No straight line from policy to practice: the practice of Ghana's Modified Taungya System by indigenous cocoa farmers

A practice based approach to governmentality

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The practice of Ghana's Modified Taungya System by indigenous cocoa farmers

A practice-based approach to governmentality

MSc Thesis

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Front cover picture: the modified Taungya system in the Krokosua Hills Forest Reserve in the Juaboso District, Western North Region of Ghana. By Hinke Wiersma (11 December 2019)

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CFI	=	Cocoa & Forests Initiative
FC	=	(local) Forestry Commission
GDP	=	Gross Domestic Product
GoG	=	Government of Ghana
IPA	=	Interpretative Phenomenological Analysis
IDH	=	The Sustainable Trade Initiative
KHFR	=	Krokosua Hills Forest Reserve
MRQ	=	Main Research Question
MTS	=	Modified Taungya System
PBA	=	Practice-Based Approach
RQ	=	Research Question
TS	=	Taungya System

Abstract

The Modified Taungya System (MTS) is a governmental agroforestry policy instigated to contribute to reforestation, mitigating climate change and solving the land scarcity problem experienced by indigenous cocoa farmers in forest fringe communities. However, policy implementation is not always effective; what happens in practice is often different from the policy itself. Therefore, this study uses a *practice-based approach* to *governmentality* to research how indigenous cocoa farmers in the Juaboso district of Ghana practice Ghana's modified Taungya System. The *situated agency* and *logic of practice* of farmers help to explain how they act upon the MTS in practice. To carry out this study an ethnographic interpretative case study approach supported by descriptive statistics was used. Observations and 59 semi-structured interviews of MTS and non-MTS farmers were realized in three communities in the Juaboso district in Ghana as well as two semi-structured interviews with the local Forestry Commission (FC). The results show that indigenous cocoa farmers engage in the MTS because they have no other option and they have a general custom to obtain food and generate an income to sustain their livelihoods. However, participating in the MTS is based on nepotism, community politics, strength and financial capacity. Moreover, farmers find sustaining the forest important, yet describe to be demotivated to plant the trees in the MTS since there is no compensation for that, although the policy and the local FC state they have a share (40%) in tree revenues. This is attributed to a lack of communication between farmers and the local FC and monitoring by the FC on trees being planted in the MTS farms, which is probably based on the limited capacity of the FC and on limited farmer representation in management activities. Also, traditional gender differences shape the practice of the MTS differently, i.e. more women describe livelihood improvement to be the purpose of the MTS, whereas for men this is afforestation. This is probably due to men seeing the MTS more as a labour system to plant trees for the government since men, more than women, get their income from cocoa farming. To conclude, this study shows that there is no straight line from policy to practice. Farmers and the local FC describe that many farmers adopt the MTS since farmers depend on it and it improves their livelihoods. Nevertheless, the results indicate that policy implementation effectiveness is limited based on farmers' practices, which is linked to a lack of capacity and communication, local politics and financial issues, i.e. costs for transport and buying work/crop material. Moreover, not only farmers shape the practice of the MTS, also the local FC is part of practice, further research can explore how the local FC shapes practice.

Keywords: The Modified Taungya System, indigenous cocoa farmers, practice, governmentality, situated agency, logic of practice, policy implementation effectiveness, Ghana.

1 Introduction

1.1 Cocoa farmers face challenges of climate change and deforestation

Cocoa farming in Ghana is more and more threatened by different factors including climate change and deforestation processes (Cobbinah and Anane, 2015, Schroth et al., 2016, Asante et al., 2017). It is one of the country's main agricultural commodities and a popular business for smallholder farmers (Fountain and Huetz-Adams, 2018). Climate change induces among others higher manifestations of pests and diseases, increased weed production and higher temperatures during dry periods, which all negatively influences farmers' cocoa plantations and cocoa yields (Schroth et al., 2016, Oyekale, 2015, Asante et al., 2017). Also, cocoa farms are ageing and due to the effect of climate change they are degrading, which decreases productivity and affects farmers and their livelihoods (Knudsen, 2007). As such, climate change forms a serious problem for cocoa farmers and the country, since Ghana is the second-largest cocoa-producing country in the world after Côte d'Ivoire with a production of 900,000 tonnes cocoa in 2017/2018 and it contributes substantially to the country's GDP (Fountain and Huetz-Adams, 2018).

Moreover, deforestation processes, which further intensify climate change effects, have been substantial in Ghana and are still taking place. Cocoa farming has been one of the main causes of deforestation in Ghana; a lot of forested land was cleared in to establish cocoa farms (Carodenuto, 2019, Gockowski and Sonwa, 2011). Ageing cocoa farms with lower soil fertility were abandoned and farmers moved to new areas to establish new cocoa farms on forest lands, since these forest soils were fertile (Ruf et al., 2015). This induced further deforestation (Knudsen, 2007). Other causes of deforestation are illegal logging, land-use change, wildfires and unequal benefit sharing of revenue, which often makes that farmers and local communities do not support reforestation objectives. Also, population increase and the creation of forest reserves induces land scarcity for farmers to engage in farming practices, making that farmers encroach on forested land (Knudsen, 2007). This all stimulates deforestation processes, which decreases species richness and negatively impacts biodiversity (Atkins and Eastin, 2012, Asase et al., 2009). In turn deforestation and biodiversity loss instigates further climate change, which again negatively impacts cocoa farms.

In essence, it becomes harder for cocoa farmers to sustain their livelihoods since farming practices are threatened by climate change and land scarcity. Besides, farmers are not allowed to deforest to benefit from the fertile forest soils for farming practices, yet illegally farmers still encroach on forested land (Ruf et al., 2015). Due to this encroachment and the preference for full-sun cocoa farms, cocoa farmers generally do not mitigate climate change processes (Ruf, 2011). One of the ways to support farmers, mitigate climate change impacts and deforestation processes, concerns the implementation of agroforestry systems. Agroforestry is a management practice that combines trees and crops to mitigate deforestation and conserve biodiversity. Moreover, agroforestry systems are supposed to increase social, economic and environmental benefits (Schroth et al., 2004, Aidoo and Fromm, 2015).

1.2 The Modified Taungya System as a solution?

In response to deforestation, climate change and land scarcity, the Government of Ghana (GoG) has introduced and implemented policies towards simultaneously supporting farmers and protecting forests, forested lands and increasing tree cover (Acheampong et al., 2016, Ros-Tonen et al., 2013, Ministry of Lands & Natural Resources, 2016). One of these policies concerns the Modified Taungya System (MTS), both an agroforestry system and a forest plantation scheme, that was initiated in 2002 by the Ghanaian Government as part of the National Forest Plantation Development Programme

(Forestry Commission, 2017). The MTS is a system where farmers integrate trees and food crops on degraded forest lands until the canopy of the trees closes (Acheampong et al., 2016, Ministry of Lands & Natural Resources, 2016). The main tree species that are planted on MTS land concern *Tectona grandis* (teak) and *Cedrela odorata* (cedrela). Other species that can be found in MTS farms include *Terminalia superba* (ofram), *Terminalia ivorensis* (emire) and *Khaya ivorensis* (African mahogany) (Forestry Commission, 2006, Ros-Tonen et al., 2013). Appendix III of the report Forestry Commission (2016), page 87-89, shows the specific list of tree species promote by the FC to be planted in the MTS. Food crops that can be planted according to the FC mainly concern plantain, yam, cocoyam, maize and vegetables like tomatoes and onions (Acheampong et al., 2016, Ros-Tonen et al., 2013, Forestry Commission, 2017).

Originally the system, called the Taungya System (TS), comes from Asia and was introduced in Ghana in 1930 by the British colonizers to be able to foresee in future timber demands and to reduce forest degradation. However, the system was not successful in Ghana, because the government was lacking sufficient management and monitoring practices, farmers did not receive any benefits from the trees and farmers were not included in decision-making processes (Ros-Tonen et al., 2013, Agyeman et al., 2003). Therefore, in 1984 the TS got suspended. Starting from the 1980s, a drive arose for decentralization and involving local people in processes of development in Sub-Saharan Africa, as such also Ghana (Adjei et al., 2018). Therefore, in 2002, a revised system was introduced by the GoG, called the Modified Taungya System aiming at increased farmer representation (Kalame et al., 2011, Ros-Tonen et al., 2013, Adjei et al., 2018).

Similar to the TS, the MTS aims at meeting timber demands and restoring degraded forest lands. It also aims at enhancing food security, livelihood standards and local people's representation (Kalame et al., 2011, Forestry Commission, 2017). Furthermore, in the current system farmers and local communities also receive benefits from the planted trees in return for contributing to the planting of the trees and halting of illegal logging and bushfires (Ros-Tonen et al., 2013). Accordingly, the farmers get a share of 40% of the timber revenues and they receive access to forested land to cultivate crops of which they receive all the benefits (Forestry Commission, 2017, Ministry of Lands & Natural Resources, 2016).

When farmers are interested in participating in the MTS, they are required to form a group, a so-called MTS group. From this group they have to select a committee that will manage the group. This committee has to be led by a representative of the FC, who is responsible for the allocation of land, monitoring farmers performance, assuring compliance and manage disputes and sanctions (Acheampong et al., 2016). As such, farmers participate in the MTS in groups of farmers led by a committee that is managed by an FC-representative.

The MTS sounds very promising for cocoa farmers on paper: access to forested land to practice farming, increased income, increased food production and a way to combat climate change. However, in practice the MTS policy is not always implemented effectively and the adoption of the policy by farmers in not without hesitation (Acheampong et al., 2016). As is mentioned in the previous paragraph farmers participate in the MTS and in this participation farmers carry out certain practices. However, since this research is about practice, in the rest of the report it will be formulated as farmers practicing the MTS, which refers to practices of farmers concerning the MTS.

