learn to adopt norms, such as reciprocity and inequity aversion, and prefer outcomes that satisfy certain normative conditions, irrespective to social sanctions (Cialdini and Trost 1998). The individual that adopts a reciprocity norm learns to value interpersonal trust and will comply when their peers have developed a reputation for trustworthiness (Ostrom 2005). Individuals that adopt inequity aversion norms, on the other hand, value equality and are more concerned with how instrumental outcomes are distributed within groups (Fehr and Schmidt 1999).

Somewhat similar division as that described between institutions as constraints and institutions as preference can be made between social and personal norms and their impacts on compliance behaviour. Although there appears to be lack of consensus in the literature, a general distinction can be made between social and personal norms. Social norms are those that are understood and accepted by members of a group, and that guide and/or constrain behaviour in a social space, group, or society (Cialdini and Trost 1998). Behaviour in this case is controlled through peer pressure or disapproval (Posner 1996, Posner 1997). Personal norms, on the other hand, more directly concern one's own personal beliefs and ethical values, irrespective of the actions and expectations of the others (Posner 1997, Hatcher and Pascoe 2006). Personal norms are principles (including social norms) that have been internalised by an individual, so that they influence behaviour even in the absence of

external factors and social sanctions (Posner 1997, Hatcher and Pascoe 2006). The influence of norms on compliance is facilitated by the phenomenon of general conformity (Cialdini and Trost 1998), whereby groups of individuals tend to adopt similar norms and the actions that they prescribe.

2.3.3 The concept of legitimacy and its role in rule compliance behaviour

The second normative model of compliance reflects the influences emerging from the political environment, and concerns in particular the role of the perceived legitimacy of authorities and the rule-making processes on compliance behaviour. The literature abounds with different conceptions and approaches to legitimacy, grounded in different disciplines, from political science (Bernstein 2005) to sociology (Suchman 1995) and psychology (Tyler 1990). Empirical research, on the other hand, discusses different roles of legitimacy in practice (Kuperan and Sutinen 1999, Viteri and Chávez 2007, Gritten and Saastamoinen 2011).

Bernstein (2005) discusses legitimacy in the context of global environmental governance, focusing therefore on the issues surrounding the international relations, international law and the global authority. In this context the concept of legitimacy transcends the traditional nation state boundaries, as well as the notion of international community, where states are seen as the only sources and seekers of authority (Bernstein and Cashore 2007, Bernstein 2005, 2011). Bernstein (2005) proposes the following conceptions of legitimacy: principled (or legitimacy as democracy), legal, and sociological. *Principled legitimacy* portrays democracy and democratic standards as the central piece of legitimacy, since democracy is the main principle that justifies authority in the context of globalisation. Due to practical limitations – such as the general lack of democratic institutions at global or even regional levels (Bernstein 2005: 145) – however, clear requirements and criteria for democratic legitimacy are generally lacking. Nevertheless, some elements from deliberative democracy, such as accountability, transparency, participation and deliberation, are generally used as guiding principles or criteria of principled legitimacy. Unlike principled legitimacy, *legal legitimacy* bypasses the normative prescriptions, and instead focuses on the empirical aspects - general support for regime and consent of the state – as central piece of legitimacy. In this view, legitimate is what is legal, i.e. what is written in the legislation of the state. Since the global environmental governance is evidently grounded in the normative foundations and transcend the traditional boundaries and role of the state, there are various challenges related to legal legitimacy of the field of international law (Bernstein 2005: 154-156). These challenges are potentially evaded in the last conception of legitimacy – sociological legitimacy. Sociological legitimacy roots legitimacy in shared understanding and goals of the community, emphasising the influences of socially constructed norms and institutions. As Bernstein (2005: 156), asserts *"to be legitimate rules and institutions must be compatible or institutionally adoptable to existing institutional rules and norms already accepted by a society"*. From this perspective, the legitimacy problems in global environmental governance arise not owing to a lack of democracy or the distance between state consent and new rules, but owing to the normative deficit and tensions within the normative environment in the global governance (Bernstein 2005: 157).

From the perspective of organisational sociology, Suchman (1995) focuses on legitimacy of private firms and organisations and the strategies that they employ to gain legitimacy to operate. As such, this approach might lack direct applicability in this research;

nevertheless, it presents a theoretically influential framework which has been used to describe legitimacy logics elsewhere (Cashore 2002). Suchman (1995:574) defines legitimacy as *"a generalised perception or assumptions that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs and definitions"*. This general definition omits the above introduced divide between democratic and sociological legitimacy (see Bernstein 2005), as it includes both – normative ("proper and appropriate action of an entity") and sociological ("socially constructed systems of norms...") aspects of legitimacy. Suchman's review of organisational legitimacy reveals three types of legitimacy; each resting on different behavioural dynamics: pragmatic, moral and cognitive legitimacy. *Pragmatic legitimacy* is associated to short-term self interests of granters and grantees of legitimacy; it *"rests on self-interested calculations of an organization's most immediate audiences"* (Suchman 1995:578). This form of legitimacy is mostly about – but not limited to – an expected favourable exchange of interests between grantees (e.g. an organisation or firm) and grantors of legitimacy (e.g. public, citizens, stakeholders, community). For instance, support for an organisational policy in return for expected (or promised) benefits that policy may bring to the grantors of legitimacy (Suchman 1995). *Moral legitimacy*, on the other hand, rests on normative evaluation of an organisation and moral motivations to grant authority; it involves judgments about whether certain organisation and actions it proposes is "the right thing to do", rather than judgments about whether it brings benefits to the evaluator or grantor of legitimacy (Suchman 1995:57). According to Suchman, moral legitimacy can concern evaluation of process, outcomes, structures and evaluation of individual political leaders. Finally, *cognitive legitimacy* is based on cognition, rather than on self interest, or normative evaluation. The 'cognition' involves two criteria: "comprehensibility" and "taken for granted" realties. Cognitive legitimacy is granted when an organisation and its activities fit with existing cognitive models and experienced realities of the audience granting the legitimacy.

Finally, the third model of legitimacy reviewed in this thesis, the so-called Tyler's model of legitimacy (Tyler 1990) – emerges from the field of psychology. Tyler's model is largely based on the Weberian approach, which emphasises an obligation to obey the authority (Weber 1974, cited in Tyler 1990). Tyler specifically focuses on the role of legitimacy on law compliance behaviour at an individual level, rather than at the state, international or global level. Therefore, this approach was adopted as the guiding model of legitimacy in the present study. According to Tyler legitimacy refers to a general acceptance and support for political authority, which leads to an internal obligation to comply with laws enacted by the authority. This internal obligation and the personal morality (denoted also as fairness, or the 'right thing to do'), are, according to Tyler, the two key elements of legitimacy (Tyler 1990, Blader and Tyler 2003, Fagan and Tyler 2004, Tyler and Jost 2007). Tyler specifically highlights the role of procedural legitimacy or procedural fairness. Procedural legitimacy focuses on how decisions are made; it concerns satisfaction with the law making, and includes variables such as, participation, openness, transparency, and accountability. Scholars suggest that individuals are more likely to comply with rules when decision-making is an open process; where affected groups are represented and where general transparency is ensured (Nielsen 2003, Viteri and Chávez 2007). Concerning in particular the role of legitimacy on compliance behaviour, it should be noted that some scholars, apart from the procedural legitimacy, also emphasise the role of outcome legitimacy (Nielsen 2003, Nielsen and Mathieses 2003). The outcome legitimacy concerns satisfaction with content and outcome of laws, and includes variables

such as distributional effects, complementarities, and coherence of law with other laws and existing practices (Nielsen 2003). In general, laws that are complementary to existing practices and coherent with other laws are easy to understand and implement and thus are more likely to be accepted and complied with (Kuperan and Sutinen 1999, Nielsen 2003). Finally, Tyler takes a note of political or personal legitimacy, which refers to the legitimacy given due to the authorities based on the political leaders themselves – their worthiness to assume positions of authority and congruence with their constituent's morals and expectations (Tyler 1990, 2002).

Tyler approach to legitimacy is based on evaluation of authority and their actions, based on moral and normative judgements, rather than on the individuals' self interests. His approach therefore, well parallels Suchman's concept of moral legitimacy, and in that context the moral evaluation of process (Suchman 1995:579). On the other hand, Tyler's definition and approach to legitimacy appears to successfully integrate the three conceptions of legitimacy defined by Bernstein (2005) – principled, legal and sociological legitimacy. First, it parallels legitimacy as democracy, as it includes elements of democratic theory, such as accountability, transparency, participation, deliberation. Legal legitimacy, having its roots in the Weberian social science, is reflected in the Tyler's assumption that actors accept a rule or institution as authoritative; that is Tyler's approach does not question the traditional role of the state and its authority. Finally, sociological legitimacy is well reflected in Tyler's model as it strongly rests on set of social and personal norms and values, concerning especially the shared norms of fairness (Tyler 1990, Blader and Tyler 2003, Tyler and Jost, 2007).

3. BACKGROUND FOR ARTICLES

3.1 Forest law enforcement, livelihoods and poverty alleviation (Article I)

Ever since the forest industrialisation and exploitation model launched in tropical forested countries in the post-World War II period by industrialised countries and donors failed to deliver socially beneficial outputs for local populations and national economies (Westoby 1978), concerns about local people's benefits and the role of forestry in poverty alleviation have grown (Westoby 1978, Oksanen et al. 2003, Sunderlin et al. 2003). As a result, in later years, development agencies and national governments increasingly adopted community forestry and poverty reduction on their agendas, especially after the Rio Summit in 1992 (UN 1992) and the UN Millennium Declaration in 2000 (UN 2002).

With this background, the new generation of international policies focusing on illegal logging and forest law enforcement—including the EU FLEGT—also adopted the principles of poverty reduction and the so-called "social safeguards" on their agendas (EC 2003, GoG/EU 2009). The statistics on forest-dependent people estimated by the World Bank a decade ago (World Bank 2001) and the negative impacts of illegal logging on the forest communities' livelihoods and poverty (World Bank 2006) became an unavoidable component of nearly every communication and policy brief on the EU FLEGT.

The EU FLEGT VPA agenda on poverty reduction and social safeguards rests on the assumption that a legal timber trade can address good forest governance which in turn can promote livelihoods and poverty alleviation. The EC Communication on FLEGT states that

"Efforts will be focused on promoting equitable and just solutions to the illegal logging problem which do not have an adverse impact on poor people" (EC 2003:3). In the first ever FLEGT VPA, between the EU and Ghana, the commitment to social safeguards and poverty reduction is reduced to: (i) developing a better understanding of the livelihoods of potentially affected groups and (ii) monitoring the impacts of the agreement on the potentially affected groups" (GoG/EU 2009: Article 17).

While the intention and the 'good will' for positive social outcomes are evident in the FLEGT VPA in Ghana, scholars remind us of the risk that the current conditions and challenges in the country, such as the elite capturing of benefits, insecure access to resources, and the contribution of illegal forest activities to the rural economy (Saastamoinen 1996, Larson and Ribot 2007, Arts and Wiersum 2010, Darko-Obiri and Damnyag 2011), may hamper the assumed positive correlation between legality and poverty alleviation. In many tropical countries, not only *de-facto* practices but also the de-jure or legal framework favour the large-scale forest industry over the small-scale and informal forest sector, artisanal forestry, and the benefits of forest communities (Schmithuesen 1976, 1979, Ribot et al. 2006, Wit and Dam 2010, Hansen and Lund 2011). Others advocate that as long as illegal forest activities provide some benefits to local communities and other stakeholders (e.g., chainsaw operators)—even if only in the short term—the simple banning of these activities will naturally result in negative livelihood implications (Colchester et al. 2006, Kaimowitz 2007, Tacconi 2007). Current research indicates that forest law enforcement under the EU FLEGT VPA in Ghana is likely to have both positive (e.g., emergence and enforcement of 'pro-poor' forest policies and laws) and negative impacts on livelihoods (e.g., lost income and employment) (Inkoom et al. 2005, Mayers et al. 2008, Owusu et al. 2010). Out of these concerns has emerged the need to understand the concept of livelihoods as discussed in the FLGT VPA in Ghana and to explore the potential impacts of the VPA on the livelihoods of forest communities in the country (see Article I).

3.2 Forest governance and farmers' rights to trees and forest in Ghana (Article II, III)

In Ghana the natural forest resources are situated in the High Forest Zone (HFZ), which is approximately 8.5 million hectares large and consists of reserve forest and outside reserve forest (off-reserves) (Forestry Department Ghana 1999, Boateng et al. 2009). This study is concerned with the off-reserves, which comprise 5.482 million hectares of the HFZ (Boateng et al. 2009), and more specifically with the farmlands in these off-reserves. The farmlands account for 48% of the off-reserve area (Damnyag et al. 2012) and harbour the largest concentration of timber trees in the off-reserves, owing to the farmers' efforts and farming systems that requires trees to enable appropriate conditions for the growth of farm crops (Amanor 1996, Kotey et al. 1998).

Prior to colonial rule in Ghana, forests were owned in common by the communities (Amanor 1999). Colonial rule established new institutions for ownership and management of land and forest, by transferring the power and the ownership from the communities to appointed chiefs (traditional authorities) who became custodians of the tradition (Amanor 1999:43). Forest reserves, as protected areas, were established under the colonial rule, from the end of the 1920s until the end of 1940s (Kotey et al. 1998). A noted above, apart from the forest in the forest reserves (on-reserves), considerable forest and timber resources are

found outside the reserves (off-reserves), including private farms (Boateng et al. 2009). The off-reserves comprise a mixture of agricultural lands (farmlands) with naturally occurring timber trees and patches of natural forest (Amanor 1996, Boateng et al. 2009). This area is important for commercial timber production, but also for the livelihoods of the communities (Boateng et al. 2009, Darko-Obiri and Damnyag 2011).

Different ownership and use rights of forest and trees apply in the on-reserves and the off-reserves in Ghana. The situation in the off-reserves is especially complex, as different arrangements apply depending whether trees are planted or naturally occurring and whether they are timber or non-timber species, and with commercial or subsistence value (Agyeman 1993, Acheampong 2003, Acheampong and Marfo 2009). Ownership rights of planted trees (e.g. community or private teak plantations) are vested in the planter of trees. However, the right to plant trees is granted to landowners only. Although there is no customary or statutory law that prohibits tenants from planting trees, such an action is perceived as an attempt to acquire permanent ownership of the land and is strongly discouraged by the landowners (Acheampong and Marfo 2009). The rights to naturally occurring non-timber trees depend on whether the trees have some commercial value or, only a subsistence value. The rights to trees with commercial value (e.g. kola, oil palm, raphia palm, bamboo) are restricted and vested in the landowner; while the rights to trees of subsistence value (e.g. fruit trees) belong to the whole community and everyone can harvest their products (Agyeman 1993).

Since the introduction of the Concessions Act in 1962 (GoG 1962), all naturally-occurring timber trees – whether on the forest reserves or outside of them, on the private or communal land, or on the private farms – are vested in the Government (Amanor 1999, Acheampong and Marfo 2009, Boateng et al. 2009). The central government, in practice the Forestry Commission, was entrusted with the full management rights of trees, including allocation of logging rights. Farming communities have no legal right over the trees on their farms. The controversy that the farmers face with respect to the legal framework is that they nurture and manage the off-reserve timber resources, as a part of their farming practices (Amanor 1999). However, when the tree is mature, the farmer does not have the right to harvest, manage or protect the trees, since they are treated as 'naturally occurring', and thus are vested in the state, who allocates the harvesting rights to the timber contractors (Amanor 1996, Boateng et al. 2009). Thus, farmers do not benefit from the trees they protect and manage on their farms. Even though, since recently the forest legislation guarantees farmers consultation and compensation for harvested trees, Marfo (2006) finds that in practice farmers are rarely consulted when the trees on their farms are felled and are rarely compensated for damage of food crops resulting from logging (see also Hansen 2011). The current legal forest framework in different ways acts as a source of frustration, dissatisfaction and delineation of farmers from forest benefits, which have resulted in farmers' resistance of regulation, including intentional "*killing of timber trees on their farms"* (Amanor 1996) or illegally selling of trees to chainsaw operators (Marfo et al. 2009, Hansen 2011).