1.3 Problem Statement: no straight line from policy to practice

Participation in the MTS by farmers is not without constraints. Farmers often do not see the importance of planting and maintaining trees for biodiversity and climate change purposes (Atkins and Eastin, 2012), which could make that they do not want to participate in the MTS. Moreover, farmers indicate there is a lack of income between the time of canopy closure (when cultivating crops is no longer possible) and timber harvest. Some farmers indicate they have a preference for other crops or tree species than those that are promoted by the Forestry Commission. Other issues concern unsigned agreements, lack of supervision and unclarity on revenue distribution (Ros-Tonen et al., 2013, Adjei et al., 2018, Acheampong et al., 2016). For all these reasons, the implementation of the MTS policy into practice does not follow a straight line and knows limitations.

Multiple mechanisms are underlying the effectiveness of the implementation of the MTS policy on field-level; in farmers' and local communities' practices. One of the mechanisms can be related to the situation that is created through the policy at the field-level and the human agency of the cocoa farmers (Behagel et al., 2017, McKee, 2009). For instance, the Forestry Commission (FC) banned the planting of cassava in the MTS, since it would influence the growth of timber trees negatively. However, despite this ban, farmers still wanted to plant cassava, even though they knew the FC would likely destroy these crops. For them cassava is an important food crop that is part of their diet and the MTS farm was often the only place in which they could cultivate that crop (Acheampong et al., 2016). This is an example of the entwinement of social structure and human agency. The situation made farmers participate in the MTS and support planting trees as prescribed by the MTS, yet they used their agency to plant their preferred food crop even though the FC threatened to destroy these crops. Moreover, not all farmers see the importance of planting trees and therefore they might not see the relevance of the MTS (Atkins and Eastin, 2012). However, policy-makers suggest that by educating the farmers on the importance of trees and the effects of climate change, they will come to see this and start participating in the MTS (Atkins and Eastin, 2012, Aidoo and Fromm, 2015). In this way, the norms and values and as such the identity of locals can change through the situation and through the strategic use of power by the government (Forestry Commission) to educate and include farmers in forest management practices.

Also, the traditions and customs of the farmers can influence how policies are practiced. Local communities often have deeply engrained traditions, beliefs and practices in their lives (McKee, 2009, Arts et al., 2014). These are not always taken into account in nature conservation policies such as the MTS, which can lead to a less effective implementation of policies towards sustainability. For example, Adjei et al. (2012) researched the representation of farmers participating in the MTS as a management option. They found that farmers were not represented and that without accounting for the needs, requirements and traditions of local communities, forest resource management would not be effective. This indicates that farmers' traditions, perceptions and their identities play a significant role in the legitimacy of policy implementation. Furthermore, Acheampong et al. (2016) describe how farmers in Ghana did not implement the MTS, because it would not lead to sufficient income. The Western world often thinks of these communities as consisting of noble savages that live in harmony with nature and understand the importance of it, while those cocoa farmers also just want to generate an income to sustain their families (Hames, 2007, Acheampong et al., 2016). This is also why it is seen that projects supporting forest protection often fall apart when funding stops (Dressler et al., 2010, Ros-Tonen et al., 2014). In this case, the identity and intention of the farmers to participate was misinterpreted by the policy-makers. Accordingly, a mismatch in goals, belief systems and ontologies

between cocoa farmers and policy-makers can influence farmers practices in the MTS (Blaser, 2009, Adjei et al., 2018).

In sum, there are differences between what the policy describes and how cocoa farmers actually practice the MTS, meaning there is no straight line from policy to practice, which can be explained by different mechanisms. To get more insights in how and why policies in general, but specifically the MTS, on paper, differ from what actually happens in practice and to gain more knowledge about the effectiveness of policy implementation, I will study the practice of the MTS by indigenous cocoa farmers. To carry out this research I will pay attention to the entwinement of social structure and human agency, local customs and traditions of the indigenous cocoa farmers that practice the MTS. To be able to adequately study how the MTS is practiced by indigenous farmers, my study-site concerned the Juaboso district close to the Krokosua Hills forest reserve, where the MTS has been implemented since the initiation of the policy in 2002 (Informant A 2019, personal communication, 1 October).

In this study indigenous is defined as being a member of one of the local matrilineages of the Juaboso district where the study will take place (Awanyo, 2004). I chose to study indigenous farmers instead of migrant farmers, since they are originally from the region of study. This could mean that they are more attached to the region and have more deeply engrained traditions, which makes them more valuable for studying how human agency and traditions shape how the MTS is practiced. For instance, the papers of Yelfaanibe (2011) and Aniah and Yelfaanibe (2018) show that indigenous people in Ghana are attached to the natural environment they live in, which has implications for sustainable forest management. Moreover, there are whole studies on the differences between migrant and indigenous farmers (Awanyo, 2004, Knudsen, 2007, Codjoe, 2006), so focusing on one group makes the data more specific and in-depth to my topic.

1.4 Study area – the Juaboso district

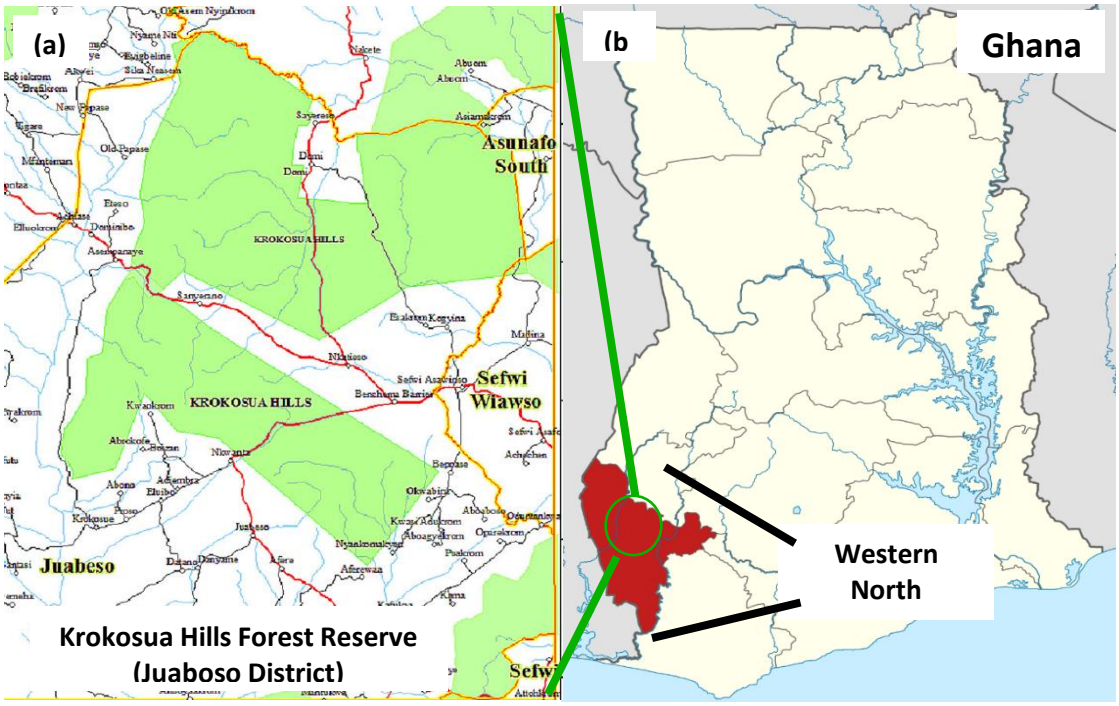

Figure 1 Map of study area (a: Asare et al., 2014, b: Wikipedia, 2019)

My research took place in the Western North region of Ghana, specifically the Krokosua Hills Forest Reserve (KHFR) in the Juaboso district (Figure 1). The KHFR was established in 1935 and has a surface of 481.7 km^2 (Forestry Department Ghana, 2019). Furthermore, it is divided into two management areas, 70% is destined for timber production and 30% is destined for biodiversity conservation (Adams et al., 2016). More than 50% of cocoa produced in Ghana comes from the Western Region in which the Juaboso district is situated, which is one of the highest yielding cocoa districts in the country. Since most of the land consists of cocoa farms or is, due to the KHFR, a forest reserve (30%) there is little space left for farmers to cultivate food crops in the district (Knudsen, 2007). One of the remaining ways for farmers to practice food crop cultivation is through the MTS.

1.5 Improving policy-making and developing theoretical concepts

There is already considerable research done on the MTS and its implementation constraints. Multiple papers showed issues including; that income from the system is not sufficient for farmers, preferences of crops and trees to be planted differ between the FC and the farmers and benefit-sharing agreements are not being signed inducing insecurity of receiving revenue (Acheampong et al., 2016, Ros-Tonen et al., 2013, Kalame et al., 2011). I want to build on the existing knowledge on the implementation of the MTS, by looking into some of the mechanisms that underlie these implementation issues, especially by researching practices, while taking into account human agency and local traditions and customs. This, in turn can contribute to explaining why there is no straight line from policy to practice, why these issues occur and how they can be combatted to make the implementation of the MTS more effective. Moreover, I found no prior research conducted on the practice of the MTS in the specific study area. Therefore, it will be interesting to look into this and to discover which discrepancies between the policy and practices exist and how these could be overcome.

Moreover, understanding more about the mechanisms that underlie the practice of the MTS on the field-level will be important for policy-making processes. In 2017, the Cocoa & Forests Initiative (CFI) was set up; a new multi-actor platform with the intention to steer towards zero deforestation. The World Cocoa Foundation leads the initiative and it is coordinated by IDH, The Sustainable Trade Initiative (Cocoa & Forests Initiative, 2018a, World Cocoa Foundation, S.A.). Besides, the CFI initiative is in line with and supported by international agreements, like the Amsterdam Declarations and the Paris Climate Agreement (Amsterdam Declarations Partnership, 2018, World Cocoa Foundation, S.A.). Through the initiative, actors including the government and cocoa companies, strive to work together in promoting the restoration and protection of forests in the supply chain. The GoG agreed with the initiative and set up a national implementation plan and a framework for action. Some of the policies of the CFI in Ghana that involve and affect indigenous cocoa farmers, concern the participation in the Modified Taungya System (MTS) by cocoa farmers (Cocoa & Forests Initiative, 2018a, Cocoa & Forests Initiative, 2018b). For example, the national implementation plan specifically mentions to use the MTS on degraded forest land to gradually stop cocoa farming and restore the forest (Cocoa & Forests Initiative, 2018a). This research can contribute to the development of the CFI, because they plan to further implement and carry out the MTS in farming communities in the initiative's six designated hotspot intervention areas (HIAs) including the Western North region, which concerns my study area (Cocoa & Forests Initiative, 2018a). For policy-makers to know how farmers practice the system and how traditions, customs and agency shape this process, is important for implementing the MTS policies of the CFI more effectively.

Moreover, apart from the MTS, this study can inform policy-making processes on nature conservation issues in general. Understanding how policies are received by locals and which role local traditions, agency and identity play, gives more insights in how to deal with this in policy-making processes, which can make the implementation of policies towards the protection of nature more successful (Adjei et al., 2012, Adjei et al., 2018, Dressler et al., 2010). It may not only give insights into how to deal with local communities and their identity, but also how this identity and knowledge of the locals can be used in policy-making processes or give feedback on the policy itself (Behagel et al., 2017, Nadasdy, 1999). In addition, this study can be useful in other policy domains, such as women empowerment, where policy-makers should also take into account local community practices, norms and beliefs (Tamanaha, 2011).

My study will deepen theoretical knowledge on among others the relation between policies on government- and even governance-level and practice on the field-level. Particularly, I built on the theories of the *practice-based approach (PBA)* and *governmentality* by introducing a practice-based approach to *governmentality*. *Governmentality*, by Foucault, describes the study of the strategic use of power to steer people's conduct rather than static sovereign power to fore example formulate the law (Foucault, 1997). My research will also further this concept by looking into how farmers are steered, how they are subject to policies and also how they practice these policies. This is described as *realist governmentality* by the paper of McKee (2009). *Realist governmentality* entails not only using or looking at traditional discourse analysis, but also at ethnography and as such empirical realities (McKee, 2009). Consequently, my research will increase knowledge of how traditions and agency play a role in how policies are received and acted upon. The *practice-based approach* relates to this and as such I will also further elaborate on this theory, even more so since this concept in forest governance (in this case *governmentality*), was established quite recently (Arts et al., 2012).

1.6 The research that is needed

To gain more insights on the nexus between policy and practice and the effectiveness of policy implementation, I studied farmers practices of the MTS in the Western North Region of Ghana, specifically the Juaboso district. I did this by taking into account social structures, human agency, traditions and customs. Also, this study will give insights on how to improve the MTS, taking into account farmers' needs, such that more farmers will participate in the MTS.

To carry out this research adequately I formulated the following main research question:

How do indigenous cocoa farmers in the Juaboso district practice Ghana's Modified Taungya System?

This study sought to respond to the main research question by the following formulated research questions (RQs):

RQ1. How is the MTS described by the local FC and by indigenous cocoa farmers in the study area?

Understanding how both the local FC and indigenous cocoa farmers describe the MTS provides insights on the similarities and differences in their views and discourses. This in turn, provides knowledge on whether the practices by cocoa farmers are similar to the intention of the policy-makers. Therefore, this research question contributes to finding an answer to the main research question.

RQ2. How does indigenous cocoa farmers' *situated agency* shape the way in which they practice the MTS in the study area?

Human agency is connected to the local context and the situation in which it is located. Therefore, researching how the human agency of cocoa farmers, including norms, values and beliefs, interacts with and is subjectified to the MTS and policy-makers, gives more insights on how the MTS is practiced by indigenous cocoa farmers.

RQ3. How does indigenous cocoa farmers' *logic of practice* shape the way in which they practice the MTS in the study area?

Indigenous cocoa farmers have deeply engrained traditions and customs that are key aspects of their lives and define their doings (*logic of practice*). These traditions and customs can influence their view on and their way of practicing the MTS. Therefore it is important to research the role of traditions and customs as this provides more knowledge on the main research question.

RQ4. What needs to change in the current MTS in order for farmers to adopt and carry out the system in the future?

As this research is not only to explore mechanisms that influence how policies are acted upon in practice, the fourth question serves to make my research more meaningful and purposeful to society. Finding out what needs to change in the current policy based on the explored mechanisms could contribute to policy- and decision-making processes and could stimulate the adoption and practice of the MTS in the future. Consequently, the fourth question is valuable and therefore part of this research.

2 Theoretical framework

To address the objectives and research questions adequately, I use a *practice-based approach* to *governmentality*. This is valuable to understand the mechanisms that underlie the practice of the MTS and to explain that there is not always a straight line between policy and practice. It highlights, how power and processes of being made and self-making influence policy implementation and specifically how farmers agency, traditions and customs shape or influence how the MTS is acted upon. In turn these practices can propose feedback to the MTS in order to improve it such that farmers are more likely to participate in the MTS. This process is also explained in the conceptual framework (Figure 2) I constructed for this study, which will be further elaborated upon in the next sections.

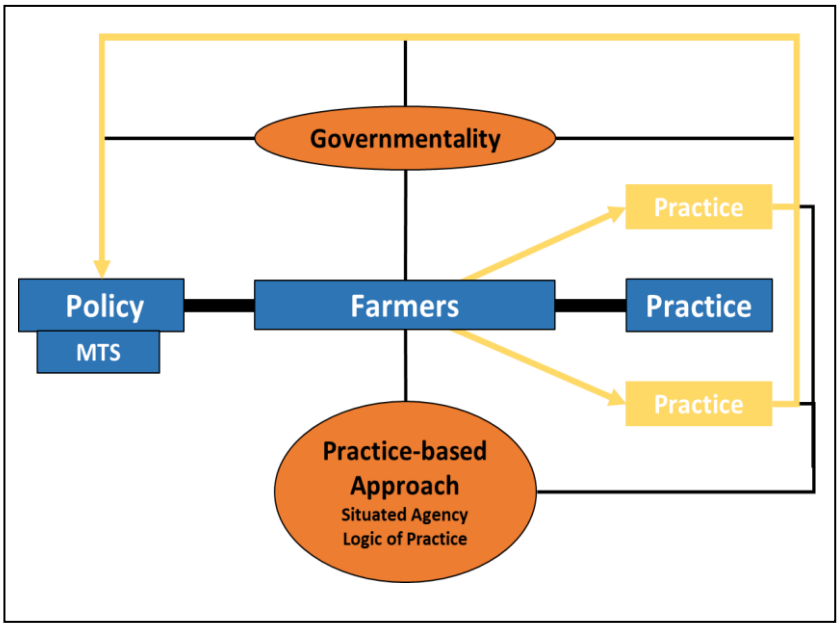

Figure 2 Conceptual framework. There is not always a straight line between policy and practice as is indicated by the yellow colour. Farmers translate (*governmentality*) the MTS policy through *situated agency* and the *logic of practice* in practices (*practice-based approach*). Accordingly, farmers can steer, through these practices, the MTS to change (*governmentality*).

2.1 Governmentality; being made and self-making

Governmentality, by Foucault, explains power not as a static being, but as a strategic instrument (Foucault, 1997). Instead of describing the government as a body of direct subordination, it is described as an institution that steers subjects towards certain actions; the conduct of conduct (Rose et al., 2006, Foucault, 1997). In this way, the government steers towards changing the practices and life forms of for example cocoa farmers (Odysseos, 2011, Menjivar and Lakhani, 2016). This is also the case for the MTS in the region of study, which was initiated by the forestry commission (FC), a governmental body, in 2002. Instead of encroaching on the forest, the FC implemented the MTS in order to steer farmers to change their traditional farming practices and cultivate food crops while planting and maintaining trees. As such, the GoG uses power strategically to steer farmers towards new life forms and practices in which they combine food cultivation and tree cover maintenance. Consequently, the Government is changing the way farmers do things, which is what *governmentality* describes.

In my study *governmentality* specifies that it is not just about an institution that steers subjects towards new life forms, it is a dual process of being made and self-making. It recognizes and describes that the government in this case, cannot just stand above subjects without seeing the identity, agency

and practices of the subjects (Rose et al., 2006, McKee, 2009). Moreover, subjects internalize policies into their own lives in different ways. This can mean that they will integrate the new life forms initialized by an institution into their life forms based on their norms, values and practices (McKee, 2009). Yet, also resistance is part of *governmentality*, since when they resist to institutional policies they are still subjectified to these policies (Odysseos, 2011). This self-making process, as described by *governmentality*, is useful to understand farmers practices in the MTS in Ghana. For example, in the old MTS, the TS, farmers adopted the policy, yet they used to destroy tree seedlings after a few years. Namely, they knew that when the canopy of the trees would close, they were not allowed or able to cultivate their food crops anymore and they would not receive any benefit from the planted trees. As such, they adopted the system and internalized it, yet they did not see the importance of the trees, since it did not generate income for them. Therefore, they destroyed the tree seedlings in their practices in order to be able to cultivate their food crops for a longer time (Adjei et al., 2018). In this case, they adopted the policy, yet still resisted part of it leading to different practices (Figure 2), since their norms and values were different from what the policy described; as such a self-making process. Moreover, it indicates it is not a simple yes or no on adopting the MTS, meaning that farmers can adopt the MTS to a certain extent (partially). Temporality also plays a role, farmers can also participate in the MTS temporarily, for example when they need it most.