3.3 Legal framework of studied forest rules (Article II, III)

3.3.1 The tree-felling rule

As stated above, in accordance to 1962 Concession Act (GoG 1962) all timber trees, including these on private land and farms, are vested in the state. Consequently, farmers are not allowed to legally fell timber trees on their farm, either for commercial or domestic needs. As stated in the Timber Resource Management Regulation (TRMR 1998/L.I 1649) timber rights may be allocated to timber companies (through timber utilization contract), or to forest communities, for community development projects (through timber utilization permit – TUP). Currently, however, no legal scheme enables individual farmers to apply for permit to fell trees, for their domestic or commercial use, at their farms or outside of them. Without, a legal option to apply for permit to fell trees, any attempt for such an action, is considered illegal. The so-called 'tree-felling rule', thus, refers to the prohibition imposed on farmers to fell timber trees on their farmland, for domestic or commercial purpose.

3.3.2 The farming rule

Farming in the forest reserves is considered illegal, c.f. the Forest Protection Decree 1974 (FPD 1974), and the Forestry Protection (Amendment) Act, 2002 (FPAA 2002). According to this Act, it is an offence to cultivate any farm in a forest reserve, without a written consent of the competent forest authority. Written consent for farming in forestry reserves can be issued on the basis of: (i) admitted farms, and (ii) Modified Taungya System (MTS). Admitted farms are legally acknowledged farms amidst forestry reserve. Nowadays such farms are exceptionally rear in Ghana. The MTS is a type of agroforestry, which allows temporary intercropping of food crops in the first years of forest plantation establishment (Agyeman 2006, NFPDP 2007). The so called 'farming rule' in this research refers to prohibition to farm in a forest reserve without a written consent of the competent authority (FPD 1974).

3.3.3 The bushfire prevention rule

Farmers use fires, for various activities, including farming (e.g. small-scale land clearance, and traditional slash and burn agriculture), hunting for bushmeat, and cultural practices. After devastating wildfires in 1982/1983, Ghana adopted number of legal and policy instruments concerning bushfire management (WMP 2011). The current law regulating bushfires is the 1990 Control and Prevention Bushfire Act (CPBA 1990). This law decentralised the regulation of bushfires to district level. Thus, there is a fire sub-committee under each District Assembly, which enacts by-laws (set of rules and regulatory measures) to ensure prevention, control and monitoring of bushfires, at the district level. These bushfire by-laws generally encompasses: prohibition of early cultivation and associated burning in the dry season, prohibition of using fire in forests or farmlands, for any purpose in the dry season, and obligation to make fire belts and attend the fire, in agricultural practices. 'Bushfire prevention rule', as defined in this research, refers to legal requirement to follow these regulatory measures.

3.4 Sources of non-compliance in forestry (Article III and IV)

As discussed in the introduction, the high levels of non-compliance with forest regulation are documented in many countries. This is increasingly becoming a global forest policy issue. The current efforts to understand the sources of non-compliance in forestry and

illegal logging (e.g. Contreras-Hermosilla and Peter 2005, World Bank 2006, Blaser 2010, Palo and Lehti 2012) emphasises the role of socio-economic and governance issues, such as enforcement capacities, corruption, factors related to global market and trade. However, the existing theoretical and empirical knowledge from other fields (e.g. law compliance in fisheries) dealing with individual compliance behaviour, motivations and factors that influence that behaviour, in the case of forestry, are presently unexplored.

One of the main constraints impeding the empirical research on compliance in forestry is the absence of an adequate theoretical and analytical framework for the study of forest law compliance. Different schools of thought approach the issue of compliance from different perspectives, emphasising for instance its economic (Becker 1968), social (Cialdini and Trost 1998), institutional (Ostrom 1990), and psychological (Tyler 1990, Tyler and Jost 2007) dimensions. A consistent research program on compliance behaviour requires an interdisciplinary and comprehensive analytical framework, where the overlaps as well as tensions between the multiple, economic, social and behavioural theories, are taken into consideration. A related challenge is application of general theories of rule compliance to the field of forestry and development of an appropriate theoretical and analytical framework. With this objective in mind, the final PhD Article IV emerged. It integrates the known sources of non-compliance in forestry with theoretical reviews to present a multiple set of causal factors that drive individual compliance behaviour in the forest sector.

4. MATERIALS AND METHODS

4.1 Thesis framework

The original motivation for this research was to understand the impacts of the implementation of the FLEGT VPA and associated forest law enforcement on forest communities' livelihoods in Ghana. Consequently, Article I explored the concept of livelihoods in the VPA negotiation process and aimed at untangling the potential impacts of VPA implementation on forest communities' livelihoods. Two key findings from the Article largely shaped the direction of the subsequent research; first, *"the livelihood of small scale farmers is among the most vulnerable"*, and second, *"the bundle of rights and powers, access, tenure, participation and benefit sharing, among others, are most relevant and most likely to shape the impacts of law enforcement initiatives on livelihoods*". Considering that these aspects are defined in the forest rules and laws, the subsequent research focused on farmers and their compliance with forest rules. Article II assessed farmers' forest values and the implications of these values for farmers' law compliance behaviour; Article III assessed farmers' compliance behaviour and the factors that influence that behaviour. The results from Articles II and III indicate a need for an analytical framework for forest law compliance, which would help structure and underpin the numerous individual and contextual factors that are likely to influence compliance with forest rules. Finally, to respond to this need, Article IV suggests an analytical tool for the study of forest law compliance. Figure 1 positions the individual articles in the research and highlights the interconnections among the results. The major concepts and theories employed at each stage of the research are provided in brackets.

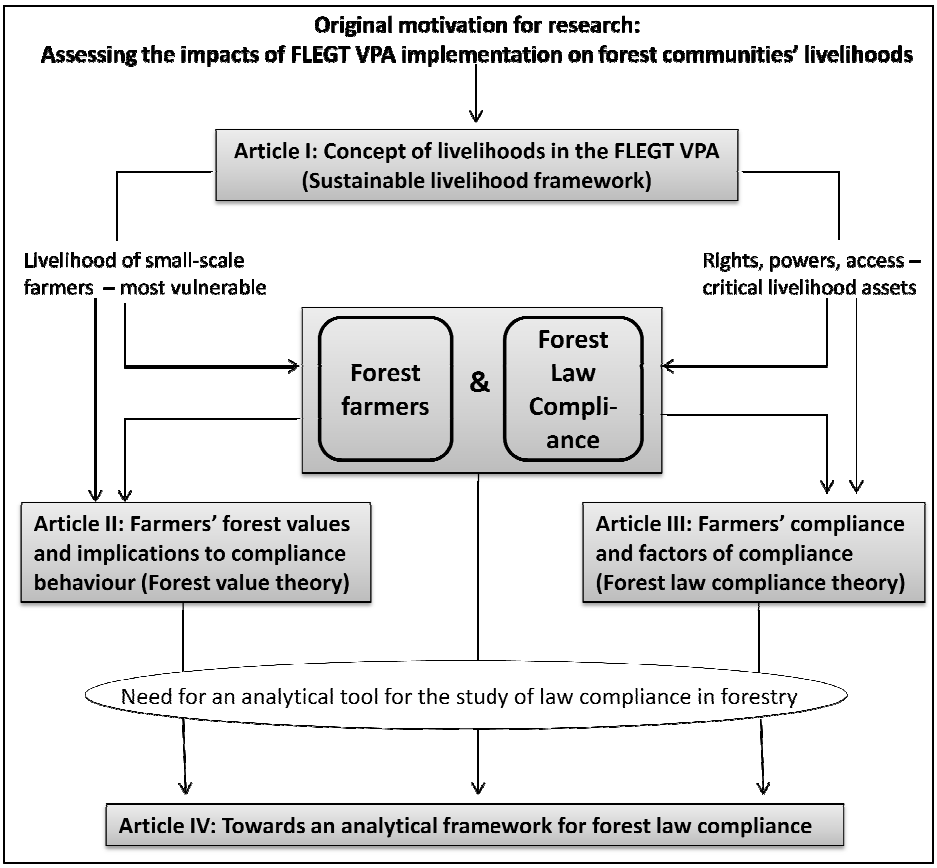

Figure 1. Overview of study design, from the original motivation to the connections among the results.

4.2 Research design

Methodologically, this research can be described as an exploratory case study that uses quantitative and qualitative methods to study the phenomena of interest within their contexts (Yin 2003). In other words, it studies the phenomena of forest law compliance and livelihoods within the larger contexts of forest governance and farmers' rights to forests in Ghana. The study uses previously established theoretical frameworks (e.g., law compliance theory, the sustainable livelihood framework) to identify initial propositions and variables, which inform the research and the research questions (e.g., compliance behaviour depends on a variety of factors, including instrumental incentives, norms, and legitimacy). However, the research does not use theory to model reality and it does not aim to strictly test the validity of theoretical variables through research and observation. Therefore, the case study cannot be described as purely deductive or purely inductive (Creswell 2009). This approach has been described as 'abductive reasoning' (Alasuutari 1998); meaning that it aims to collect new observations and—by combining and contrasting them with the initial

theoretical propositions (also known as a dialogue between theory and empirical findings)—generate new insights, explanations and propositions.

Data collection and data analysis are performed using both quantitative (i.e., questionnaires and statistical tests) and qualitative (i.e., review of documents, interviews and content analysis) research methods (Creswell 2007, Hancock and Mueller 2010). Similarly, the interpretation of data and results is performed using different theoretical standpoints. The research can therefore also be described as methodological and theoretical triangulation, as it involves a "between-method approach" at different stages of research (Seale 1999:54).

4.2.1 Data collection and fieldwork

Data for this study were collected through a structured questionnaire (for Article I) and semi-structured face-to-face interviews (for Articles II and III). In addition, a literature review of published and unpublished documents was conducted. The questionnaire collected data on various issues related to livelihoods and poverty alleviation in the context of the EU FLEGT VPA (Appendix II). The questionnaire was sent via email to individual experts from NGOs, governmental organisations, research and academia, who closely followed and/or were directly involved in the VPA negotiation. In total, 20 respondents returned the questionnaire. The majority of respondents were from research and academic organisations (10), followed by the non-governmental (5), governmental (4) and industry (1) sectors. In addition, five emails were received with free-form responses and insights on the surveyed issues. The survey was conducted during September and October 2009.

Data for Articles II and III were collected using semi-structured interviews (Creswell 2007). Interviews were conducted with individual farmers, heads of households, in 10 selected communities. The communities were randomly selected from the list of farming communities near the forest reserves. The lists were obtained from the forest district offices. Before the fieldwork commenced, in each community, the village chief, a committee chairman or an elder was approached, asked for fieldwork permission, and when possible, interviewed. In addition, six pre-test interviews were conducted in three communities. For each community, the total number of households and its approximate boundaries and shape were known. An in-situ interview plan was made, where the approximate shape and boundaries of the community as well as the locations of households for interviews were defined. The interview plan aimed at covering approximately 10% of the community's households, located in different parts and units of the community. The interview plan was followed as closely as possible; households that most closely coincided with the specified locations were approached and their heads were subsequently interviewed. In total, 226 heads of households were selected and interviewed. The sample includes 9.3% of the heads of households in the 10 selected communities. The fieldwork and data collection phase was organised and aided by one senior scientist from the Forest Research Institute of Ghana (FORIG), Lawrence Damnyag. Interviews were conducted by two fieldwork assistants from FORIG and by the author. With a few exceptions where the interviews were conducted in English, most of the interviews were conducted in Twi (the local dialect), with narratives recorded in English. The fieldwork (preliminary interviews, pre-tests and interviews) was conducted from April to July 2010. Each interview took between 1 and 1.5 hours to complete.

To promote accurate reporting, respondents were informed of the topic and aim of the research in advance and could choose to participate or decline their participation in the

survey. They were assured that the research team has no relation to the forestry department. None of the approached potential interviewees declined to participate in the survey, allowing for a 100% response rate.

4.2.2 Study area (Article II and III)

Ghana covers a total area of 23.5 million hectares, with an estimated population of 25.2 million in 2012 (CIA 2011). The study area is located in the High Forest Zone (HFZ) of Ghana, which constitutes the southern, most forested one-third of the country. The HFZ covers a total land area of about 8.5 million ha (Forestry Department Ghana 1999), of which 1.6 million are gazetted as forest reserves (Kotey et al. 1998, Affum-Baffoe 2002, Boakye and Affum-Baffoe 2008). In addition to forest reserves, forest resources in the HFZ are also found in the areas outside of the reserves, in the so-called off-reserves. This study is conducted in the off-reserves, which account for approximately 5.482 million hectares (Boateng et al. 2009). The off-reserves comprise a mixture of agricultural lands (farmlands) and a significant amount of naturally occurring timber trees and patches of natural forest (Amanor 1996, Boateng et al. 2009). This area is important for timber production, as well as for the livelihoods of farming communities who are settled around the fringes of the forest reserves (Boateng et al. 2009).

The study is conducted in ten farming communities, spread across the following forest districts: Dormaa, Juaso and Begoro (Appendix III); which belong to Brong Ahafo, Ashanti and Eastern administrative region, respectively. The study sites are located in different ecological zones; Dormaa is in dry semi-deciduous zone, Juaso is in semi-deciduous zone, and Begoro in moist-semi-deciduous zone. The forests in the study area are considered tropical forest, with generally high species diversity, multiple canopy layers, and slow growth rates for mature forest (Wagner and Cobbinah 1993). Despite the ecological differences, the economic, socio-political and cultural conditions in the study area are similar. The forests in the study area are subject to heavy timber exploitation, raising concerns for deforestation and illegal logging (Marfo et al. 2009).There has been a rapid change of forest policy and legislation (Opoku et al. 2005); yet, the forest and tree tenure system remain unclear and contesting (Acheampong and Marfo 2009).

Table 1. Demographic and socio-economic information of respondents (Article II and III) N=226.

Occupation (%)	Gender (%)	Age	Level of education (%)	Origin	Average monthly income[a]	Average household size
Farmers/ Carpenters/ Hunters	Male/ Female	18-30/ 30-60/ above 60	With/ Without formal education	Indigenous to community/migrant		
97/1/1	70/30	15/74/11	80/20	64/36	145 GHC (~100 USD)	7

[a]Note that 70% of respondents had an income under the average

4.3 Materials and methods adopted in specific Articles

The article discusses the concept of livelihoods in the VPA negotiation process in Ghana and explores potential implications of the FLEGT VPA for forest communities' livelihoods. A literature review of forest communities' livelihoods and livelihood assessment methods was conducted. Data were collected using a structured questionnaire (Appendix II). Closed- and open-ended questions were used to identify (i) the livelihood-related issues covered in the VPA, (ii) the social groups whose livelihoods are most likely to be affected by FLEGT VPA implementation, and (iii) the potential impacts on the communities' livelihoods. In addition, using an open-ended question, respondents were asked to provide general and more descriptive information about the issues, including (i) the concept of livelihoods and poverty alleviation within the FLEGT VPA in Ghana; (ii) the negotiation of the FLEGT VPA in Ghana (e.g., stakeholders' views, policy objectives); and (iii) the final FLEGT VPA between the EU and Ghana (e.g., main elements, benefits, social issues and objectives). Qualitative data were analysed using manual coding (Creswell 2007) and manual content analysis (Silverman 2006), whereas for quantitative data, arithmetic means were calculated.

4.3.1 Materials and methods in Article I

The article discusses the concept of livelihoods in the VPA negotiation process in Ghana and explores potential implications of the FLEGT VPA for forest communities' livelihoods. A literature review of forest communities' livelihoods and livelihood assessment methods was conducted. Data were collected using a structured questionnaire (Appendix II). Closed- and open-ended questions were used to identify (i) the livelihood-related issues covered in the VPA, (ii) the social groups whose livelihoods are most likely to be affected by FLEGT VPA implementation, and (iii) the potential impacts on the communities' livelihoods. In addition, using an open-ended question, respondents were asked to provide general and more descriptive information about the issues, including (i) the concept of livelihoods and poverty alleviation within the FLEGT VPA in Ghana; (ii) the negotiation of the FLEGT VPA in Ghana (e.g., stakeholders' views, policy objectives); and (iii) the final FLEGT VPA between the EU and Ghana (e.g., main elements, benefits, social issues and objectives). Qualitative data were analysed using manual coding (Creswell 2007) and manual content analysis (Silverman 2006), whereas for quantitative data, arithmetic means were calculated.

4.3.2 Materials and methods in Articles II and III

Articles II and III are similar in terms of their methodological approach, data collection and data analysis. Data for both articles were collected using semi-structured face-to-face interviews (Appendix IV). Both articles are based on closed- and open-ended questions from the interviews and make use of descriptive statistics (frequencies and percentage) and non-parametric statistical tests in the data analysis phases.

Article II assesses the relative importance that farmers ascribe to certain forest values and the potential associations between their forest values and compliance with the tree-felling rule (i.e., the ban on harvesting timber trees on farmers' lands). Data on forest values were collected in two subsequent exercises: (i) the identification of all forest values and (ii) the ranking of the importance of twelve predefined categories of forest values. In the first exercise, the respondents were asked to name all of the things they value about the forest; in the second exercise, they were asked to rank the importance of twelve predefined forest

values (Appendix I). Next, using an open-ended question, the respondents were asked to give reasons for ranking a certain forest value as the most important and another as the least important. Respondents could give more than one reason, allowing for a multiple response option. Farmers' compliance with the tree-felling rule was assessed using the following question: *"Would you fell timber tree/trees without a permit?"*, with the following answer options: *yes*, *only in difficult situations*, and *no*. Subsequently, they were asked to provide reasons for their reported compliance behaviour. Non-parametric Friedman tests and multiple pairwise comparisons of subsets of values, with Bonferroni adjusted p-values, were conducted to establish the order of importance of forest values. Multivariate binary logistic regression (Hosmer and Lemeshow 2000, Hancock and Mueller 2010) was used to explore the potential relationships between compliance with the tree-felling rule (dependent variable) and forest values (explanatory variables). Finally, to understand why the respondents perceive certain forest values as the most and others as the least important, the given reasons were analysed and the percentages of responses were calculated.

Article III, on the other hand, assessed farmers' compliance with formal forest rules and the reasons and motivation for their behaviour. Data collection on compliance with forest rules included (i) farmers' own compliance behaviour; (ii) farmers' perceptions about the compliance behaviour of their peers; and (iii) farmers' approval for non-compliance with the studied forest rules. Concerning the factors that affect compliance, farmers were asked to respond to a variety of pre-defined statements, established with reference to general compliance theory (see section 2). Additionally, farmers were asked to give reasons for their reported compliance/non-compliance with specific forest rules. Data about forest law compliance and the factors influencing compliance were analysed using basic descriptive statistics on the numbers and percentages of respondents.

4.3.3 Materials and methods in Article IV

The last article is a response to the observed complexity surrounding forestry law, compliance behaviour, and the observed lack of theoretical, empirical and analytical insights into rule and law compliance in the forest sector. The article adopts an inductive approach that draws upon the available literature on sources of non-compliance in the forest sector and the interdisciplinary theoretical literature on rule compliance. More specifically, the article reviews the literature on compliance in forestry to identify a comprehensive list of the most common sources of non-compliance in the forest sector. It then continues by reviewing different theoretical perspectives on rule compliance and emerges with three dominant models that collectively highlight a variety of individual motivations for compliance that generally consist of (i) instrumental benefits and costs, (ii) social and personal norms, and (iii) legitimacy. Finally, the article integrates the empirical and theoretical reviews to present an analytical framework for compliance in the forest sector that embraces multiple theoretical models of human behaviour.

The studies on compliance in forestry reviewed in the article adopt a global perspective but focus mostly on countries where, for different reasons, high rates of illegal forest activities exist: the Amazon, Central Africa, Mesoamerica, South-East Asia and West Africa, with some consideration of European context (Contreras-Hermosilla 2002, Brack 2003, Hirakuri 2003, Tacconi et al. 2003, Contreras-Hermosilla and Peter 2005, World Bank 2006, Kishor and Damania 2007, Tacconi 2007, Tacconi 2007a, Blaser 2010).

5. RESULTS

The results of this research are summarised in four sections; each presenting the main results of one specific PhD article. As previously mentioned, the Article I discusses the concept of livelihood, as outlined in the VPA and the potential impacts of law enforcement on the forest communities' livelihoods within the VPA in Ghana. The three subsequent articles explore different dimensions of compliance with forest rules, focusing in particular on: farmers' forest values (Article II), factors that impede/facilitate compliance/non-compliance with rules (Article III), and theoretical and analytical developments in the study of forest law compliance.

5.1 Concept of livelihoods and the expected impacts of the FLEGT VPA on forest communities' livelihoods in Ghana (Article I)

5.1.1 Concept of livelihoods in the EU-Ghana FLEGT VPA

In addition to the five-livelihood assets given in the sustainable livelihood framework (SLF) (Carney 1999, Chambers and Conway 1992, DFID 2002), five supplementary elements of livelihoods were identified as relevant for the livelihood of forest communities in the context of FLEGT VPA. After Baumann (2000), these elements were termed as "policy and institutional livelihood assets" and include: (i) forest communities' rights to forest resources, (ii) their access to resources, (iii) their participation in decision-making processes, (iv) equity in timber benefit sharing, and (v) land and tree tenure. The experts involved in the interview considered the policy and institutional livelihood assets as the most influential and the most relevant for the livelihood security of forest communities, within the VPA. The policy and institutional livelihood assets directly relate to the larger forest governance discourse (Cotula and Mayers 2009). More precisely these aspects define the bundle of rights and bundle of powers (Ribot 1998, Ribot and Peluso 2003), as well as deliberation processes in which these bundles are transferred from socially, politically, or financially stronger to the weaker groups (Agrawal and Ribot 1999, Ribot et al. 2006, Tacconi 2007b).

Natural (i.e. forest as natural resource stock) and social assets (social networks, relationships and norms), from the SLF, were also perceived as very relevant in the VPA process. The VPA implementation is expected to have an indirect impact on these assets. For instance, the VPA implementation may improve forest management practices, which would lead to retention of forest resources, which in a long run, may strengthen forest-based livelihoods of communities. Social aspects are expected to improve, as a result of an expected improved access information, as well as formation of networks and consultation that took place during the VPA negotiation phase. Financial assets (savings, income), on the other hand, were regarded as relevant for the livelihood security, but largely overlooked in the VPA negotiation. The actual financial risks and uncertainties – including market prices and impact on communities – were considered higher than the assumptions made in the negotiation phase. Consequently, concerns about financial loss for both, VPA countries' governments and the communities, were expressed. Similarly, human (skills, knowledge,

labour) and physical assets (infrastructure, transport, energy, communications) were considered to be largely overlooked during the VPA negotiation process.

5.1.2 Potential impacts of the VPA implementation: who will be affected and how

Groups within the forest communities whose livelihood is likely to be affected by the VPA implementation include: (i) small-scale and subsistence farmers; (ii) chainsaw operators; (iii) youth; (iv) women; (v) middle class (e.g. cocoa farmers, land owners); and (vi) wealthier groups (e.g. chiefs and sub-chiefs).

It is expected that the VPA implementation may result in both, positive (e.g. justice in allocation of timber benefits, and better access to information, improved participation) and negative impacts (e.g. lost access to forest and forest resources, lost employment provided by the illegal forest activities) on the livelihoods of the impoverished, as well as the wealthier groups, within the forest communities (Table 2/Article I). The analysis of results imply that the actual impacts will largely depend on the extent to which the following issues are addressed in the VPA implementation: (i) reforms of the land and tree tenure, (ii) participation, (iii) transparency and accountability, and (iv) forest management practices. Considering the legal plurality and the complex co-existence of statutory and customary tree and land tenure systems in Ghana (Amanor 1999, Larbi 2006, Boakye and Affum-Baffoe 2008), a lot of hope is put on clarification and reform of ownership and tenure. However, clarification and reforms of tenure and ownership rights will not necessarily benefit the forest communities and the vulnerable groups, unless their interests and concerns are taken into consideration in the reforming processes. Therefore, a direct participation and an honest consideration of the communities in the forest policy and legislation reforms ought to be strengthened. Increased transparency and accountability is expected to reduce the elite capturing of forest benefits, and potentially the existing corruption in the forest sector. Having said that, an increased transparency and accountability is expected to have potential negative impacts on the local elite; while at the same time, it is expected to benefit the vulnerable groups, through more equal and just sharing of timber benefits. Finally, certain expectations exist that the VPA will introduce better forest management practices, which will result in improved resource stocks, environmental services and non-wood forest products; which in a long run will have positive impacts on forest communities' livelihoods.

5.2 Understanding the meaning and context of farmers' forest values (Article II)

5.2.1 What farmers value about the forest

Farmers identified over 100 forest value items (e.g., bushmeat, protein, air quality, farming land, soil fertility, shelter, timber, firewood, honey, wild fruits, inner peace). These items were grouped into 32 broader categories of forest values (Appendix V). As shown in the appendix, the identified categories of forest values were grouped in one of the following groups: subsistence, environmental, economic, learning, future, cultural and spiritual forest values.

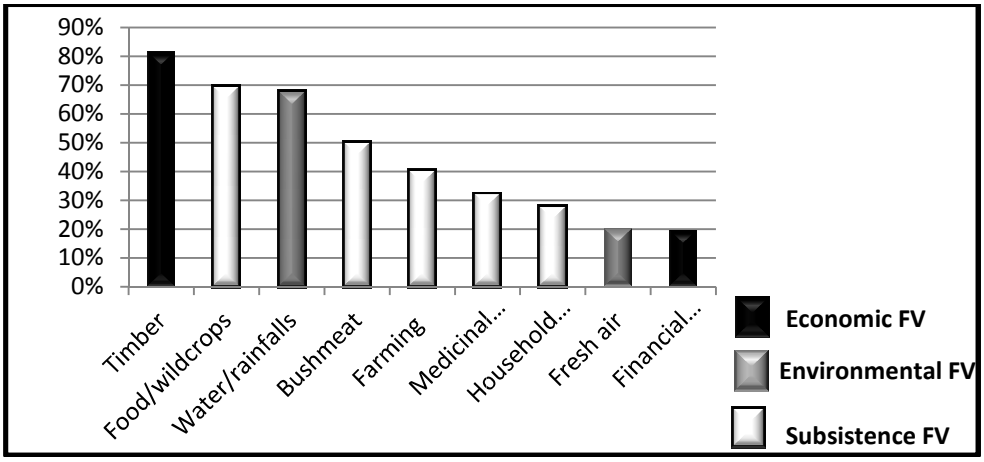

Figure 2. List of the dominant forest values identified by farmers. Percentage of respondents (N = 226)

The most dominant (in terms of the percentage of farmers who identified the specific forest values) and the most diversified forest values (in terms of the number of items of value identified) are subsistence values (e.g., food, wild crops and bushmeat), followed by environmental (e.g., water, rainfall) and economic (timber, income) values. Aesthetic and religion-related forest values were not identified by farmers (Figure 2).

The rankings of the importance of different categories of forest values, classified into use and non-use forest values (Appendix I), were found to be statistically different (Friedman test statistic for use forest values: 575.2, p=0.000, df=5, n=225; Friedman test statistic for non-use forest values: 357.5, p=0.000, df=5, n=226). Environmental, subsistence and economic values were ranked as the most important of the use forest values. They are followed by medicinal, learning, and finally aesthetic values as the least important of the use forest values.

Table 2. Pairwise multiple comparisons of subsets of values: order of importance of use and non-use forest values (1 – most important to 6 – least important)

	Use forest values[a]					
	Environmental	Subsistence	Economic	Medicinal	Learning	Aesthetic
Order of importance	1	1	1	2	3	4
	Non-Use forest values[a]					
	Future	Moral	Cultural	Intrinsic	Spiritual	Religion
Order of importance	1	2	2	3	3	4

[a] It should be noted that the ranking of forest values is performed separately for use and non-use forest values. Therefore, the importance of forest values cannot be compared across these two groups.

Future forest value was ranked as the most important in the group of non-use values, followed by moral and cultural, then intrinsic and spiritual, and finally religion–related forest values as the least important in the respective group (Table 2). It should be noted that environmental, subsistence and economic forest values have the same order of importance, and so do moral and cultural and intrinsic and spiritual values. This means that in pairwise comparisons, there was no statistically significant difference in the rankings of importance of these subsets of forest values.

5.2.2 Why farmers perceive forest values as important/unimportant

The right to and the need for livelihood support and subsistence is one of the primary reasons why farmers perceive certain forest values—environmental, subsistence, economic and future values—as most important. In the case of environmental and subsistence values, 77% and 90% of the given reasons for perceiving the respective forest values as the most important were related to livelihood support and subsistence (e.g., rainfall for farming, animals as food, soil fertility, food provision and security, health, farming land). Livelihood support and subsistence in terms of environmental forest values was communicated by most of the farmers as follows: *"we need rainfall for farming and food*" or *"...our life depends on natural resources"*. Concerning the importance of subsistence forest values, most of the farmers highlighted the need for survival, strength and the maintenance of their social duties (i.e., expectations to support other family/community members in need): *"forest sustains our lives and gives us strength to fight the life-calamities*" *"...I have to provide food to my children, and help my other brothers and family in need"*. In the case of economic and future forest values, 40% and 44%, respectively, of the farmers' reasons for the importance of these values relate to their contributions to livelihood support (e.g., timber for shelter, community and family support, medicinal plants, livelihoods for future generations).

Farmers rank the aesthetic forest values as the least important becauseas noted by respondents in Ghana, it is not common to appreciate the forest's beauty (68% of farmers' reasons), and because,as respondents noted: *"one does not live from beauty"*, and *"you can't eat what you see"* (22% of farmers' reasons). The religion-related forest value in the questionnaire was defined in the context of traditional African religions *("I value the forest because it is a place to worship God and the nature...").* The given reasons for the low importance of this value appear to be related to a relatively recent decline of traditional African beliefs and a shift to Christianity; 72% explained that *"God prohibits worshiping of natural objects"*, or *"forest is not a place to worship God"*, and *"it used to be our customs, but nowadays only some chiefs respect this tradition"*. It should be further noted that 9% of the given reasons for the low importance of religion-related forest values were associated with the discouragement of worship in the forest (e.g., *"it is prohibited by authorities to worship in forest", "no forestland is allocated for religious/spiritual use"*).