Altogether, the concept of *governmentality* explains both how policy makers try to steer indigenous farmers towards certain practices, but also how these practices can turn out differently based on the agency of the indigenous cocoa farmers. Therefore, this concept is useful to study the discourses the local FC has as well as the discourses of indigenous farmers and how these interact and shape practice. It helped me to develop criteria to for example analyse whether farmers discourses are informed by the local FC, if they are their own or maybe even a combination; indicating processes of being made and self-making (as explained above).

2.2 A practice based-approach to governmentality

Not only looking at traditional discourse analysis, but also at ethnography and as such empirical realities can be described as *realist governmentality* (McKee, 2009). A theory that adds well on this is the *practice-based approach*. The paper of Arts et al. (2014) describes a *practice-based approach* to governance, in which governance is referred to as regulation approaches that are decentralized, community- or market-based. However, in the paper of Arts (2014) is described, according to the *governmentality* theory, that in governance regulations the government often still plays a large steering role. It describes that governance does not so much transfer nor decentralizes authority, it rather makes that the government steers from a distance. This tends to reaffirm power relations. In my case the MTS was originally initiated by the government within the forest plantations development programme (Kalame et al., 2011). Yet, nowadays there are also multiple governance initiatives, like the Cocoa & Forests Initiative (CFI), that include the MTS. For instance, in the CFI the role of the government is still significant and also it is the body that is designated to implement the policies of the program (Cocoa & Forests Initiative, 2018a). Moreover, also in the region of this study the MTS is being implemented by the FC (a government body). Since the productive power and role of the government in the implementation of the MTS is considerate, I use a *practice-based approach* to forest *governmentality* instead of forest governance. Moreover, these concepts interact well together, since both see power as a productive force and comprehend the value of agency, traditions, norms and beliefs.

The *PBA* describes very well how agency, traditions, norms and beliefs shape how policies are acted upon in practice. Cook and Wagenaar (2012) describes this accordingly:

> *… by putting knowledge forward as the major, privileged, or exclusive way of relating to the world, we overload it. We leave out the whole living, experiencing, interacting, embedding material and social environment that often gives rise to what we know in the first place and without which it simply wouldn't make sense to us* (Cook and Wagenaar, 2012, p. 14).

As such, the *PBA* concerns how humans or actors act by interpreting and responding to for example laws, policies and discourses (Arts et al., 2014). In the *PBA* practice is defined as follows by the paper of Arts et al. (2014):

> *An ensemble of doings, sayings and things in a specific field of activity. The 'doings' refer to social and society-nature interactions, the tacit knowledge and skills that people employ, and the scripts that they follow; 'sayings' refer to people, their discursive interactions, as well as the explicit rules, norms, and knowledge that they utter; and 'things' refer to materials and artefacts, like rocks and technologies, as well as nature more in general. These elements together are constituted in a 'specific field of activity'* (Arts et al., 2014, p. 6).

Following this definition, society and nature are entwined and practices are contingent. This is relevant in my study, since I study how the MTS system is practiced and how these practices came to be like this, which also relates to the entwinement of society and nature. For example, practices concerning which crops and trees farmers planted, how they are cultivated or maintained and how these differ on different farms are part of the practices that are studied by both observations and interviews. This, in turn, gives more insights into the saying, doings and things as described by the definition of practice.

2.3 Situated agency and Logic of practice

The two sensitizing concepts of *situated agency* and *logic of practice* as part of the *PBA* help to study what actually happens in practice where the MTS is implemented. They contribute to understand how agency, traditions and customs influence and shape how the MTS is acted upon by indigenous cocoa farmers (Figure 2).

Situated agency describes as the word indicates that the situation or context shapes the way in which actors or individuals act on for example policies. It highlights human agency as not being autonomous, but as being shaped by the local context or a certain situation. Moreover, *situated agency* is about the interpretation and local translations of among others knowledge, discourses, policies and rules in every-day practices. As such, it describes the entwinement between social or institutional structures and the human agency of the actors involved. (Behagel et al., 2017, Arts et al., 2014, Krott and Giessen, 2014). In this research agency is described as a continuous property in which individuals or collectives (have the desire to) exercise some sort of power to intentionally act in a certain way and is aware of the effects the action(s) will have (Bandura, 2000, Dietz and Burns, 1992). Accordingly, *situated agency* describes that this agency is embedded or interacts with the constituted social space (Gregory, 1981, Behagel et al., 2017). Some individuals might have the desire to use power and act in a certain way, yet this might be impossible due to certain constraints or a lack of 'free play'. Therefore, I added 'have the desire to' in the definition of agency, since this can still provide valuable information for my research.

Situated agency is a useful concept in my research, as it supports to understand how the MTS and its measures interact with the agency of farmers and how this in turn shapes farmers' practices. For

example, some farmers do not understand the value of trees and how it helps to combat climate change. The papers of Aidoo and Fromm (2015), Atkins and Eastin (2012) among others suggest that with education on the importance of MTS for climate change and deforestation mitigation, farmers will see the importance and adopt the MTS more easily in practice. However, it will depend as well on the agency of the farmers how this will turn out in practice. For instance, if they are struggling to make a living and the income of the MTS is not sufficient, as is suggested as a barrier to adoption by multiple papers, then it is uncertain whether education is enough to make farmers adopt the MTS. Therefore, the concept of *situated agency* is useful to find out these dynamics and how the MTS is received in practice by farmers. By formally and informally collecting knowledge, discourses, ideas and rules on the MTS for both policy makers and farmers and see how they interact, I am able to apply the concept and see how farmers' agency is situated and how this influences farmers' practices.

The other concept regards *logic of practice*. This concept puts forward that how people act in practice is not only based on formalized structures, but also on deeply engrained traditions and routines. As such, policies are translated through the combination of on the one hand formal rules and on the other hand traditions, routines, knowledge and understandings in and of local practices. Moreover, logic is not something that is imposed externally, but instead is internally embedded in practice (Behagel et al., 2017, Arts et al., 2014, Krott and Giessen, 2014). Essentially, when farmers have an engrained logic or tradition of sustaining their livelihoods as much as possible through generating an income, they may not act on the MTS as was externally imposed on them. Their *logic of practice* will shape the way in which the MTS is acted upon in practice. Finding out farmers' *logic of practice* contributes to explaining the discrepancies between on the one hand the MTS and on the other what actually happens in practice.

In sum, I used a *practice-based approach* to *governmentality* to carry out this research. It takes into account both the MTS policy and its steering power as well as the human agency and *logic of practice* of indigenous cocoa farmers. Therefore, these concepts form a good framework to research how farmers in the Juaboso district of Ghana act upon the MTS and how these practices can give feedback on the MTS itself.

3 Methodology & methods

3.1 General methodology

To answer the main research question adequately I use a case-study approach. My research question concerns a qualitative explanatory question for which in-depth real-life knowledge is required. The case-study approach allows me to explore the mechanisms that explain the implementation of institutional policies in the field, since there are no clear boundaries between the phenomenon and the context in a case study (Baxter and Jack, 2008). Consequently, this approach helps me to answer the 'how' question and it is representative as these mechanisms also apply elsewhere in other settings and cases. Moreover, my case study is interpretative and based on mainly qualitative data. This helps me to better understand the shared social meanings of the cocoa farmer communities when conducting the fieldwork. Besides, it allows me to take into account the social and political environment concerning among others the description of the MTS policy of the government as well as what happens in the study area. Also, because I study a policy and how this policy is practiced an interpretative approach is useful to find out meanings both individual and shared (Bernard, 2011, Crowe et al., 2011). To promote data triangulation and as such sustain internal validity I use mixed methods by including quantitative data (Bernard, 2011). This helps to quantify for example farmers' discourses and practices and analysing which ones are of more importance.

For the actual fieldwork concerning the practices of the cocoa farmers and how they developed, I use a combination of ethnography and the *PBA*. Ethnography describes the act of 'being there', exploring a phenomenon by using yourself as an instrument to gather the knowledge you need. Ethnography entails thickness and holism, because it pays attention to richness and detail in practices (Van der Arend and Behagel, 2011, Ortner, 1995). Moreover, it is about coming in contact with agents in a social way and recording human experience, which is largely linked to the interpretative perspective I use in this research (Willis and Trondman, 2000). This is necessary in my research to create a sophisticated and in-depth understanding of the mechanisms that explain how policies become implemented at the field-level. The *PBA* added on this by taking into account the situation at hand and the practices that are carried out by the cocoa farmers (Van der Arend and Behagel, 2011).

3.2 Case study communities

I conducted my research in three communities in the Juaboso district in the Western North Region of Ghana close to the KHFR, Figure 1. The three communities are shown in Figure 3. Nkwanta is the biggest community and a little more developed with other employment options than just farming. Nkatieso is also big, yet is further away from the forest reserve than the other two communities and as such from the MTS land. Teabenti is the smallest community of the three with the least options for different employment than farming. I chose these communities since these differences can make that farmers describe the MTS differently and that the *situated agency* of farmers shape the practice of the MTS differently. This increases both internal and external validity. Namely, it gives a more holistic view of how farmers in the specific research area practice the MTS based on the differences in the communities (Bernard, 2011). Moreover, understanding how and how much these differences influence how the mechanisms (like *situated agency*) I studied shape practice, gives insights in how applicable findings of this research can be to other cases and policies. Therefore, this increases the external validity of this research (Bernard, 2011).