5.2.3 Compliance with the tree-felling rule and relationships between values and compliance behaviour

In total, 68% of the respondents reported that they would not comply with the tree-felling rule (45% of which would absolutely not comply and 23% would not comply only in difficult situation, e.g., if they needed the resources for survival). The multivariate regression model suggests some relationships between farmers' compliance behaviour and

their ranking of the importance of forest values. Respondents who ascribe a high importance to economic, learning and religion-related forest values are more likely to comply with the tree-felling rule compared to those who ascribe less importance to these values. No association was found between compliance and some important forest values, such as subsistence, environmental and future forest values.

5.3 Compliance levels and factors affecting compliance behaviour (Article III)

Article III assessed farmers' level of compliance and motivations for compliance/non-compliance with forest rules. The levels of compliance with forest rules in general and with three specific forest rules in particular were assessed, namely the ban on felling trees without a permit (tree-felling rule), the ban on farming in forestry reserves (farming rule) and the obligation to follow guidelines for the prevention and management of bushfires (bushfire prevention rule). Of the 226 respondents, 99% reported that they were aware of the existence and meaning of the three studied forest rules.

5.3.1 Farmers' compliance with formal forest rules in Ghana

It should be noted that based on the assumption that self-reported non-compliance tends to be lower than the true noncompliance rate (Tyler 1990, Kaene et al. 2008), two original categories, "absolute non-compliance" and "non-compliance in difficult situations", were treated as equal and are referred to in general as "non-compliance".

Of the three studied rules, the highest level of non-compliance is observed for the tree-felling rule. Concerning the tree-felling rule, in total, 68% of the respondents reported that they would break the rule. The majority of respondents believed that other community members do break the rule (83%) and approved when this happens (62%). In the case of the farming rule, a total of 10% of the respondents reported that they would break the rule; 42% believed that other community members break the rule; and 31% approved when this happens. Finally, 13% of respondents reported that they would break the bushfire prevention rule; 55% believed that their peers do not comply with rules; and 21% approved of their peers when this happens.

Table 3. Compliance with forest rules. Percentage of respondents (N=226)

Situation	Tree felling rule (%)	Farming rule (%)	Bushfire rule (%)
Respondents who do not comply with rules	68	10	13
Respondents who believe that their peers do not comply with rules	83	42	55
Social approval for non-compliance with rules	62	31	21

In addition, it is important to note that social norms were found to play an important role in farmers' interpretation of and *de facto* compliance with rules. Although these norms were not surveyed in detail, it was observed that the level of compliance and social approval for the non-compliance of peers largely depended on the following: (i) the purpose of the action (e.g., domestic vs. commercial use of resource); (ii) socio-economic and demographic status of the actor (e.g., indigenous to community vs. migrant; landowner vs. land renters; poor vs. better-off); (iii) the location of the trees (e.g., trees growing on one's own farm vs. threes outside of the self-owned farmland); and (iv) the season of the year (rainy vs. dry season). For example, non-compliance is more likely to occur and more likely to be approved of by peers if the resource is needed for domestic use (e.g., for food or lumber for shelter), if the harvesting of trees is done on a farmer's own farmland, if there is no alternative way to obtain the needed resource (e.g., no farming land, no legal permit scheme to apply for the felling of trees), and if there are traditional practices in place to follow (e.g., traditional fire management practices). However, non-compliance in the opposite cases (e.g., for commercial purposes, felling trees outside one's own farmland) is met with strict disapproval and social sanctions.

5.3.2 Factors influencing forest law compliance behaviour in general

Factors leading to farmers' compliance with forest rules include inducements or positive incentives for compliance (e.g., financial and non-financial compensation or rewards), fear of sanctions, social and religious-based norms (e.g., the law corresponds to the traditional/religious leaders' teachings and values), the legitimacy of the decision-making process (e.g., participation and deliberation in decision-making processes) and the legitimacy of outcomes (e.g., the management, ownership or use rights to the forest). In each of these cases, at least 90% of respondents reported that they would comply with rules.

The most significant factors leading to non-compliance with forest rules in Ghana include the violation of the norm of fairness, tradition/culture (e.g., the law contradicts ancestral teachings and values), religion (e.g., the law contradicts religious beliefs and practices) and a general lack of perceived legitimacy (perception that the authorities are irresponsible and illegitimate). In each of these cases, at least 44% of respondents reported non-compliance with rules. On the other hand, financial gain (e.g., breaking the rule to improve the actor's financial income) and a lack of sanctions (i.e., the presumption that there are no law enforcement agencies) were reported by only 26% and 19% of respondents as reasons for breaking the laws, respectively.

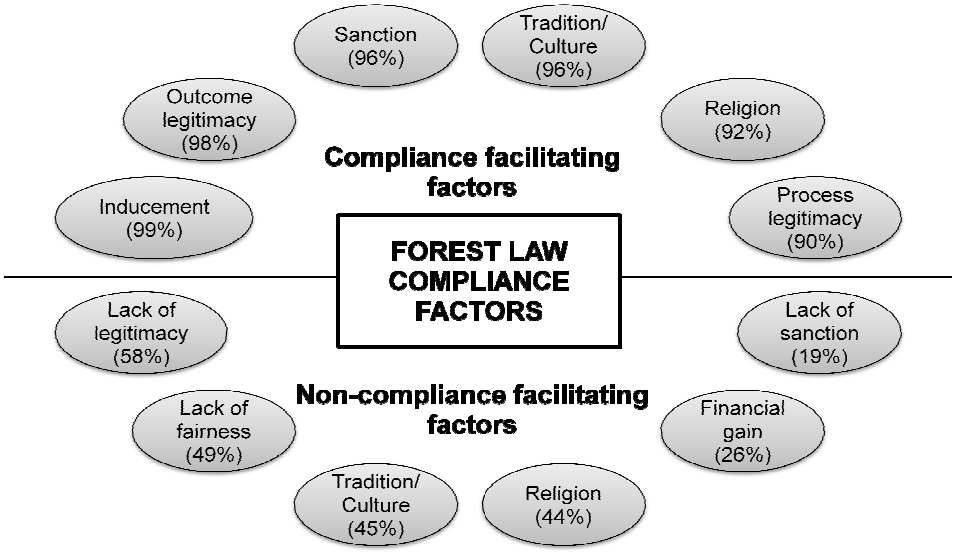

Figure 3. Major factors facilitating compliance and non-compliance with forest regulations. The percentage of respondents who identified these factors as crucial to their compliance/non-compliance with forest rules (N=226)

5.3.3 Factors influencing compliance with the tree-felling, farming and bushfire-prevention

The perceived fairness of rules is identified as the major factor explaining the higher levels of compliance with the farming and bushfire prevention rules, mentioned by 49% and 81% of complying respondents, respectively. The fear of sanction was identified as a reason for compliance by 32% of the respondents in the case of the farming rule and by 16% in the case of the bushfire prevention rule. Furthermore, social norms (e.g., morality, traditional fire management practices), peer pressure (e.g., fear of community members and informal sanctions), the regulatory context (i.e., the availability of legal alternatives by which to obtain the needed resources) and the socio-economic context (e.g., poverty, lack of farming land) also played a role in complying with these rules. Concerning the perceived fairness of the farming and bushfire-prevention rules, respondents explained that the fairness of these rules lay in their purposeful meaning and contribution to forest protection, the maintenance of the rainfall cycle, soil quality, and the protection of farmlands and the community from destruction.

The need for wood and timber for domestic use and in support of livelihoods (e.g., building shelters) and the perceived lack of fairness of the tree-felling rule (i.e., the perception that the community should have the right to use and fell trees on their farmland) are identified as the two major factors explaining the lack of compliance with this rule. The former was identified by 65% and the later by 61% of non-complying respondents. Further, various regulatory constraints (i.e., the lack of alternative legal means of obtaining a permit to fell trees) were identified by 14% of non-complying respondents, whereas financial gain was identified by only 8% of non-complying respondents as a reason for non-compliance (Table 4).

Table 4. Major factors explaining compliance/non-compliance with the studied forest rules. Percentage of respondents who identified the factors of compliance.

FACTORS EXPLAINING COMPLIANCE WITH RULES Number of respondents who comply with forest rules for various reasons			
Instrumental factors	Tree felling (N=72)	Farming (N=202)	Bushfire (N=194)
Sanction (fear of sanction)	**34 (47%)**	65 (32%)	31 (16%)
Norms			
Fairness (perception that the rule is fair and important)	0	**99 (49%)**	**157 (81%)**
Tradition and religion (sin, morality)	2 (3%)	14 (7%)	10 (5%)
Peer pressure (fear of informal sanction)	0	0	14 (7%)
Contextual factors			
Regulatory context (alternative legal options)	13 (72%)	28 (14%)	0
Socio-economic context (ability to afford the resource)	9 (13%)	0	0
FACTORS EXPLAINING NON-COMPLIANCE Number of respondents who break forest rules for various reasons:			
Instrumental factors	Tree felling (N=153)	Farming (N=22)	Bushfire (N=30)
Livelihood needs (domestic use of resource)	**99 (65%)**	1 (5%)	9 (31%)
Financial gain (commercial use of resource)	12 (8%)	3 (14%)	0
Norms			
Social norms (practices adopted over time)	8 (5%)	0	**25 (86%)**
Fairness (perception that the rule is unfair)	**93 (61%)**	0	0
Contextual factors			
Regulatory context (legal constraints)	22 (14%)	2 (9%)	0
Socio-economic context (poverty)	6 (4%)	**16 (73%)**	0

5.4 Towards an analytical framework for forest rule compliance (Article IV)

Article IV proposes an expansive analytical framework for the study of forest law compliance. It embraces the relatively well-established assumption that human behaviour cannot be understood by a single all-encompassing model but requires a multiple model approach that incorporates a broad range of social, psychological and contextual influences (Henrich et al. 2001). It aims to integrate the theoretical literature on rule compliance with the existing literature on compliance in forestry, which emphasises the common sources of non-compliance. It further aims to facilitate the analytical research on forest law compliance by identifying a set of broad causal factors influencing individual law compliance behaviour.

5.4.1 The proposed analytical framework

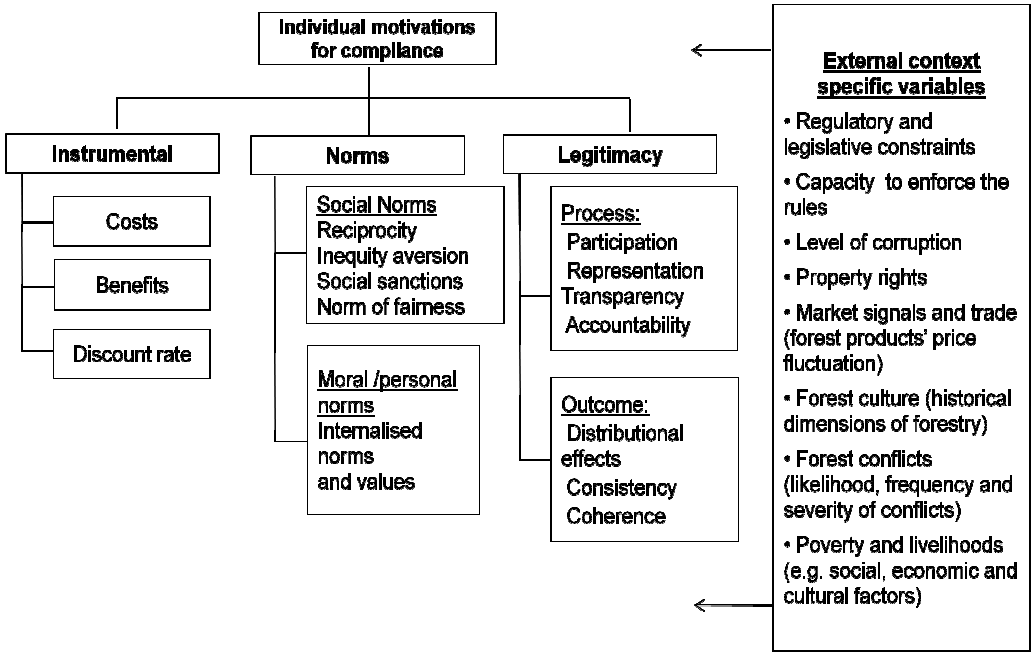

Figure 4. Analytical framework for rule compliance in forestry.

The framework distinguishes between the motivational context (i.e., individual motivations for or factors in compliance) and the external variables that provide the context in which individual decisions are made. While the theoretical literature tends to emphasise motivations at the individual level, the emerging literature on compliance in forestry to a large extent tends to emphasise external or context-specific variables influencing compliance behaviour. There is, however, a considerable amount of correlation and likely endogenous relationships or overlap between individual-level motivations, derived from theory, and the external factors, derived from the literature on compliance in the forestry sector.

The analytical framework distinguishes between individual motivations and external or context-specific variables of compliance. The motivational context is categorised as a product of instrumental incentives, norms, and legitimacy. The instrumental incentives category consists of three major variables: costs, benefits, and the discount rate. Costs refer to potential costs of non-compliance, such as the likelihood and severity of sanction; benefits refer to the potential gains associated with the illegal exploitation of resources, such as the size/value of the illegal harvest. The discount rate refers to the way in which resource users perceive the future flow of resources (Ostrom 1990). If users have a high discount rate in regard to a particular resource, the time horizon for their interest in the resource is short. Consequently, they see short-term benefits as a reasonable option and have little motivation to invest time and effort in managing the resources sustainably and for shared long-term benefits. It should be noted, however, that costs, benefits and the discount rate are not static variables that are well-defined in monetary terms. They too are subject to human judgment depending on social and personal norms and values (Ostrom 1990).

The institutional theory suggests two salient classes of norms as motivations for compliance: *social norms* and *personal norms or morals* (Cialdini and Trost 1998, Elster 2009). Although norms can vary considerably across cultural contexts, *reciprocity norms* (Henrich et al. 2001, Gintis et al. 2003), inequity aversion (Fehr and Schmidt 1999) and various forms of social sanctioning (Posner 1996, 1997) appear relevant in a wide range of cultures (Ostrom 1998, Henrich *et al.* 2001).

Following Nielsen (2003), variables that constitute legitimacy are divided into process (procedural legitimacy) and outcome (outcome legitimacy). The variables of process legitimacy include participation in the decision-making process, representation, transparency and the accountability of the rule-making process (Tyler 1990, Nielsen and Mathiesen 2003, Viteri and Chávez 2007). Outcome legitimacy is related to the rules themselves, their quality, and their practical implications for forest users. Important variables include the distributional effects of rules (e.g., granted rights to forest), consistency (the degree to which forest rules complement existing rules and practices and/or the ease with which forest users can adapt them), and coherence (i.e., perceptions among forest users that rules are meaningful in a broader context and will contribute to larger management objectives such as the regeneration of forest stocks and the solution of deforestation problems).

External context-specific variables are derived from the sources of non-compliance in the forest sector, including regulatory constraints, the capacity of authorities, corruption, property/ownership, market and trade, economic incentives and disincentives, the perceived fairness of legislation, forest culture, transparency and accountability, forest conflicts and poverty and livelihood needs (see Article IV for a detailed description of these variables). The majority of these context-specific factors are not specifically related to individual-level motivations (with the exception of the perceived fairness of legislation). Instead, they are characteristics of the external environment and are assumed to influence compliance decisions by altering the motivational structure of the alternatives; more precisely, by altering the instrumental incentives, legitimacy and social and personal norms. For instance, shifts in context, most notably property rights, can activate certain motivations or cause shifts to occur between instrumental outcomes and normative preferences (Ostrom 1990, Vatn 2005, Biel and Thøgersen 2007). Property and use rights granted by the authorities' decisions are likely to influence the legitimacy of authorities (Nielsen 2003) but also the perceived fairness of rules because as this study has shown, forest users often have predefined beliefs about their rights to the forest. Markets, on the other hand, can alter the instrumental distribution of benefits and costs in a variety of ways. Changes in demand can undermine compliance when the value of forest products increases (Sutinen et al. 1990, Nielsen 2003). Further, corruption may affect the likelihood and fear of sanction if it is realised that sanction can be avoided through informal payments to law-enforcement agencies. On the other hand, the perception that the law-enforcement agencies are corrupt affects judgments about the legitimacy of that agency as well as the norm of fairness. Poverty influences the compliance of rural forest users such as farming communities by influencing the expected costs and benefits resulting from an illegal action but also by influencing peer behaviour and peer pressure. As this study (see Article III) and other studies (e.g., Gezelius 2004) have shown, peer pressure declines if non-compliance occurs for subsistence reasons but increases if it occurs for the purpose of the commercial use of resources.

6. DISCUSSION AND CONCLUSIONS

This section is divided into four parts. In the first part, the results are discussed in terms of the relevant theoretical and empirical literature, and the major assumptions derived from the results are outlined. An attempt is made to address results and issues that, although relevant, have been discussed to a lesser degree in published PhD articles. The second part outlines the major policy implications of the study, and the third outlines some methodological and conceptual limitations. Finally, in the last part of this section, some concluding remarks and needs for further research are provided.

6.1 Discussion of results

Assessing livelihoods and recognising livelihood as a factor in law compliance behaviour
Assessing and understanding the livelihoods of forest communities in the context of the EU FLEGT VPA in Ghana requires an in-depth analysis and thorough understanding of larger governance, policy, and institutional issues such as the rights and powers of forest communities (Article I). These issues directly define and influence the forest-based livelihoods of the vulnerable and marginalised communities who are dependent on forest resources (Baumann 2000, Cotula and Mayers 2009). Currently, the sustainable livelihoods framework (SLF or framework hereafter) is the most widely applied methodology for livelihood assessment and acts as a model for frameworks and methodologies with similar objectives (DFID 2002, Brocklesby and Fisher 2003). Governance, policy and institutional issues (e.g., rights to the forest, power relationships, participation, laws and norms and culture) in the SLF are covered in a broad area known as *'policies, institutions and processes'* (Carney 1998, DFID 2002). Various challenges with regards to the assessment of complex issues such as power relations, political capital, institutional dynamics and changes using the SLF have been acknowledged (Baumann 2000, Carney 2002). This research does not study the methodological limitations of the SLF in detail. However, it informs further studies aiming to assess the livelihood impacts of forest policy instruments, such as the EU FLEGT to draw due attention to the policy and institutional aspects of such instruments.

Expanding further on the issue of livelihood, its relevance throughout this thesis should be highlighted. The struggle for livelihood was identified as one of the major reasons why farmers ascribe a high importance to forests (Article II) as well as one of the relevant factors influencing farmers' law compliance behaviour (Article III). The former confirms the well-established finding that farming communities in Ghana primarily derive their livelihoods and subsistence benefits from forests, unlike commercial benefits (Blay et al. 2008, Abane 2009, Appiah and Pappinen 2010). The latter finding, on the other hand, proposes that farmers will disobey certain forest rules if those rules compromise their ability to maintain their tenuous livelihoods. The lack of compliance with the tree-felling rule directly confirms this assumption, showing an increased level of non-compliance due to, among other reasons, livelihood and subsistence needs (Article III). The latter finding, however, might be specific to the forest users in this study. Namely, livelihood is an important factor in rule compliance for those groups who most directly depend on the forest for subsistence—e.g., forest communities and impoverished rural populations. However, the relevance of livelihood as a factor of compliance in the context of the timber industry

and illegal timber extraction is likely to be smaller (Article IV). In the case of illegally operating timber companies, factors such as market and economic incentives are likely to prevail (Contreras-Hermosilla 2002, Contreras-Hermosilla and Peter 2005, Tacconi 2007a, Blaser 2010).

Importance and interpretation of forest values by farmers and the societal and cultural contexts of their concepts of value

Concerning forest values and their importance to farmers, it should be stressed that use forest values (e.g., the opportunity to use the forest for timber, farming, food production, rainfall, bushmeat, etc.) were perceived to be more important in comparison to non-use forest values (e.g., the opportunity to enjoy the forest's beauty or the intrinsic values of the forest). Furthermore, farmers perceived many forest values in the context of their livelihoods and subsistence (Article II/Table 3). Comparing these results with the results from studies conducted in different societal, economic and cultural contexts, it can be observed that the same forest values are interpreted and understood differently in different contexts. For instance, the public in the United States associates economic forest values with various commodities, intensive harvesting and financial benefits (Bengston and Xu 1995, Manning, et al. 1999), whereas farmers in Ghana associate them with life-supporting and subsistence needs (e.g., the provision and sales of unprocessed food from forest and other non-timber forest products, building of shelters). Similarly, whereas environmental values are often associated with biodiversity, endangered species, wilderness and climate regulation (Bengston and Xu 1995, Manning, et al. 1999), in this study, they are associated with rainfall for farming, soil fertility, and bushmeat (Article II/Table 3). These findings imply that the meaning of forest values depends on the specific socio-economic and cultural context in which forest values are examined. This is in accordance with earlier studies, which show that values are grounded in wider social and cultural (Bengston 1994, Williams and Watson 2007) as well as ethical contexts (Saastamoinen 2005).

Similarly, the assigned importance of forest values differs among different contexts. For instance, the prominent shift in forest value orientation from utilitarian to non-utilitarian and from anthropocentric to biocentric suggested to have occurred in Australia (Web et al. 2008) and the United States (Manning et al. 1999, Bengston et al. 2004) is not observed in the current study. Although additional reasons and explanations are worth examining, an obvious implication of the results is that people are more likely to value aesthetic or intrinsic forest values once their basic livelihood and subsistence needs are satisfied.

Values and law compliance behaviour

The study suggests certain linkages between farmers' forest values and their forest law compliance behaviour (Article II). This finding is generally consistent with the cognitive hierarchy model (McFarlane and Boxall 1999, Vaske and Donnelly 1999) and supports the normative perspective on law compliance (Tyler 1990). However, the observed results should not be overstated. As shown in Articles III and IV, human behaviour, both in general and in terms of law compliance in particular, is highly complex and therefore difficult to study and model. The current study does not conduct an in-depth analysis concerning the impacts of values on law compliance behaviour. Further, the analysis did not include some important theoretical variables, such as the fear of sanction, the perceived fairness of rules, and social norms (Becker 1968, Tyler 1990, Nielsen 2003) The primary strength of this specific analysis involves the provision of a theoretical framework within which to study an interesting and novel empirical issue, as well as the provision of forward-

looking assumptions regarding potential associations between forest values and compliance (Article II). Therefore, additional and more detailed studies are needed to further explore these associations. In this context, it is recommended that researchers consider a wider range of variables with potential influences on law compliance behaviour (Article IV). The application of theories that address the impact of context on motivations and behaviours in specific situations, such as the theory of planned behaviour, is also recommended (Ajzen 1991, Karppinen 2005).

Factors in forest law compliance

The perceived fairness of forest rules, domestic and livelihood needs for resources, existing social norms, fear of sanction, and the legitimacy of authorities are all found to influence farmers' compliance with forest legislation. This finding contradicts the so-called economic or deterrence model of compliance—the major model currently informing the policy response to forest illegalities, according to which compliance depends on instrumental factors (i.e., expected benefits and costs). This model has been criticised by scientists from various fields, including sociology and psychology, for being limited, omitting the normative, social, and cognitive dimensions of human behaviour and their impacts on policy and practice (e.g., Carrol 1987, Elster 1989, Elickson 1998, Murphy 2005). This study suggests that normative (e.g., social norms, personal morality, fairness), instrumental (e.g., fear of sanction and economic benefits), and contextual factors (e.g., corruption, trade, poverty) engage in complex interactions that collectively influence law compliance behaviour in specific situations (Articles II-IV).

Concerning the compliance of forest farming communities in particular, Article III identified livelihood needs and the perceived lack of fairness as the two major reasons for the high rate of non-compliance with the tree-felling rule. Drawing on these specific findings, the following hypothesis concerning farmers' forest law compliance is proposed: to the extent that the forest rules decrease the livelihood options of farmers and the perceived fairness of the rules, non-compliance with those rules increases. Thus, ensuring alternative livelihood options, reducing people's vulnerability, and enhancing the perceived fairness of forest rules should be fundamental parts of any initiative aimed at improving compliance with forest rules among farmers and generally reducing the illegality of forest activities.

Although the relevance of the norm of fairness emerged as most prominent, other general norms based on tradition, culture and religion also influenced farmers' compliance with forest rules (Article III). An additional norm that significantly influenced compliance is peer behaviour and the social approval of non-compliance. The study's findings suggest the following assumption: the higher the levels of social approval for non-compliance and the perceptions that others do not comply are, the higher are the rates of individual non-compliance (Table III). This assumption, however, is context-dependent. For instance, in the case of the tree felling rule, the actual non-compliance is even higher than the social approval for non-compliance, which again elevates the importance of context in rule compliance behaviour.

Concerning the influence of legitimacy on compliance behaviour, although this factor appeared to be relevant for compliance with forest legislation in general terms (i.e., when the legitimacy of the decision-making process or the behaviour of authorities was questioned), its relevance in terms of compliance with the specific forest rules was negligible (Article III). This latter finding contrasts with the majority of the reviewed compliance literature, which identifies legitimacy among the key factors in compliance

(Tyler 1990, Kuperan and Sutinen 1999, Nielsen and Mathiesen 2003, Viteri and Chávez 2007). This inconsistency in results is likely associated with the challenge of properly addressing legitimacy in the empirical part of this study. The study does not directly address the legitimacy of authorities in Ghana—in practice, the Forestry Commission—or the impact of this legitimacy on compliance. Further research is required to examine the influence of legitimacy on compliance in further detail. In particular, the general acceptance of the authorities and perceptions about their rights to impose and implement forest rules should be addressed.

Facilitating further research on forest law compliance

The framework outlined in Article IV proposes that compliance occurs at multiple levels, including the individual level and higher societal levels (e.g., group, community, and state) comprising the context in which compliance decisions are made (Article IV). Motivations at the individual level (i.e., instrumental factors, norms and legitimacy) are derived from behavioural models grounded in theories of human behaviour, whereas contextual variables (e.g., market, corruption, and poverty) are derived from studies on compliance in the forestry sector. The linkage between these two trajectories is offered in the 'institutions-as-rationalities' approach (Vatn 2005, 2009). This approach proposes that context acts as a catalyst (or inhibitor) for individual motivations. More specifically, changes in contextual variables are expected to affect specific individual motivations for compliance and their relative influence on the eventual compliance behaviour. For instance, a context-specific variable such as corruption is likely to influence the likelihood and fear of sanction if it is realised that sanction can be avoided by making informal payments to law-enforcement agencies.

The primary strength of this framework is that it outlines a theoretical framework for analysing the sources and motivations of rule compliance in forestry. The framework also allows the researcher to build assumptions and hypotheses related to the set of proposed variables, their mutual interactions, and finally their relative strengths in influencing compliance behaviour. Next, to facilitate further theoretical and analytical developments, a number of testable assumptions implied by the analytical framework (Article IV) are presented. First, assuming that individual motivations for compliance (e.g., social norms, benefits, and fear of sanction) change with changes in contextual variables (corruption, market price), it is important to examine how specific contextual variables affect each of the individual motivations. To characterise the effect of context, scholars may compare different regions or states that vary in terms of their socio-economic, political and legal environments. Second, to understand the influence of specific individual motivations (e.g., norms, benefits, and fear of sanction) on compliance behaviour, further studies could test whether the influence of a particular motivation varies among different forest user groups (e.g., the forest industry vs. forest communities). It is likely that some groups of forest users will be more motivated by sanctions and others by reciprocity, or the fairness of rules. The level to which compliance factors sensitise different forest users will depend, among other considerations, on the main use objectives and time horizons of the forest users with regards to the forest (e.g., short term profit-making vs. the long-term sustainable use of forest resources). For this purpose, studies that investigate individual-level behaviour under different static external contextual variables are suggested. A third assumption concerns the influence of social norms in general. For instance, it has been suggested that social norms will play a more significant role in settings where the groups of forest users are small and the level of mutual trust within the groups is high. Thus, smaller groups of forest users that

have a history of collaboration and a high level of trust will rely more strongly on normative than instrumental factors of compliance (Ostrom 1990). Finally, another assumption that requires further testing involves the role of legitimacy in compliance behaviour. Specifically, it is important to address whether legitimacy forms a part of individual motivations or whether it is only responsible for influencing other normative motivations, such as the norms of fairness or reciprocity. Whereas the framework and the vast majority of the literature propose a direct relationship between legitimacy and compliance, it seems equally plausible that legitimacy variables only provide a context that activates normative motivations (e.g., the norm of fairness). Although this suggestion is a mere conjecture at this point, it demonstrates how the framework could be used to generate testable hypotheses.

6.2 Policy implications

This research suggests a need to design policy and legal mechanisms that present an alternative to the command-and-control forest regulations, which are often based on the strict enforcement of existing legal requirements. The major policy implications of the current research are summarised as follows: first, flawed, inconsistent and unfair forest regulations in and of themselves may encourage non-compliance; i.e., the stricter enforcement of such regulations is not likely to strengthen compliance or the sustainable use of forest resources. Second, more effective forest policy and legal outcomes require a broader and more flexible approach to legality and compliance, in order to untangle the leading sources of non-compliance. Third, widening and empowering the range of actors involved in policy-making and implementation is likely to encourage compliance with forest rules. Finally, the implementation of forest law enforcement initiatives such as the EU FLEGT VPA should reflect local and domestic forestry issues, including the forest resources on farmlands, forest communities and farmers' rights to trees and forest. Next, each of these implications is elaborated in further detail.

Concerning the implication that flawed rules encourage non-compliance, as discussed in Article IV, the forest regulations in many countries with high rates of illegal forest activities are found to be flawed, inconsistent and perceived as unfair by local forest users (Contreras-Hermosilla 2002, Blaser 2010). Such laws inherently impose barriers to legality (Contreras-Hermosilla 2003, Richards et al. 2003, Palo and Lehti 2012), which paradoxically leads to an increase in the banned activity (e.g., the chainsaw ban in Ghana; Marfo et al. 2009), or to resistance and the intentional violation of such rules (Peluso 1992, Amanor 1996, Abane 2009). The current study demonstrates this paradox by documenting a higher level of non-compliance with a rule that is perceived as ultimately unfair (tree-felling rule) and inconsistent with farmers' values, norms and practices in comparison with a higher compliance with rules that are perceived as fair (Article III). The strengthened enforcement (surveillance, monitoring and sanctions) of inadequate rules will not, in and of itself, result in positive outcomes. On the contrary, some of the most rigorous and poorly suited forest regulations are found in the countries with the highest rates of illegal forest activities (Cashore and McDermott 2004, Tacconi 2007, Palo and Lehti 2012). The ability of laws to influence behaviour will depend less on the sanctions and punishments associated with non-compliance and more on their properties, particularly their ability to promote the fairness of rules and to encourage positive practices and behaviour.