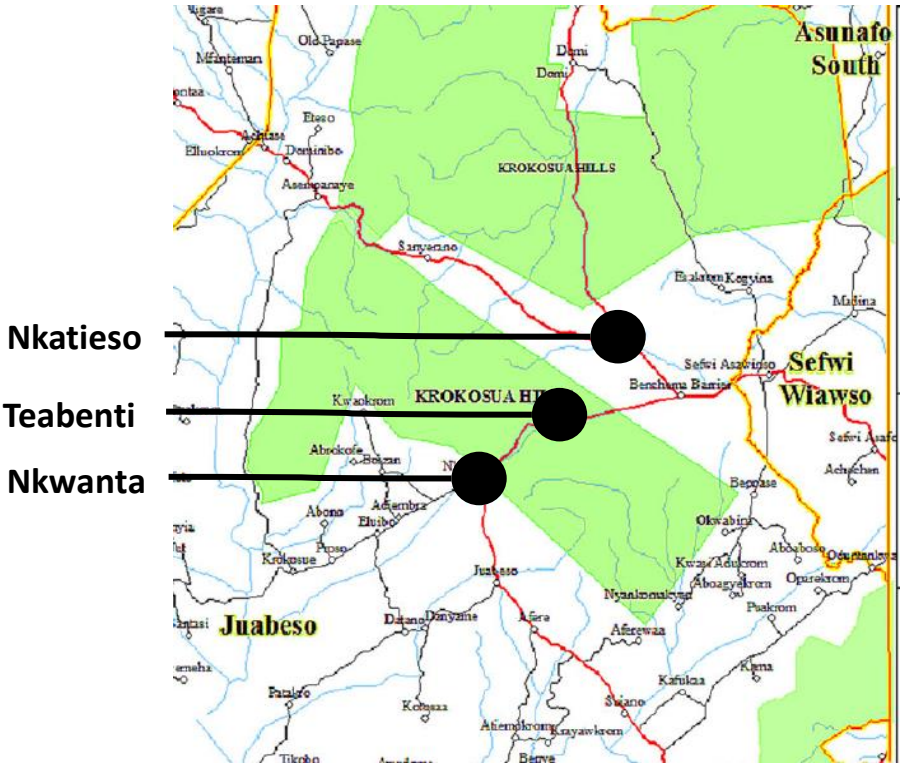

Figure 3 The three communities in the study area in which the research was conducted.

3.3 Informants

Since my research is about how indigenous cocoa farmers practice the MTS, the main informants are indigenous cocoa farmers from the three communities shown in Figure 3. In total, the research entails 61 informants. 59 of the informants are indigenous cocoa farmers and the other two informants are of the local forestry commission. Since it is important to know more about the policy itself as well as how local FC officers describe the policy I included two informants of the FC in my research. These FC officers, concerning the district manager and the assistant district manager, form specialized informants, that have specialized knowledge about the details and functioning of agroforestry policies and specifically the MTS. Since these informants are specialized in these policies, it is enough to gather sufficient data (Bernard, 2011, Marshall, 1996)

Figure 4a shows the desired informant quantities per category. Figure 4b shows the actual informants of this research. The informants are selected through a combination of quota sampling and snowball sampling. Quota sampling concerns the creation of specific research groups or categories based on the different research variables, for which you try to find the same amount of informants, Figure 4a. This strategy comes close to probability sampling, yet there is no random selection (Moser, 1952, Fogelman, 2002). Quota sampling is a suitable strategy to use, yet it is hard to stumble upon these informants considering the time I had for the fieldwork, which was 2 months. Therefore, snowball sampling was used to acquire the informants of the specific groups. This is a strategy where you ask an informant to name or link you to another (Noy, 2008). In my research, it was mainly someone from the specific communities, who my translator contacted, that found informants for my research for the specific community. Snowball sampling made it harder to find the same amount of informants for the different groups, therefore the actual selection of informants in Figure 4b is different from the desired one as shown in Figure 4a.

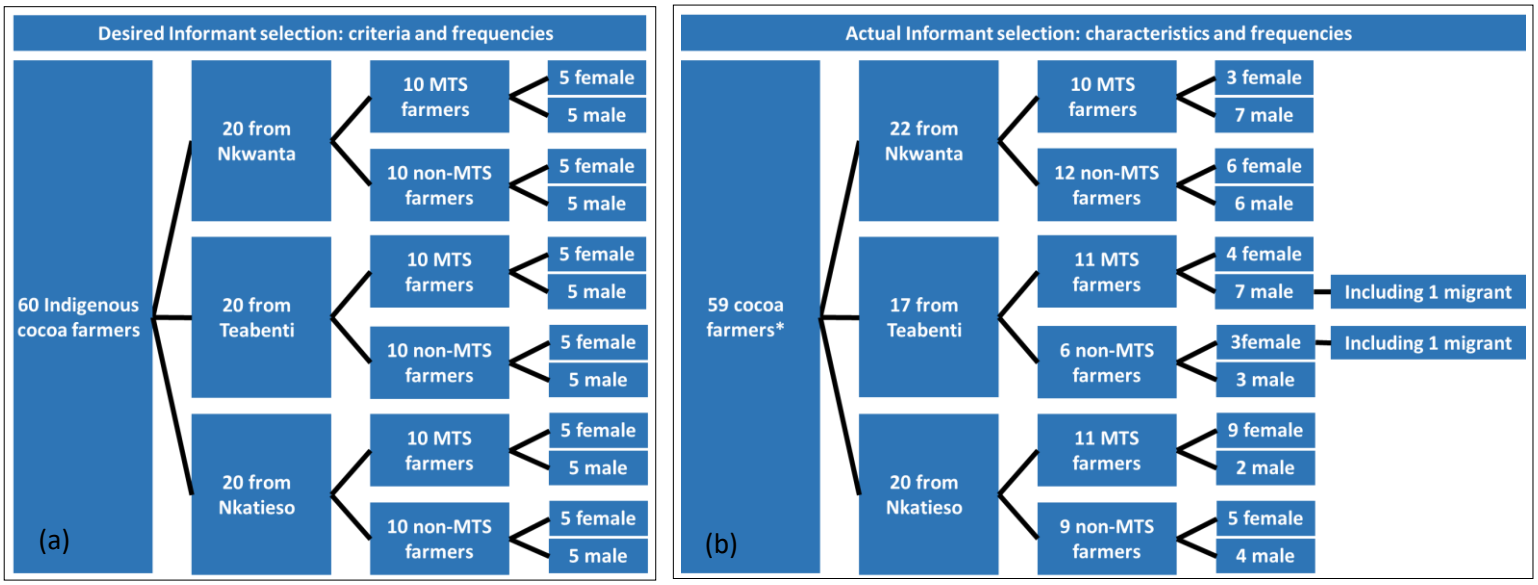

Figure 4 The desired informant selection and the actual informant selection (b). *two of the farmers were migrants as is also indicated, the other 57 farmers concern indigenous cocoa farmers.

3.4 Selection criteria

There are different types and groups of farmers in the region, for instance you have indigenous farmers and migrant farmers. There are whole studies on the differences between indigenous and migrant framers (Awanyo, 2004, Knudsen, 2007, Codjoe, 2006). This research studies how policies turn out in practice and how traditions and human agency influence this process, therefore more in-depth information can be acquired when the focus is on only one of these groups, being indigenous farmers in my case. In this study indigenous is defined as being a member of one of the local matrilineages of the Juaboso district where the study took place (Awanyo, 2004). I selected indigenous farmers, since they are originally from the region and therefore have more engrained traditions and customs and are more context-bound than migrant farmers, as such they are more valuable informants to my research. Since I use snowball sampling two of my interviews are with migrant farmers. The responses of these interviews are still taken into account, yet with precaution.

Moreover, since cocoa farming is widespread in the region, cocoa farms take most of the land cover (apart from forested land) and cocoa is an important cash crop, the main focus is on cocoa farmers (Knudsen, 2007). In my study cocoa farmers are defined as having cocoa farming as one of the main farming activities.

In Section 3.2 I already explain the selection of the three communities. Accordingly, considering that this study concerns the practice of the MTS, the informants concern indigenous cocoa farmers that practice the MTS and indigenous cocoa farmers that do not; being MTS farmers (32) and non-MTS farmers (27), see Figure 4. To find out more about how cocoa farmers internalize the MTS, also researching farmers that do not practice the MTS provides useful data. Famers who do not practice the MTS may have different perspectives on the MTS than farmers who practice it. Moreover, non-MTS farmers may talk more freely about illegal or difficult topics or activities, because they have less to lose since they do not practice the MTS. Therefore, I included non-MTS farmers in my research, which as well increases the internal validity and decreases response bias (Bernard, 2011).

3.5 Methods for collecting data

To acquire useful and robust data, a variety of methods is used in this study; data triangulation. This improves the quality of the study and its internal validity (Denzin, 2015, Bernard, 2011). The main method I use concerns semi-structured interviews. Furthermore, this is supported by (participant) observation and literature search.

3.5.1 Semi-structured interviews

The core method for gathering data concerns semi-structured interviews. In this method a structured interview guide (Appendix I) steers the conversation, yet it knows an open character and allows to follow up on leads (Weiss, 1994). This method is useful to structure the obtained data, but to still leave room to dig deeper into certain topics when for example I see that a certain question triggers certain emotions. It provides data on how both farmers and the local FC describe the MTS. Moreover, robust data on how *situated agency* and the *logic of practice* of cocoa farmers shape practice and what should change in the policy itself for future adoption is obtained with this method. In total, I conducted 59 farmer interviews, which makes that I had enough informants in the specific groups (Figure 4) to have adequate results for conducting qualitative research (Guest et al., 2016, Bernard, 2011). I conducted two interviews with the local FC. This interview guide (Appendix II) was different, since the FC had more information on the policy itself, which is valuable (Marshall, 1996). However, the questions were mainly similar to the ones I asked the farmers to make data analysis more feasible.

Since the farmers did not speak English all interviews were conducted through a translator who was as well my research assistant in the field. The interviews with the FC were conducted by me in English. All interviews were recorded as well as extensive notes were made. The notes serve as a back-up, as a way to capture things that the recorder could not (like emotions) and are otherwise easy to forget. Also it serves as a strategy to create a silence and make the informant say more.

3.5.2 Observation: field notes, diary and participant observation

To support the data I got through the semi-structured interviews, I conducted observations of the MTS farms of all three communities. For example, it helps me to see that often trees were not planted in the MTS farm. Moreover, the use of specifically participant observation was limited due to unpredictability of when farmers would go to their farms. Participant observation entails that I participated in farming activities whilst observing, which would also build trust (Bernard, 2011). Although used little, the method gives me more insights on the MTS and how it is practiced. For example, I experienced the bad road and the time it takes to get to the farmland.

I captured these observations in field notes, that I jotted down while observing or as soon as I got a moment for myself. When time was limited to write, I recorded what I had observed (Taylor et al., 2015, LeCompte and Schensul, 2012). I also made pictures of what I observed, since it added value to my field notes and it supported data analysis. Furthermore, I made a distinction between what I observed and the interpretations and feelings I have about what I observed, as such I used the code "R.C." (Researcher's comment) for my comments (Taylor et al., 2015).

Apart from field and informant observations, I also observed myself. This means that I kept a diary every (few) day(s) during my fieldwork period. Observing myself, my feelings, experiences and thoughts and reflecting on them is of importance for the quality of my research. Namely, this helps me to discover how much I was involved or engaged with the topic and consequently to adapt and stay critical and diplomatic (Clarke, 2009, Rasch et al., 2020). I kept on reflecting on myself during data analysis as it is a crucial stage of the research as well in which staying critical and objective is important.

3.5.3 Literature

To establish a thorough background, a literature review was conducted to get to know more about agroforestry policies and specifically the MTS in Ghana and the specific region of study. This helps me to link the findings of my interviews with the MTS policy. Moreover, it is used to support, validate and analyse my findings (Johnston, 2014). For acquiring peer-reviewed scientific articles on my topic, databases as Google Scholar and Scopus were used by entering search terms like: "*agroforestry polic*" AND Ghana* or *MTS and "Western Region".* Also, more general data (like demographic data) about the region of study was obtained through scientific papers as well as grey literature, by looking for Western North region of Ghana or Bia-Juaboso landscape.

3.6 Data analysis

My study concerns an explanatory research according to an interpretative case study design in which ethnographic and practice-based research are of key importance. Therefore, I use interpretative phenomenological analysis (IPA) combined with discourse analysis in which the basic unit of analysis was practice in order to stay aligned with the *PBA* (Starks and Trinidad, 2007, Behagel et al., 2017). The *PBA* follows IPA in terms of methodology (Behagel et al., 2017). Moreover, PBA focusses on practices and IPA analyses the lived experiences (practices) of phenomena, therefore it is a good method to use for data analysis. It helps to analyse 'sayings', 'doings' and 'things' as is described by the definition of practice (Section 2.2). Moreover, it contributes to analysing the themes of '*situated agency*' and '*logic of practice*' dealing with social structure, farmers' agency, traditions and customs (Cassell and Bishop, 2019, Starks and Trinidad, 2007). It also contributes to finding out what the MTS entails according to the local FC and local cocoa farmers and how the policy can be adapted in the future to stimulate adoption by farmers. Discourses of both the FC and indigenous cocoa farmers play an important role in how the policy is translated into practice as well as in the practices themselves. Therefore, after conducting the IPA I conducted a discourse analysis to delineate and analyse prominent discourses of both farmers and the local FC (Starks and Trinidad, 2007, Cassell and Bishop, 2019).

I used the software *ATLAS.ti*, since my dataset was large, to properly analyse my data. This data consists of transcriptions of all interviews and fieldnotes. Furthermore, I used the pictures that I made to sustain my analysis. Since the transcriptions are based on translations of what the respondents answered, they do not include pauses or accented words of the respondents. Interesting respondent features were captured in memos to use during data analysis as well as in the reporting. All quotations used in the report are corrected for spelling errors made during the transcription of the data. Moreover, abbreviations used in transcribing the data to make the process faster, are restored to their original in quotations used in the report.

In the data analysis, I made use of a combination of top-down (deductive) and bottom-up (inductive coding in which I established predefined codes, but also made new codes based on the data and its interpretation (Fereday and Muir-Cochrane, 2006). For example, I predefined codes for the traditions and customs of farmers with '*logic of practice*' and the interaction of human agency of farmers and social structure with '*situated agency*' according to my theoretical framework and research questions. Inductive codes that were established concerned among others 'advantages, 'disadvantages' and 'heard about the MTS'; the last one indicating if a farmer only knows the TS or also the MTS.

For the quantitative aspect of my study I used descriptive statistics. The dataset is not large enough and of enough similarity to do statistical tests (Bernard, 2011). However, descriptive statistics help to

indicate for example more prominent discourses over less prominent ones. To do this, I did not always use the total amount of farmer informants as 100%-indication. I used the total amount of informants who said something about a certain topic as the total (100%). Accordingly, I quantified the different responses within that topic. For instance, I only asked MTS farmers why they are practicing the MTS, therefore I used 32 as a maximum (100%), since there were 32 MTS-farmers that I interviewed. I used four scales in my research: 0-25%, 25-50%, 50-75% and 75-100%. At first I thought that 75-100% would not be reached, yet it did occur, therefore this is used as a separate class. Since I only have two interviews with the local FC, quantities illustrate 50% (1 FC officer) or 100% (2 FC officers). Differences between communities, gender and MTS versus non-MTS farmers were hard to statistically test, therefore these were determined by me based on judgement of the qualitative responses and their quantities.

Moreover, some parts of my findings are not found based on only specific questions, but as well on aspects filtered out of transcriptions of the interview in general. This is especially true for most of the reasons that were given about why the trees are or are not planted on the MTS-land (see Section 4.6 of the results). For this, I indicated the amount of farmers' who stated something that could be a reason for planting or not planting the trees and took that as the maximum amount based on which the quantities for the different reasons mentioned were calculated.

3.7 Limitations

The main limitation of this study considers time. Namely, this study concerns a thesis of six months, which is a short period to conduct research. However, I made the research questions specific and focused, such that the research would still be meaningful. Moreover, I used both qualitative and quantitative methods, which ensured data triangulation, leading to increased internal and external validity of the research (Denzin, 2015). However, this made that there was less time for proper ethnographic research which limits in-depth findings on the practice of the MTS, since time is an important factor in ethnographic research (Van der Arend and Behagel, 2011, Ortner, 1995).

Also, response bias could have formed a limitation, since I am a white Western researcher, which could have made informants respond differently, i.e. because they want to say the socially desirable thing (Paulhus, 1991). Besides, some farmers seemed afraid of the FC and my link to them, which could have also made that farmers would not tell me the truth. However, my introduction letter from the Wageningen University (Appendix III) showed my independence and made farmers to speak more freely. During the fieldwork a local translator supported me. This could have also led to response bias as well as translator bias (Ghazala, 2002). However, response bias is probably not that big, since he is young, which made it easy for informants to talk to him. Research fatigue is not an issue in my study, as little research has been done in the study area, thus people were very open and everyone wanted to talk to me freely without any form of compensation. Sampling bias, since I used mainly snowball sampling, could have influenced my research (Noy, 2008). For instance, on one day I only spoke to petty trader women in the same community who may give similar answers that are not representative for the whole community.

Furthermore, I realize that as a researcher I could also pose a bias to the research. For instance, I am a student in Europe and therefore I have a Western ontology, which can influence the way I interprete the responses of the informants, since they probably have a different ontology (Blaser, 2009, Hames, 2007). On top of that, I sometimes easily got emotionally involved in touching situations, which made it harder to stay in the researcher role (Dickson-Swift et al., 2007). Therefore, I kept an eye on myself

and also kept a diary, which was useful to assess my influence on the research and correct for this (Bernard, 2011). Also as much as possible, I was diplomatic, open-minded and respectful towards my informants (Dickson-Swift et al., 2007).

3.8 Ethical considerations

My research follows the Netherlands code of conduct and specifically the Wageningen code of conduct, therefore following the five principles of scrupulousness, reliability, verifiability, impartiality and independence as described in Eijsackers et al. (2008) and Algra et al. (2018). I told the informants the full purpose of my study without any deception, since I think this did not influence the way they provided information. Also, since my research regards a sensitive topic, I ensured every informant anonymity on information that could harm them or their surroundings (Appendix IV). Beforehand was decided not to capture the informants' names because of topic sensitivity, even though informants did not mind. Moreover, every participant gave verbal consent on using their community name, making field notes and recording interviews as well as the use of quotations (Appendix V). This consent was asked after explaining the purpose of the study, but before participating in the research in any way. Besides, they were able to pull out of the research at any time without a justification (Appendix IV).

4 Results – the practice of the MTS

In this chapter I show the results of my study. I integrated the findings on the research questions in the subchapters, since these findings interact with each other. This creates a holistic view on how indigenous cocoa farmers practice the MTS and how this links to the policy. My research questions are as follows:

MRQ. *How do indigenous cocoa farmers in the Juaboso district practice Ghana's Modified Taungya System?*

RQ1. How is the MTS described by the local FC and by indigenous cocoa farmers in the study area?
RQ2. How does indigenous cocoa farmers' *situated agency* shape the way in which they practice the MTS in the study area?
RQ3. How does indigenous cocoa farmers' *logic of practice* shape the way in which they practice the MTS in the study area?
RQ4. What needs to change in the current MTS in order for farmers to adopt and carry out the system in the future?