Regarding the second implication, the need for a broader approach to legality and compliance, it is noted that currently, the international forest policy debate on illegal forest activities is limited to illegal logging. Laws and compliance are understood only in the context of state laws. This model of compliance is transferred into legal plurality environments with parallel and overlapping rules and forest governance institutions. The international response to illegal logging (Humphreys 2006, Ogle 2008) is largely based on the following policy assumptions: (i) illegal logging is a universally wrong and harmful activity and (ii) forest law enforcement is one of the major strategies for addressing illegal forest activities. This policy focus has caused a significant imbalance in policy research, where an elevated attention has been put on (i) the negative impacts and extent of illegal logging and (ii) the role of instrumental motivations (profit, sanction, monitoring) on compliance (Figure 5). This imbalance in research further feeds back into policy implementation through the science-policy interactions and policy advice, providing, at best, incomplete information and weak strategies for action. As a result, the policy debate on forest illegalities remains narrow and poorly informed. The major current challenge concerns the lack of dialogue between theories and forest policy design and implementation, which leads to incomplete models of human behaviour and a poor understanding of the major reasons for and factors in non-compliance with forest laws. To facilitate effective policy and legal designs and outcomes, there is a need for a more flexible and open approach with regards to the concepts of illegality and compliance in both research and policy. Relevant questions, among others, include the following: why illegal forest activities occur, at both individual and societal levels; what constitutes rules and laws; what are the origins of the existing rules; what is the role of the legitimacy of authorities in pursuing compliance with rules. To help facilitate a more systematic approach to untangling these questions, the study proposes looking ‘outside of the box’—at the myriad of existing empirical research on compliance in other fields, such as fisheries (see, in particular, the referred studies of Jon J. Suttinen, Stig S. Gezelius and Jasper R. Nielsen). In addition, the application of theoretically driven, multidisciplinary research and science is proposed, which is well-equipped with conceptual and theoretical frameworks and models to help understand the driving sources of non-compliance and rule violations at different levels (see, in particular, Article IV).

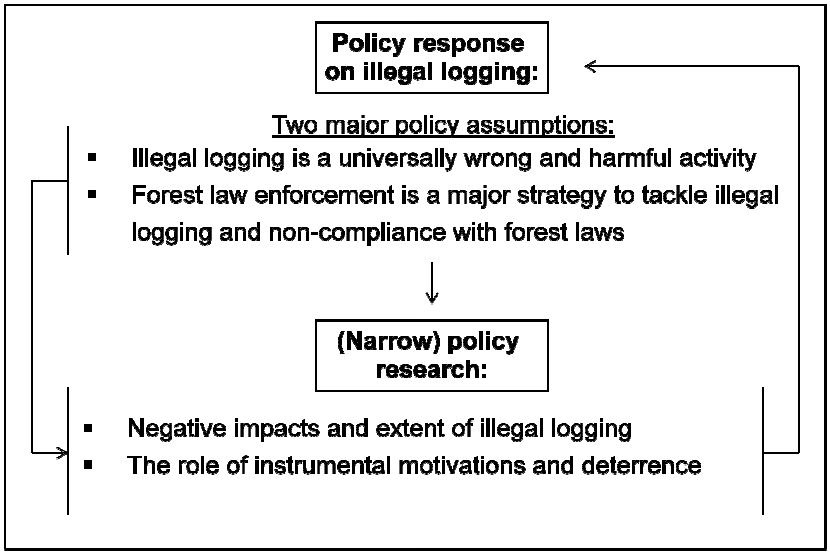

Figure 5. Science-policy interactions in the field of illegal logging.

The third policy implication concerns the devolution of voices and powers in the decision-making process. The range of actors who are involved and affected by illegal forest activities is broad, including large international timber companies, small-scale loggers, and forest communities that are dependent on the forest for subsistence. Involving and empowering local forest users in decision-making processes and ensuring that enacted laws enhance their stakes and rights—although easier said than done—will make enforcement and compliance significantly easier. Although cooperation and participation require substantial initial costs and political will, it is expected that the cooperation, communication and involvement of local users will enhance the perceived fairness of rules, the legitimacy of authorities, and ultimately the enforcement of and compliance with rules (Tyler 1990, Nielsen 2003, Viteri and Chavez 2007). As Gregersen and Contreras (2010) argue, the motivations of local communities and forest users can easily be stimulated if laws provide appropriate incentives. An open and transparent decision-making process and legally backed rights to the forest were identified as important factors in farmers' compliance in this study (Table 2/Article III). Concerning farming communities in particular, a viable option to explore is strengthening farmers' use, management and ownership rights over the timber trees on their farms. Various studies have identified a number of loopholes in the current forest policy, which vests the timber trees with the state (GoG 1962) and which acts in favour of large operators (Hansen 2011, Hansen and Lund 2011). The policy effectively denies farmers the right to benefit from timber trees that they have nurtured and managed on their farms. As a result, farmers perceive the regulation concerning the tenure and use of the trees on their farms to be discriminative and unfair and consequently resist it (Amanor 1996, Abane 2009). This study finds the faultiness of the current legal framework regulating forest tenure and management rights to be one of the primary causes of farmers' non-compliance with the tree-felling rule. Consequently, the revision of forest regulation in favour of farmers' rights to on-farm trees is suggested.

Finally, for effective implementation and to achieve the full benefits of forest law enforcement initiatives such as the EU FLEGT in Ghana, there is a need for (i) a direct focus on local and domestic forestry issues such as the domestic timber market, off-reserve forest resources, forest communities' engagement and rights to the forest and (ii) an expansive model for a legal compliance system that encourages both the normative as well as the instrumental factors of compliance in Ghana. Concerning the former, it is important to recall that at present, the domestic demand for timber in Ghana is largely supplied by (currently illegal) chainsaw operations; farmlands are identified as the most common areas for chainsaw operations and farmers as the major channels through which chainsaw operators access the trees (Nketiah et al. 2004, Marfo et al. 2009, Marfo 2010). Without fully addressing the domestic timber market and the role of local forest users (loggers, communities and farmers) as well as the reasons for illegal forest activities, the major achievements of the Ghanaian EU FLEGT Plan may be limited to the redirection of Ghana's timber from EU markets to less rigid timber markets elsewhere. The current study proposes that a successful policy design and implementation cannot rest on narrowly crafted assumptions and solutions. Alternative approaches to law compliance (Article III) are worth considering. Unlike traditional approaches, these approaches are based on discursive measures and cooperation between authority and resource user groups; behaviour is induced thorough discursive measures, information, education, cooperation, assistance and capacity building (May 2005, Gezelius 2007). Ghana's legal and compliance system rests largely on the traditional approaches to compliance (e.g., coercive measures and sanctions where the desired behaviour is elicited through the prohibition of undesirable behaviour by rules and measures enforced by governmental agencies). The emerging literature on rule compliance suggests that the traditional approaches encourage instrumental motivations for compliance, which is often ad-hoc and more costly to implement (Tyler 1990, Sutinen and Kuperan 1999, Gezelius 2002, 2004, 2007, May 2005). The costs of implementation are especially high in situations where forests are distant from forest offices and are populated with rural resource users, as in Ghana. In this case, a more viable option might be the cooperation with and empowerment of these users (Ostrom 1990, Hirakuri 2003, May 2005). Alternative approaches are associated with normative compliance motivations and an internal long-term duty to comply (Tyler 1990, May 2005). Farmers and local forest communities, when organised and motivated, can help monitor forest activities, report non-compliance by major law violators, and support forest officers in their efforts to promote positive behaviour and the rule of law.

6.3 Methodological and conceptual limitations of the study

This study's limitations, in terms of the generalisability of the study results, applied research methods and conceptual framework, can be discussed. With regards to generalisability and the application of the study results to different settings, one should note that the studied issues are highly context-specific. As discussed above, the behaviour and motivations for compliance are likely to differ among different forest users and contexts; therefore, what is relevant for farming communities in Ghana may less be so for other forest users in different environments. Nevertheless, considering the in-depth approach to studying the specific issues, as well as the general absence of empirical studies in the field, it is believed that this study contributes to the knowledge base and provides the basis for further research in the field of rule compliance in forestry. It should be further noted that

the study results cannot claim wide representativeness in geographical terms. Due to budgetary limitations, the study does not cover all eight administrative regions in the High Forest Zone of Ghana—instead, the study is limited to three of them. In addition, it is noted that the representativeness of the sample in terms of gender or age is not possible to calculate due to the lack of comprehensive socio-economic data for the base population—heads of household (see Articles II and III). However, the large number sampled, including approximately 10% of the base population, greatly reduces the risk of non-representativeness.

The limitations related to the applied research methods mostly relate to the challenge of assessing the meaning and importance of forest values. First, there is a general challenge to ensuring that all respondents, as well as the researcher, share the same understanding of the studied forest values. Second, due to practical limitations in the field (i.e., the high level of illiteracy among the respondents), in the ranking of importance exercise, the forest values had to be split into two groups – use and non-use forest values. The definition and categorisation of use and non-use forest values was mostly theory- and literature-based, which might have introduced a certain bias into the study. Expanding further on the methodological issues related to values, it should be noted that the study relies on statistical correlations (multilateral binary logistic regression) in assessing the influence of forest values on compliance behaviour. It is noted that this method does not provide a thorough understanding of the reasons behind the obtained relationships and results. More in-depth and qualitative methods could have been beneficial in addressing the relationships between forest values and compliance in a more comprehensive and context-specific manner.

Finally, considering the conceptual limitations, the study's theoretical approach to the concept of law in general and compliance in particular should be noted. As this study initially aimed at focusing exclusively on the EU FLEGT VPA and the legal issues surrounding this agreement in Ghana, it followed the FLEGT approach to law and compliance, focusing only on the laws and rules established by the state. It can be said that the FLEGT VPA relies to a large extent on the tradition of 'legal positivism' (Hart 1997). The classical articulation of this tradition is that law is the rule issued by the state and enforced through sanctions and punitive measures (i.e., there is only one source of law—the sovereign state). Although this conception of law may hold up fairly well in the European context in which it was initially developed, its relevance has been significantly criticised (Dworkin 1977), especially in non-European contexts, where there are often multiple sources of law (Merry 1988). Conceptualising the law in a more comprehensive way and including traditional rules and/or social norms along with state laws might have significantly added to the value of the current study. The results could have shed light on the role of the origin of rules on compliance behaviour as well as a comparison of the level of compliance with state vs. traditional rules. In addition, considering that a large portion of this research deals with the 'compliance of the weak' (the compliance of economically and politically marginalised forest farming communities), referring to the institutional theory and political ecology in the theoretical framework would have also been of clear value. Nevertheless, applying such an expansive and complex theoretical framework in a single empirical study, on the other hand, might have brought additional difficulties and complexities.

6.4 Final remarks and future research

As the human pressure on the world's forests grows, ensuring compliance with forest laws is becoming an increasingly important international issue. The economic, or deterrence, model of compliance has been the dominant model in legal systems that regulate the use of natural resources, including forests. This model portrays compliance behaviour as a function of costs and benefits, thus emphasising the importance of instrumental factors and coercive measures in law compliance. The model suggests rather simplified solutions to the problem of non-compliance (e.g., increased monitoring and sanctions), which are typically attractive and readily adopted by policy makers. As a result, governments establish regulations to control the use of forest resources, which they try to enforce by threatening forest users with legal measures such as fines and arrest. It is increasingly recognised that this model has not been successful in ensuring the sustainable use of forest resources or in resolving illegal forest activities worldwide.

An effective forest law compliance system requires a broader approach, which—given the complexity of human behaviour and that of social and environmental systems—considers various instrumental, normative and contextual factors that may influence compliance with forest rules. In particular, an effort should be made to improve the perceived fairness of rules, the incentive schemes and effectiveness of deterrents, the harmony of rules with existing social norms, and finally the perceived legitimacy of the ruling authorities. Such an approach to compliance would offer a wider array of strategies for behavioural change, including, along with coercive measures, discursive and cooperative measures such as education, cooperation, co-management, and the involvement of complying agents in decision-making as well as the monitoring of law enforcement.

Concerning, in particular, the forest farming communities in Ghana and their compliance with laws, there is a need to understand and address the driving historical, social and economic factors, including the changes in forest governance institutions over time, the benefits of illegal activities for the rural economy, and the dependence of forest fringe communities on the forest for their livelihoods. These factors often act as drivers of illegal forest practices among farmers. A revision of the current system that regulates farmers' tenure and legal rights to manage and benefit from the trees on their land is recommended, as this system was perceived to be unfair and inappropriate. Furthermore, particular attention should be placed on addressing the existing lack of legal alternatives for farmers to obtain needed forest resources and the lack of alternative livelihood strategies, as these factors were shown to be specifically relevant in promoting non-compliance. Social norms, based either on religion, tradition or culture, that encourage positive behaviour, should be identified and strengthened.

Below, some assumptions and hypotheses resulting from this research are provided, as well as the future research needed to test these assumptions.

- With regards to the monitoring and assessment of the livelihoods of forest communities in the context of FLEGT VPA implementation, there is a need to further develop the existing monitoring frameworks to include the issues that directly influence local forest communities' livelihoods (Article I), including participation and empowerment in decision-making processes, legal rights to forests and trees, transparency and accountability, and the bundle of rights and powers (i.e., state and non-state rules as well as non-rule-based structures, mechanisms and processes).
- The study indicates that the ways in which people perceive and value the forest may influence their compliance with forest rules (Article II). There is a need to test this

assumption using a more comprehensive theoretical framework that includes a wider range of theoretically relevant variables of compliance and that would account for the role of context-specific or more immediate 'behaviour-specific factors' (Ajzen and Fishbein 1980, Ajzen 1991). As discussed in Article II, these specific factors are likely to hinder the assumed direct influence of values on behaviour.

- With regards to farmers' compliance with rules, the study suggests the following specific hypotheses: (i) to the extent that forest rules decrease livelihood options and the perceived fairness of rules, non-compliance with those rules increases; and (ii) the higher the levels of social approval for non-compliance and the perceptions that others do not comply are, the higher are the rates of individual non-compliance.

Concerning rule compliance behaviour in more general terms, the following assumptions and needs for further research are identified (Articles III and IV):

- This study proposes that contextual variables, such as market, trade, and corruption, influence compliance behaviour indirectly by altering specific motivations for compliance that operate at the individual level (e.g., costs, benefits, and norms). There is a need to identify the specific contextual variables that influence specific compliance motivations and the ways in which they do so. For instance, it is reasonable to assume that changes in a resource's market price will influence instrumental factors of compliance such as benefits and costs. However, the impacts of other contextual variables, such as corruption, regulatory and legislative constraints, political capacity, and property rights, are likely to be more complex and manifold (see Article IV for details).
- There is a need to further study the impacts of different factors/motivations operating at the individual level on compliance behaviour. Although the impacts of some factors, such as the benefits of compliance and sanctions, are considerably more studied and understood, the impacts of norms and legitimacy are lacking detailed insights and understanding. In particular, concerning the role of norms in compliance, it is proposed that social norms will have a more significant role in the following settings: smaller groups of users with a history of collaboration, a shared sense of justice and established mutual trust. Furthermore, more research is needed to understand and untangle the many questions concerning the role of legitimacy in compliance. Specifically, it is important to address whether legitimacy forms a part of individual motivations—influencing compliance behaviour directly—or whether it is only responsible for influencing other normative motivations, such as norms of fairness or reciprocity. To test the role of legitimacy, scholars should look at the general acceptance of the authorities, the process that they apply to gain a ruling mandate and the processes that they apply to make and enforce laws and rules.
- A final assumption that requires further testing relates to the relevance of different compliance factors for different user groups. Some individuals and forest user groups are more likely to be influenced by the benefits and costs of compliance, whereas others will be more inclined to respond to the normative aspects. The extent to which different factors motivate different types of forest users may depend on various issues, including the objectives of the forest users (e.g., fast profit-making vs. the long-term use of resources), their previous experience and interactions with forest officials, and their relationships to the forest.