I start with explaining that farmers rather know the Taungya System than the Modified Taungya System. Secondly, I explain how the system and its steps are described in general as well as the reasons for farmers to engage in the system or not. Accordingly, I explain how the described steps work out in practice, whilst indicating the specific steps it concerns. After this, I show how the whole system is perceived by illustrating the advantages, disadvantages and the general feelings about the MTS. I wrap up by pointing out the changes that are needed to improve the MTS according to the farmers and the FC. The headings I use are closely linked to or are quotes of farmers and are therefore rather indicative than structurally concrete. In the headings, I indicate to which research question(s) the section is mainly linked by putting for example '(RQ1)' or '(RQ1, RQ2)'.

In the figures of the results I show below, I indicate links to the concepts of situated agency, logic of practice or both based on the colours as shown in Figure 5. Furthermore, I use a blue colour as well, this is a neutral colour to indicate the practice or topic that I am illustrating. Besides, in every sub-chapter of the results I indicate the differences I found between communities, men/women and MTS/non-MTS farmers.

Figure 5 The colours that are used in the results for indicating the practice or topic and the links to the different concepts.

4.1 'I have only heard about the Taungya' (RQ1)

Less than a quarter of the farmers (Figure 6) has heard about the name the Modified Taungya System, they all know 'the Taungya'. The MTS policy as well as the local FC describe that farmers have a 40% share in timber revenues, which was absent in the old Taungya system (Forestry Commission, 2017, Agyeman et al., 2003). Two farmers describe the difference right; they describe that in the MTS rather than the TS farmers have a financial share (percentage) in the trees. The others mainly describe that in the MTS the FC will hire workers to plant the trees, rather than that the farmers are planting it as well as the opposite of this that now the farmers have to plant the trees rather than the hired workers. The MTS policy describes that farmers should plant the trees under supervision of the FC (Ministry of Lands & Natural Resources, 2016). Yet, based on my observations and farmers perceptions proper supervision and monitoring is often lacking (see also 4.6.6).

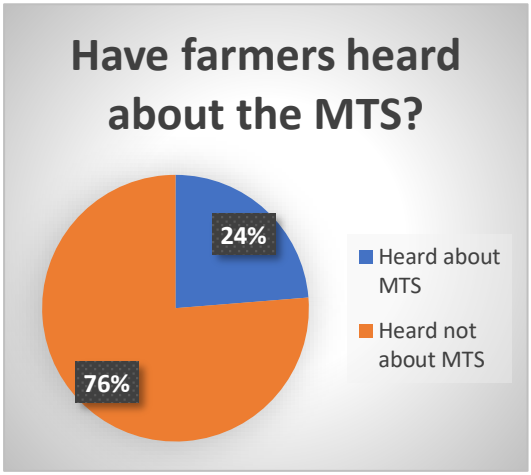

Figure 6 Percentage of farmers that heard about the MTS.

'He is saying that the Taungya and the Modified Taungya System are the same thing, that there is no difference. The farmers still have to apply for it and then the FC gives the land to the farmers. So when they give the land to the farmers, what they do is that farmers have to plant their crops and then also the trees. And then in the MTS the FC said the farmers should plant the crops and then the FC would plant the trees.'[1] *(Farmer #17, Male, Nkwanta)*

'The MTS is also a system of farmers getting land. But this time the FC allows them to plant the trees themselves and then do the pegging themselves and do everything in the farm including planting their crops.' (Farmer #11, Female, Nkwanta)

'But later on they came and introduced something that is the modified way. So that time they told them they would also get some percentage out of it.' (Farmer #9, Male, Teabenti)

Furthermore, almost half of the farmers that claim to know the difference between the TS and MTS are Taungya leaders. Moreover, it is mainly MTS-farmers and men who know the difference, yet most leaders are men. There are no specific differences found between the communities. Since most farmers only heard about the name 'Taungya' and not the MTS, I mainly write 'the Taungya' in the Results chapter, such that I stay close to farmers' practice.

[1] Note that all the quotations that are shown are not literally what the farmers said, but are translations by my translator of what they said.

4.2 The Taungya and its purpose described (RQ1, RQ2, RQ3)

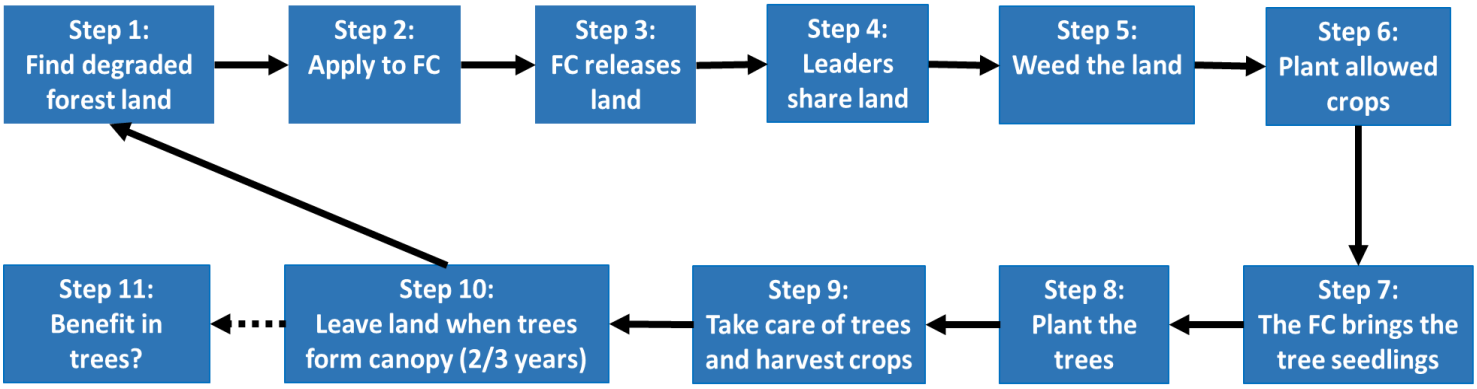

Figure 7 The different steps of the Taungya as described by the farmers and the local FC officers.

Figure 7 shows how farmers and the district FC officers describe the Taungya in general. It is rather the farmers that apply to the FC when they want land to farm on, than the FC trying to get the farmers to do the system. Mostly, it is also the farmers who find the degraded land and report it to the FC when they apply for the Taungya. Afterward the FC inspects if the appointed land is indeed degraded and then releases it to the leaders in the group or community, the so-called 'Taungya heads'. These first three steps are the ones that are described by both the local FC and farmers and acted upon similarly. For the steps four to ten, Figure 7 shows that farmers weed the degraded land and then plant their crops. Accordingly, the trees need to be planted within the same piece of land. After 2 to 3 years the trees will have formed a canopy and then the farmers have to leave the land, which is also described by the policy (Agyeman et al., 2003). The farmers can again apply for new land, as such the system can be repeated. However, there are differences in how farmers and the local FC describe the meanings of the different steps as well as how they are acted upon. Also, there is a difference in how farmers describe the system and how they act upon it in practice. Step 11 is shown separate from the other steps. In the MTS farmers have a 40% share in timber revenues. Yet, this step is highly contested as well, therefore I put the question mark within the step.

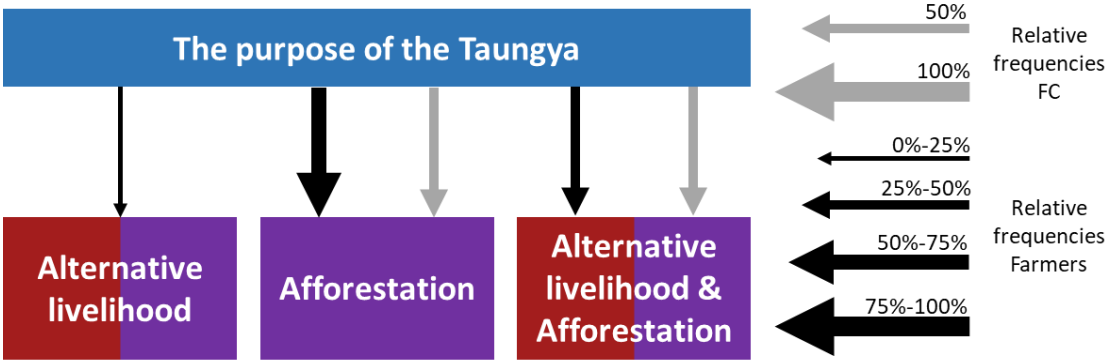

Figure 8 The purpose of the Taungya according to the farmers.

There are three different discourses on the purpose of the MTS as shown in Figure 8. According to more than 50% of the farmers the purpose of the MTS is afforestation which was mainly stated by men.