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APPENDICES

Appendix I. Forest values: typology and defining statements as used in the interviews.

Use-Forest Values	Non-Use Forest Values
Economic: Because of the opportunity to use the forest for timber, cash crops, earnings from selling forest products.	**Cultural:** Because forest forms a part of Ghana's national heritage, our old customs and traditions.
Subsistence: Because of the opportunity to use it for food (crops, vegetables, meat, fruits, etc.), shelter, household items, firewood.	**Moral:** Because I feel it is my moral duty and responsibility to protect the forest, so that others as well can enjoy it.
Environmental: Because it provides clean and healthy air, water, soil, rainfall, shade, living space for animals.	**Future:** For the future generations – my children and the children of their children – to experience the forest as it is now.
Aesthetic: Because of the opportunity to be in forest and enjoy its beauty, natural surroundings, the scenery, sites, wilderness.	**Intrinsic**: Because I value the forest in itself, merely for its existence; even if I wouldn't acquire any benefit from it, I would equally value it.
Medicinal: Because of the opportunity to use medicinal plants and improve my health and wellbeing.	**Religion-related**: Because it is a place to worship God and the nature. It has a religious meaning to me – it is a sacred and holy place.
Learning: Because of the opportunity to learn about growing and tending trees and plantations.	**Spiritual:** Because it offers inner peace through contact with nature.

Appendix II. Questionnaire used for the Expert Survey (Article I)

Study on the EU FLEGT Voluntary Partnership Agreement's (VPA) Implications to Forest Communities' Livelihoods and Poverty Alleviation in Ghana

Dear Sir/Madam,

This questionnaire is a part of my PhD thesis, focusing on the EU Forest Law Enforcement, Governance and Trade (FLEGT) Voluntary Partnership Agreement (VPA) and its implications to forest communities' livelihoods and poverty alleviation in Ghana. This PhD research is conducted at the European Forest Institute (EFI) and the University of Joensuu (JoY); under supervision of Ilpo Tikkanen (EFI) and Professor Olli Saastamoinen (JoY).

The questionnaire is intended to different stakeholder groups – governmental, non-governmental, forest community organisations, academic and research institutions, private sector, etc. The aim of the questionnaire is to obtain information about the following thematic areas:

- The concept of livelihoods and poverty alleviation within FLEGT VPA in Ghana
- The position of different stakeholders in the negotiation of FLEGT VPA in Ghana
- The scope of final FLEGT VPA between EU and Ghana

The objective of the study is to explore the extent and the ways in which the FLEGT VPA can strengthen the livelihoods of forest communities and lead to poverty alleviation in Ghana. The results will contribute to the first PhD article dealing with FLEGT VPA social agenda and implications to forest communities' livelihoods and poverty alleviation in Ghana.

Your opinion and perception on these issues are of prime importance and value to the study. Please note that you are asked for your own opinion and not for an official statement of your organisation. The information will be kept confidential and no person or organisation will be identified in the published results.

There are altogether 5 questions organised in 5 parts. Answering of the first four questions is by *checking the boxes* and by *choosing one of the given options*. Only in the last fifth question you are asked to provide narrative information about discussed topics. Your additional comments are very important and valuable to us.

When you have completed the questionnaire, please save the file and return it in *electronic form* to the following email address: sabaheta.ramcilovic@efi.int , by the **20th of October 2009**.

Genuine thanks for your time and contribution to this survey.

Sincerely,

Sabaheta Ramcilovic

PhD Student
European Forest Institute (EFI) and
University of Joensuu (JoY)

Correspondent:

Name and Surname:		
Organisation:		☐NGO; ☐Governmental; ☐Private sector; ☐Academic institution; ☐Research; Other:
Email:		
Web site (if any):		
Telephone number:		

***** Disclaimer: Please note that personal information is *only* for internal use of the study and possible follow-up and no person or organisation will be identified in the published results.

Part 1: *Social Groups* in the discourse of livelihoods and poverty alleviation within the FLEGT VPA in Ghana

In this part you are kindly asked to: **(A)** Rank the level of importance of social groups in the framework of livelihoods and poverty alleviation within the FLEGT VPA in Ghana; **(B)** Rank the expected impacts of the FLEGT VPA Implementation on those groups, in Ghana; and **(C)** You may wish to add additional explanation to your answer.

SOCIAL GROUPS	**(A) Level of importance** of social groups in the livelihood framework	**(B) Expected impacts** of FLEGT VPA implementation on the social groups	**(C)** Opinions and Explanations
Forest communities	Select	Select	
Migrant groups	Select	Select	
Indigenous groups	Select	Select	
Farmers	Select	Select	
Rural poor	Select	Select	
Middle class (in terms of wealth)	Select	Select	
Wealthier groups (e.g. chiefs, cocoa farmers, landowners)	Select	Select	
Women	Select	Select	
Other:	Select	Select	

Comments:

Part 2: *Specific Social Issues* in the framework of livelihoods and poverty alleviation within the FLEGT VPA in Ghana

In this part you are kindly asked to: **(A)** Rank the level of importance of different issues in the discourse of livelihoods and poverty alleviation within FLEGT VPA in Ghana; **(B)**

Rank the expected impacts of the FLEGT VPA Implementation on those issues in Ghana; and **(C)** You may wish to add additional explanation to your answer.

SOCIAL ISSUES	**(A) Level of importance** of social issues in the livelihoods framework and poverty alleviation	**(B) Expected impacts** of FLEGT VPA Implementation on the social issues	**(C)** Opinions and Explanations
Rights of forest communities	Select	Select	
Land and tree tenure	Select	Select	
Participation in decision making in forest management	Select	Select	
Access to forest resources	Select	Select	
Equity in benefit sharing schemes	Select	Select	
Natural assets[1]	Select	Select	
Human assets[2]	Select	Select	
Physical assets[3]	Select	Select	
Social assets[4]	Select	Select	
Financial assets[5]	Select	Select	
Institutional and political assets[6]	Select	Select	
Other:	Select	Select	

[1] Examples of Natural Assets: Land; Water; Trees and forest products; Wildlife; Biodiversity.

[2] Examples of Human Assets: Health; Nutrition; Education; Knowledge and skills; Capacity to work and adapt.

[3] Examples of Physical Assets: Infrastructure; Transport; Secure shelter and buildings; Water supply and sanitation; Energy; Communications; Tools and techology: tools and equipment for production, seed)

[4] Examples of Social Assets: Networks and connections; Formal and informal groups; Common rules and sanctions; Collective representation; Mechanisms for participation in decision-making; Leadership.

[5] Examples for Financial Assets: Savings; Credit/debt; Pensions; Wages

[6] Examples of Political and Institutional Assets include: *Policies* of governmental, non-governmental and interational organisations; *Institutions* (e.g. political, legislative, judicial and executive bodies, civil society, NGOs); and *Processes* (e.g. the "rules of the game", decision-making processes, social norms and customs, gender, caste, class, etc.)

Comments:

Part 3: Position of different stakeholders during the negotiation of the FLEGT VPA

In this part you are kindly asked to mark the fields of interests of different stakeholders during the negotiation of FLEGT VPA in Ghana? To answer, please check the boxes as indicated.

- *Please note that you may mark several fields of interests for the same stakeholder group. Please also note that you are asked to give your opinion about the position of all stakeholder groups, no matter to which group of stakeholders you belong to.*

	Export & trade of illegal timber in the EU	Licenses & verification of legal timber	Transparency & accountability	Stakeholder participation	Competitiveness of Ghanaian timber industry	Domestic timber market in Ghana	Policy& legal reform in Ghana
European Union Representatives (EU)	☐	☐	☐	☐	☐	☐	☐
Ghana officials[7]	☐	☐	☐	☐	☐	☐	☐
Civil society & NGOs	☐	☐	☐	☐	☐	☐	☐
Ghana's private sector	☐	☐	☐	☐	☐	☐	☐
International private sector	☐	☐	☐	☐	☐	☐	☐

	Forest communities' livelihoods	Participation of forest communities	Land and tree tenure	Securing the forest communities' access to forest	Securing Equity in forest benefit sharing	Poverty reduction /alleviation	Others:
EU	☐	☐	☐	☐	☐	☐	☐
Ghana officials	☐	☐	☐	☐	☐	☐	☐
Civil society & NGOs	☐	☐	☐	☐	☐	☐	☐
Ghana's	☐	☐	☐	☐	☐	☐	☐

[7] Governmental agencies involved in the negotiation of FLEGT VPA.

private Sector							
International private sector	☐	☐	☐	☐	☐	☐	☐

Comments:

Part 4: The scope of the final FLEGT VPA between the EU and Ghana

In this part you are kindly asked to: **(A)** Rank the level of importance of specific issues in the finally agreed and signed VPA between the EU and Ghana; and **(B)** You may add the possible reason for the given level of importance.

	(A) Level of Importance	**(B) What in your opinion are the reasons for the level of importance?**
Export and trade of illegal timber in the EU	Select	
Licensing and verification of legal timber	Select	
Transparency and accountability	Select	
Stakeholder participation	Select	
Competitiveness of Ghanaian timber industry	Select	
Domestic timber market in Ghana	Select	
Policy& legal reforms in Ghana	Select	
Forest communities' livelihoods	Select	
Participation of forest communities	Select	
Land and tree tenure	Select	
Securing the access to forest resources	Select	
Just forest benefit sharing	Select	
Poverty reduction/alleviation	Select	
Others:	Select	

Comments:

Part 5: Additional Comments and Information about the FLEGT VPA in Ghana

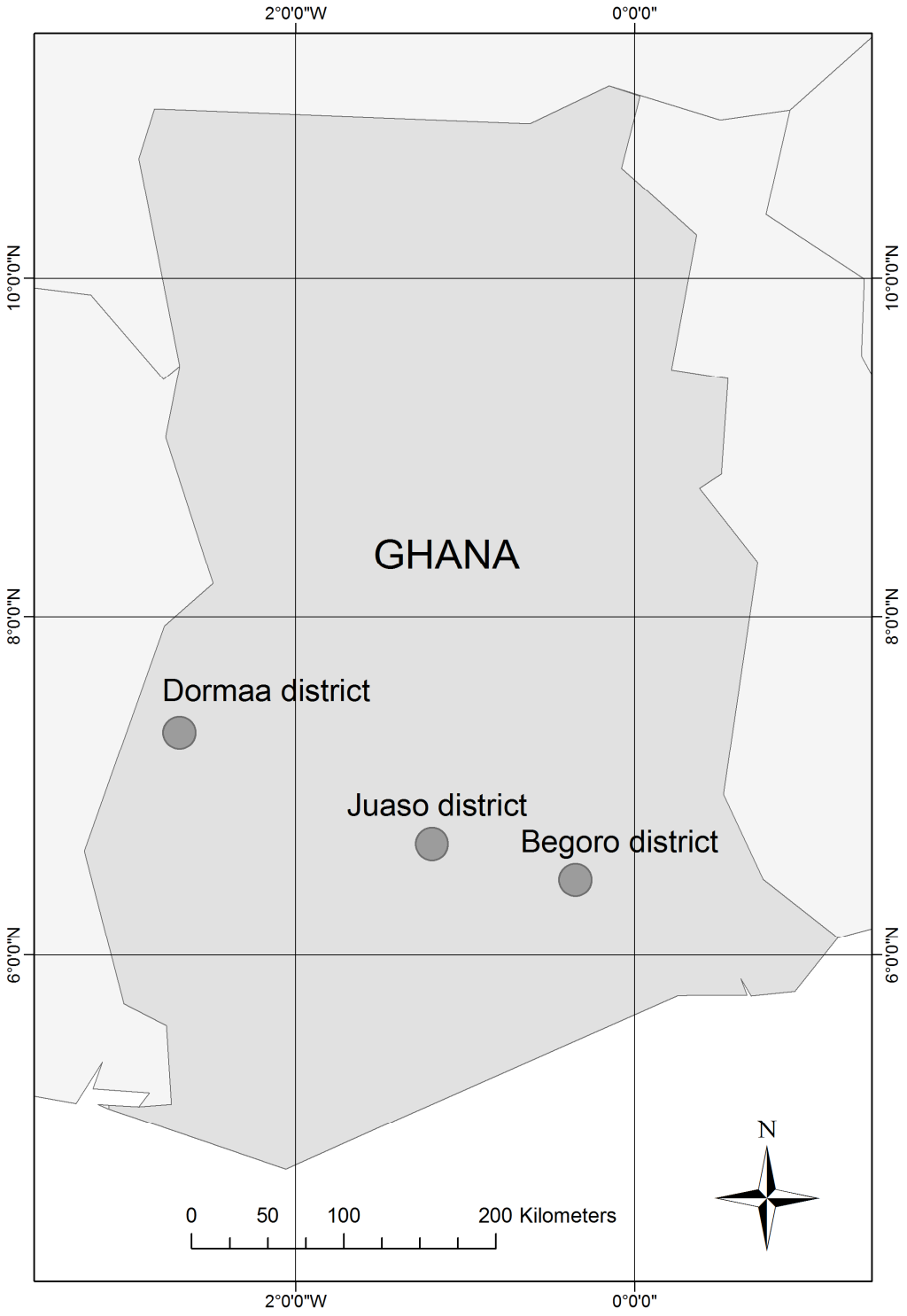
Please add any additional information or comments you may have concerning the issues discussed above.

Issues	Comment:
The concept of livelihoods and poverty alleviation within the FLEGT VPA in Ghana:	
The negotiation of FLEGT VPA in Ghana (e.g. stakeholders' views, policy objectives)	
The final FLEGT VPA between the EU and Ghana (e.g. main elements, benefits, social issues and objectives)	
Other:	

Thank you very much for your time and contribution to this survey!

Please send the completed questionnaire by **the 20th of October 2009** to**:**
sabaheta.ramcilovic@efi.int

Appendix III. Map of the study area



Appendix IV. Interview survey with forest farmers.

SURVEY ON THE FOREST COMMUNITIES' VALUES AND FOREST LAW COMPLIANCE

(May – July, 2010)

Introduction:

This study is about the local communities and forestry rules. She is a student and this research is *her own student project. So, we are not related to the FC or to any other forest official departments.*

We are going to ask some questions about your views concerning the forest and the forestry rules. You need to know that *this is not a test, there are no right or wrong answers, only your opinion counts* Also, we would like to assure you that *everything you say here is kept confidential*, your personal values and perceptions will not in any occasion be associated to you and your personality.

The purpose of the study is to understand the problems with the forestry rules, and the extent to which they are applicable and just, in the opinion of the communities.

Before we start, *if you have any questions about us, or about our study*, please feel free to ask. Finally, we really *appreciate the time you are dedicating to us and THANK YOU in advance*.

Part 1: Forest Values

1. "The forest has different meaning to people. We all value/cherish the forest for different reasons. I would like to know the reasons for which you value/cherish the forest".

"I'd like you to take a moment and imagine yourself in the forest. If you like you may close your eyes and visualise the forest around you. (pause shortly)
"You are in the forest. What are you doing there, what do you see"?

Give the participant 2-3 minutes to think and concentrate.

"At this moment, try to specify what is it about the forest, or in the forest, that you value the most. Write only the key words. Write in order: 1,2,3,.. as they speak.

1.	4.	7.
2.	5.	8.
3.	6.	9.

2. **"**I will read to you different values for which one can values/cherish the forest – forest values. I would like you to **rank** these values in order of their importance to you.

When reading the forest values: Read the full text of values only once – the first time you read it. From then on, just refer to the value title in **bold.**

Instructions: "Read the six values to the respondent and then ask him/her:

- **Which of these is the number 1, the most important to you? Which follows next,** and, next until the end**?**

Use Forest Values	Rank of importance
1. Economic: The opportunity to use the forest for *timber*, cash crops, earnings from selling forest products and alike.	
2. Subsistence: The opportunity to use it for *food* (crops, vegetables, meat, fruits, etc), *shelter and household items, firewood*.	
3. Environmental: Because it provides clean and healthy *air, water, soil*, rainfalls, *living space for animals and fish*.	
4. Aesthetic: Because you enjoy *the beauty* of forest and natural surroundings, the scenery, sites, the wilderness.	
5. Medicinal plants: Because of the opportunity to use *medicinal plants and keep my wellbeing*.	
6. Learning: Because of the opportunity to *learn* about growing and tending trees and plantations, to learn about medicinal plants, etc	

Why did you rank the X value as **the first one (the most important)?**

Why did you rank the Y values as **the last one (the least important)**?

How about the following 6 values? Rank these values in order of their importance to you.

Non-Use Forest Values	Rank of importance
7. Cultural: Because it forms a part of Ghana's *national heritage*, our old customs and traditions.	

8. Moral: Because you feel it is your *moral duty and responsibility* to protect the forest, so that others as well can enjoy it.	
9. Future values: Because of the opportunity that *future generations* – your children and the children of their children, may enjoy and experience the forest as it is now.	
10. Intrinsic: Because you value the *forest in itself*, merely for its existence; even if you wouldn't acquire any benefit from it, you would equally value it.	
11. Religion: Because it is a *place to worship God and the nature*. It has a religious meaning to you – it is sacred and holly place.	
12. Spirituality: Because of the opportunity to obtain your inner peace through contact with nature	

Why did you rank the X value as **the first one (the most important)?**

Why did you rank the Y values as **the last one (the least important)**?

Part 2. Values and Law Compliance

3. "This question is about your personal opinion concerning the forestry rules. I am going to read some statements, and I would like you to tell me if you agree with these statements. You may choose to: **strongly disagree (SD), disagree (D), agree (A) or strongly agree (SA)**."

a) **You would break** the forestry rules if:

		SD	D	A	SA
13.	If the *forestry officials* access and benefit from the forest resources and you are not allowed to. (justice).	1	2	3	4
14.	If breaking the rules would improve the community life (sense of community).	1	2	3	4
15.	If breaking the rules would improve your financial situation (economics)	1	2	3	4
16.	If breaking the rule is the only option to sustain your life (survival)	1	2	3	4
17.	If the *timber contractors* cut more trees than they are supposed to, and you are not allowed to. (justice)	1	2	3	4

18.	If your *fellow community members* access and benefit from forest and you do not. (justice).	1	2	3	4
19.	If obeying the rules is difficult and expensive (economics)	1	2	3	4
20.	If the law goes against what your ancestors have thought you (tradition)	1	2	3	4
21.	If the law prohibits your religious practices (religion)	1	2	3	4
22.	If you are sure nobody will know about it (rationality)	1	2	3	4
23	Because you believe that rules are unjust and only benefit the rich and powerful (justice)	1	2	3	4
	Other (specify):	1	2	3	4

b) **You would obey the forestry rules if:**

		SD	**D**	**A**	**SA**
24.	If you get some compensation/reward for protecting the forest (economic/rational)	1	2	3	4
25.	If the forest you are protecting is your private property (belongs to you) (economic/rational)	1	2	3	4
26.	If you see offenders sanctioned (rationality, fear of law)	1	2	3	4
27.	If it is a collective decision by the community and not an imposition “from above” (participation, governance)	1	2	3	4
28.	Because forest has a right to exists for its own sake – even without benefits to people (intrinsic value)	1	2	3	4
29.	If the rules protect the sacred natural sites and sacred groves (spirituality).	1	2	3	4
30.	If the elders (older people in your family/community) have encouraged you to obey the forest rules (tradition).	1	2	3	4
31.	If your religious leader has preached that breaking the laws and rules is a sin and offence to God (religion)	1	2	3	4
32.	Because of protecting the forest for your children and the children of your children (future value of forest – bequest).	1	2	3	4
33.	Because not obeying the forestry rules may leave other people in your community without resources (ethics, community sense)	1	2	3	4
34.	Because the environment will look more scenic and beautiful (aesthetic)	1	2	3	4
35.	Because not obeying may cause forest degradation, and affect the air, water and the soil (environment).	1	2	3	4
36.	Because not obeying may leave animals (goats, sheep and	1	2	3	4

	wildlife) without their habitat and fodder (environment).				
	Others (specify):	1	2	3	4
		1	2	3	4

Part 3. Law Compliance

"This part is about some forestry rules that Forestry Commission is implementing in the region and in the community".

4. "What do you think about the following rules, in terms of their fairness and justice: are they appropriate, fair and justified"? (After the general respond, ask him/her: Could you indicate **how fair these rules are: 1 – very fair, 2 – fair, 3- unfair, 4 – very unfair.**

	1 (FIRST): General comments and reasoning:	**2.** Indicate fairness
37. That you do not have the right to fell a tree in the nearby forest without a permit		VU____1 Unfair_2 Fair___3 VF____4
38. That you cannot grow your crops and vegetables in the place declared as a forest reserve.		VU____1 Unfair_2 Fair___3 VF____4
39. That you cannot use the bushfire, in your benefit (e.g. bush meat or more land for farming).		VU____1 Unfair_2 Fair___3 VF____4

3.1. The implementation and acceptability of violation of forest rules

5. "Now, I would like to ask you: Are you familiar with the following forestry rules":

RULES	Yes	Somewhat	No
40. Prohibition of felling trees without permit	1	2	3
41. Prohibition of farming in forest reserves	1	2	3

42. The guideline for managing the bushfire	1	2	3

6. "This question is about your views regarding specific forestry rules and whether they should be obeyed, disobeyed, changed, etc. If the question in any way embarrasses you, you can also refuse to answer".

Do you think that the following things are done in your community:	**Yes**	**Somewhat yes**	**Somewhat no**	**No**	**Refuse**
43. People fell trees without permit	4	3	2	1	5

Somewhat yes: **why (in what situations)**?

If No/somewhat no: **why not?**

44. People farm in the forest reserves	4	3	2	1	5

Somewhat yes: **why (in what situations)**?

If No/Somewhat no: **why not?**

45. People do not follow the rules of managing the fires, which may cause bushfire.	4	3	2	1	5

If Yes/Somewhat yes: **why (in what situations)**?

If No/somewhat no: **why not?**

Do you understand your community members when they:	**Understand**	**To some extent**	**Don't understand**	**Refuse**
46. Fell trees without permit	3	2	1	4

If understand/to some extent: why?

If don't understand: why not?

47. Use the forest reserves for farming	3	2	1	4

If understand/to some extent: why?

If don't understand: why not?

48. Do not follow the rules of managing the fires, which may cause bushfire	3	2	1	4

If understand/to some extent: why?

If don't understand: why not?

Would you yourself perform the following actions:	Yes	Only, if in difficult situation	No	Other
49. Fell trees without permit	3	2	1	

If yes /in difficult situation: **When**.

If no: **why not?**

50. Farm in the forestry reserves?	3	2	1	

If yes /in difficult situation: **When**.

If no: **why not?**

51. Not follow the rules of managing the fires, which may cause bushfire.	3	2	1	

If yes /in difficult situation: **When**.

If no: **why not?**

4.1 The frequency of violation

"Various forest rules are difficult to implement for different reasons. We are trying to find out which of these rules are especially difficult to implement".

7. Think of **5 people you know best**, and kindly tell me; how often you think that they have done the following things in the **past 1 year**.

52. Fell the tress without permit	Often	Sometimes	Seldom	Almost never	Never
	5	4	3	2	1

Remark:

53. Farm in the forest reserves	Often	Sometimes	Seldom	Almost never	Never
	5	4	3	2	1

Remark

54. Caused bushfire due to disrespect of the rules for managing fire	Often	Sometimes	Seldom	Almost never	Never
	5	4	3	2	1

Remark:

3.2 Reasons for Compliance (Obligation and Legitimacy)

❖ **Deterrence**:

8. This question is about the forestry officials in the community, and the work they are doing here. Let's assume that you have done some forestry offences. How likely is it that the forestry officials would find out about it, and sanction you, in the following cases?

	Very unlikely	Somewhat unlikely	Somewhat likely	Very likely
55. In case you fell trees without permit	1	2	3	4
56. In case you have been farming in the forest reserve.	1	2	3	4
57. In case your action has caused bushfire	1	2	3	4

9. Let's assume that you have been caught committing certain forest offences. What are *the three most common sanctions* that you expect, from the forest officers, or the CFCs, for the following offences?

58. **Felling trees without permit**	59. **Farming in forest reserves**
- No sanction (as they are easy to bribe)...(1) - Financial fine …… (2) - Arresting and taking you to the court....(3) - Seize the equipment and the products…(4) - Pay in kind (e.g. goat, sheep, bag of maize) ...(5) - Destroy my property (crops/farm).....(6) Other:…… …… - -	- No sanction (as they are easy to bribe)(1) - Financial fine …… (2) - Arresting and taking you to the court..(3) - Seize the equipment and the products.(4) - Pay in kind (e.g. goat, sheep, bag of maize).....(5) - Destroy my property (crops/farm)...(6) Other:…… …….... - -
60. **Your action has caused outbreak of bushfire**	
- No sanction (as they are easy to bribe)...(1) - Financial fine …….(2) - Arresting and taking you to the court...(3) - Seize the equipment and the products...(4)	- Pay in kind (e.g. goat, sheep, bag of maize) .....(5) - Destroy my property (crops/farm).....(6) Other:…… -

10. What are the **three sanctions (punishments) which you fear the most** (which if happen would be the most harmful to you)?

- Arresting and facing the police.....1
- Financial fine..... 2
- Seizing of equipment and the products by forest officers.....3
- Payment in goods (goat, sheep, bag of maize).....4
- Disapproval from your community members.....5
- To be questioned by the chief and elders for your action 6
- To be ashamed from neighbours for having done the offence.....7
- Destroying of your property (crops, farm).....8
- Others:
- .....

Part 5. Legitimacy

11. This question concerns your satisfaction with the behaviour and work of the forestry officials in your community.

61. How satisfied are you with the work of forest officials, in general?	Not satisfied at all	Not satisfied	Satisfied	Very Satisfied
	1	2	3	4

Why?

62. Do you think the forestry officials deserve the community's respect?	Don't deserve **any** respect	Deserve **certain** respect	Deserve **great** respect
	1	2	3

Why?

63. How often do you think that forestry officials make responsible and fair decisions if someone breaks forestry rules?	Always	Usually	Seldom	Never
	4	3	2	1

Why?

64. Do you feel that you, and people like you, are treated: the same, better or worse than others, by the forest officials?	Treated same	Treated better	Treated worse
	2	3	1

Could you tell more about it:

Part 5: The fundamental values: Why does it all matter?

12. "This last part is about general values concerning human life. I would like you to **rank these values in order of their importance to you.**

When reading the forest values: Read the full text of values only once – the first time you read it. From then on, just refer to the value title in **bold.**

Instructions: "Read the six values to the respondent and then ask him/her:

"Which of these is the number 1, the most important to you? "Which follows next, and, next until the end?

	Values	Rank of importan
65.	**The Nature**: availability of clean air, water, trees, soil, plants, fish, wildlife, and all the rest).	
66.	**Money:** to have enough to satisfy the basic needs and provide for a *good quality life*.	
67.	**Wealth:** accumulation of money and related safety and power.	
68.	**Respect for elders and tradition**: respect for elders, customs and habits of my ancestors.	
69.	**Faith in God:** to be close to God and protected by him.	
70.	**Fairness and equity:** equal opportunity for all no matter the social, ethnical, religious background.	

Why did you rank the X value as **the first one (the most important)?**

Why did you rank the Y values as **the last one (the least important)**?

Values	Rank of importance
71. Honesty: to be trustful, not to lie and cheat.	
72. **Intellect**: to learn fast, and have the knowledge you need for life.	
73. **Helpfulness**: to help others when in need.	
74. Ambition: to seek always to improve your current position.	
75. Politeness: to be careful and tender with others.	
76. Self-interest: to ensure my personal wellbeing, satisfaction and security	

Why did you rank the X value as **the first one (the most important)?**

Why did you rank the Y values as **the last one (the least important)**?

Values	Rank of important
77. **Responsibility**: to be reliable and take responsibility of your actions.	
78. Rationality: to follow your interests, to be logical and consistent.	
79. Obedience: to be dutiful, well-behaving and obey.	
80. **Courage**: to be courageous to stand for your opinion and beliefs.	
81. Forgiveness: to be willing to pardon others if they have offended or hurt you or your feeling.	
82. Capability: to be hardworking and capable of things.	

Why did you rank the X value as **the first one (the most important)?**

Why did you rank the Y values as **the last one (the least important)**?

Demographic and Socio-economic characteristics:

83. **Gender**: M (1)/F (2)
84. **Age**:_____ Age group: 18-30 (1); 31-40 (2); 40-50 (3); 50-60 (4); 60+ (5).
85. **Highest level of education:** None… (0), Primary,..(1) JHS..(2), Middle school..(3) SHS..(4), Non-formal..(5), Technical…(6), Polytechnic..(7), Training college…(8), University…(9)
86. **Main occupation**: farmers (1); carpenter (2); chainsaw operator(3); hunter (4)
87. **Origin**: indigenous (1), migrant (2), other:_____
88. **Land rights:** own/family land_____(1), sharecropping/rented_____(2)
89. **Total size (ha) of land right** (own/family and sharecropping/rented):_____ha.
90. **Access to basic household items**: Radio (1), TV (2), Block house (3), Mud house (4), Brick house (5), Bicycle (6), Block plough/tractor (7), Motor (8), Car (9), others
91. **Total monthly income of households**:_____
___
92. **Household size**:

Name of the community:_____
_____

Name of the forest district:_____
_____

Name of the region_____
_____

Name of the nearest forest reserve:_____
_____

Appendix V: Forest values identified by respondents. Percentage of respondents who identified these forest values (N=226)

	USE-FOREST VALUES				NON-USE FOREST VALUES
	Subsistence	**Economic**	**Environmental**	**Educational and learning**	
1	Various food items and wild crops (69.5%)	Timber (81.4%)	Water (rainfall for farming, availability of fresh water) (67.7%)	Learning and research purposes (0.4%)	**Future forest values** and responsibility to future generations (8.8%)
2	Bushmeat and game (50.0%)	Financial income from selling food, timber, NWFP (19.5 %)	Fresh air (19.9%)		**Cultural forest values** (childhood memories in forest, nostalgia, proverbs) (0.9%)
3	Farming (land for farming, various farming practices) (40.3%)	Governmental revenues (8.0%)	Wild animals (17.7%)		**Spirituality** and inner peace (0.4%)
4	Medicinal plants and disease prevention (32.3%)	Plantations and income (6.2%)	Standing trees, old trees – more than timber (7.5%)		
5	Household items (ropes, lianas, cooking utensils, mats) (27.9%)	Source of employment (3.1%)	Protective functions (storm and flooding) (6.6%)		
6	Firewood (14.6%)	Tourism (3.1%)	Natural habitats (3.1%)		
7	Shelter (roofing, building) (7.1%)	Community revenues (2.2%)	Soil fertility (1.3%)		
8	Charcoal (1.3%)	Minerals (1.8%)	Biodiversity (0.4%)		
9	Village protection (1.3%)	Furniture (1.8%)	Sunlight (0.4%)		
10	Fodder (0.4%)	Paper (0.4%)			