'The main reasons is because of climate change. The only way they can fight climate change is to plan trees, so the FC wants the farmers to plant trees to mitigate climate change.' (Farmer #54, male, Nkatieso)

'The FC can't plant the trees themselves. So they want the farmers to weed and then plant the trees. They use the crops like plantain to deceive the farmers, so that the farmers will plant the trees for the FC.' (Farmer #29, male, Nkwanta)

Farmers express that they see that the forest is degraded and they experience the effects this has. This situation can instigate the purpose to be described as only afforestation. Moreover, some farmers express that the system is just there to help the FC. It is only the crops that they get, but apart from that they are just helping the FC and as such government to plant trees, which is also what the last quotation above stated. Also, the FC officers describe the purpose to be mainly the afforestation of the forest:

'Ooh, the purpose is to reforest where the forest is degraded. So you don't even practice Taungya where the forest is in good shape. You only do it in a degraded area. Where the place is degraded. You know the forest we have, as a manager, where the forest is degraded you have to, I mean, bring back trees to the place' (FC officer #2, male)

'Oh afforestation. It's a form of plantation. People are encroaching the forest reserve to cultivate land. Before it was community land, but now it is reserved as a forest. So most communities they went into the forest. … So forest land diminishes. As a matter of that we need to plant them back, such that we will not lose our forest cover.' (FC officer #1, male)

Moreover, for the FC it is a way to decrease forest encroachment. Also, maybe because the FC officers see afforestation as the main purpose of the MTS, they inform the farmers about it in this way. Moreover, the FC sees the livelihood aspects also partly as the purpose of the MTS:

'So in so doing, people are now less encroaching because of MTS. Why don't we allow them to cultivate, but as you attend to your food crops, you are also weeding around the trees and take care of the trees for us…' (FC officer #1, male)

Less than 25% of the farmers see the purpose to be the livelihood aspect, namely the food they will get from the Taungya. This purpose is mainly described by Teabenti and women. In the last discourse farmers see both the livelihood aspect as the planting of the trees to be the purpose of the Taungya, 25%-50% of the farmers, of mainly Nkwanta and Nkatieso, state this combination as being the purpose. This combination of sustaining farmers and increasing food security as well as afforestation is what the policy describes as the purpose of the MTS (Forestry Commission, 2006, Forestry Commission, 2010, Forestry Commission, 2017)

'She sees that the purpose is that the government sees that those people living in the forest communities are very poor. As a result of that they have no place to eat, to get food. Because of that the government decided to give them food. So the purpose of it is that it will provide them food and increase their livelihoods.' (Farmer #41, female, Nkatieso)

'For the government it is the planting of the trees and also for the communities it is the food security and the income level that will be improved, that is why the FC is giving out the Taungya.' (Farmer #48, male, Nkatieso)

There are no specific differences in what MTS and non-MTS farmers describe as the purpose of the MTS.

4.3 'No other land left to farm on' (RQ2, RQ3)

Why are farmers engaging in the system? Do they have this desire to protect the forest or is the reason different? In this section I illustrate the reasons why farmers engage in the Taungya based on MTS-farmers responses and how these link to the different concepts (Figure 9). Since it's about farmers engagement in the Taungya, this section is linked to all the steps of the Taungya (Figure 7).

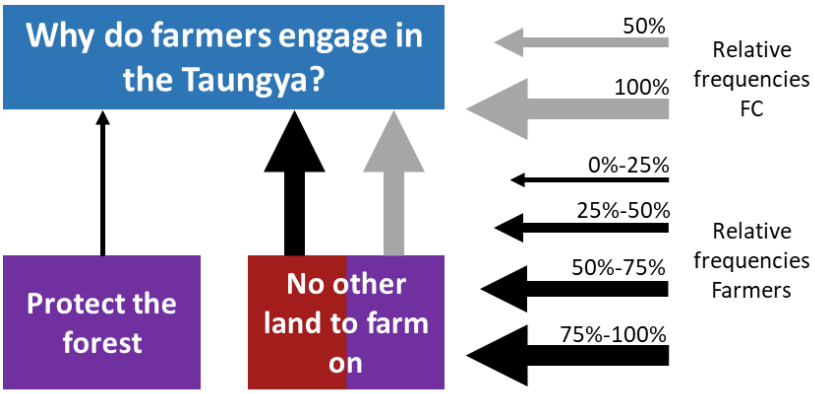

Figure 9 The practice linked to why farmers engage in the Taungya.

Farmers engage in the system based on the environmental situation they are in. All their land is converted to cocoa, so apart from that they have no other land left to farm their food crops on. 75%-100% of the farmers (Figure 9) mention this as the main reason as well as both of the FC officers. Forestry Commission (2006) states that the policy is there to support forest-fringe communities that experience land scarcity. My observations as well confirm that there is no other land left to farm on which makes farmers engage in the MTS. Furthermore, in my observations in the communities I saw that living conditions were often poor and farming was often their only way to generate an income to sustain their families, especially in Teabenti. The FC mentions, due to an increased population size a lot of farmers used to encroach illegally into the forest, to farm their crops there to sustain their families. Namely, because their land was not sufficient. Now, because of the MTS fewer farmers are encroaching the forest according to the FC. In a sense farmers are forced by the situation to engage in the Taungya, because the forest and cocoa land induces land scarcity and gives no other place to farm than the Taungya.

It is not only the situation that drives them to do the Taungya. Namely, one of the reasons they say there is no other land to farm on, is because farming is their way of living and also they need food and money to sustain their families.

> *'For myself, the main reason I am doing it, is that now all my land has been converted to cocoa. So there is no other place where I can plant my food crops, so I have to go to the forest to plant crops to feed my family.' (Farmer #38, female, Nkatieso)*

> *'In this place they can only do farming. And their cocoa farm already burnt down, as a result of that the only place they get money from is the Taungya.' (Farmer #6, female, Teabenti)*

Farming is what they know and what they do in this area as the main activity. I also observed this when asking people their occupation, almost all answered 'I am a farmer', especially in the smaller communities. It seems to be part of their traditional lifestyle. This makes the Taungya a way for them to do what they do best. Moreover, as a matter of custom they need food and money to sustain their family. This is something you hear and see a lot when you are there, both in the interviews as well as through observation. There are also not many alternatives in the area that I have seen. Alternative

livelihoods as beekeeping are mainly still to be developed. Many farmers also asked me if I could help them or if I could organize something through which they could obtain skills to do some small business.

Moreover, in general both the MTS farmers and the non-MTS farmers both say that more people participate in the Taungya for the same reason as I just described. There is no other land to farm on so everyone does the Taungya. Specifically in Teabenti I observed that almost everyone does the Taungya, also because it was hard to find non-MTS farmers there to interview.

> *'There's a lot of people here and they don't have land for their food crops. So when the government releases it everyone runs for it.' (Farmer #48, male, Nkatieso)*

Apart from the discourse that farmers have no option but to do the Taungya, the other discourse that came up was to protect the forest. However, less than 25% (Figure 9) of the farmers mention this as a reason to do the Taungya and the FC did not see this to be a motivation for farmers to participate in the MTS. It is slightly more prevalent than other reasons that are mentioned by farmers, therefore I included it here.

> *'The time the FC came and they were giving out land. Then she thought about it and thought it to be a good initiative to plant trees to sustain the forest and also get food to eat. It motivated her to do it.' (Farmer #47, female, Nkatieso)*

> *'I live in this community, so when the forest is destroyed I have to volunteer to protect my forest reserve. … The forest also protects our cocoa farms and other farms and it also helps them to get soil fertility. If we didn't protect the forest that would also be no rainfall. That's why he's doing it.' (Farmer #2, male, Nkwanta)*

Some farmers have seen the situation the forest is in and seen how much it is degraded. Therefore, they believe the Taungya is a good initiative to participate in to plant trees and help the forest to recover. Yet, there are only a few farmers who see this as the pure reason to participate. Other reasons that are mentioned concerned that farmers should support the government in what they do, that they followed their parents in doing the Taungya.

There are no specific differences between the responses of farmers in the different communities as well as between men and women. However, when I visited the MTS farms I observed more women than men farming the land. One woman there told me that men like their cocoa farms better and are lazy to do the Taungya. She said they will maybe only help in the weeding of the land.

4.4 'Those who really need it, don't get it' (RQ2, RQ3)

This section is linked to step 4 and 5 of the Taungya (Figure 7), which is about the sharing and weeding of the land. This is linked to who will get Taungya land and also the amount. Moreover, it connects to the reasons why non-MTS farmers are not practicing the Taungya. In general, only a few farmers state that there are more farmers not engaging in the Taungya, which is mainly mentioned by non-MTS farmers and men from only Nkatieso and Nkwanta.

In policies regarding the MTS is stated that the system attempts to strengthen equity and increase participation of vulnerable groups, i.e. women and land-poor farmers (Agyeman et al., 2003). Yet, in practice it does not work out like that; not everybody gets to do the Taungya. Figure 10 shows the four main ways that determine whether you get Taungya land and also how much of it you get according to the responses of the farmers and the local FC. I explain all of them one by one, indicating how they shape practice and showing the differences between communities, gender and MTS/non-

MTS farmers. Moreover, I indicate how they are linked to the concepts of *logic of practice* and *situated agency*.

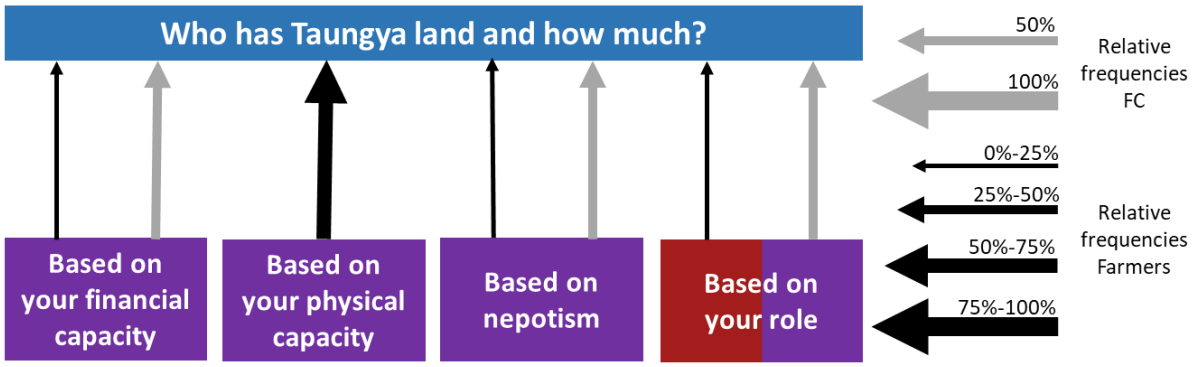

Figure 10 The practice linked to who gets Taungya land and how much.

4.4.1 'The Taungya requires a lot of money' (RQ2)

Less than 25% of the farmers mentions capital as a reason that influences whether you can practice the Taungya. Yet, it still a prominent reason that is named more often than others. Farmers mention that the land for the Taungya is released in cocoa off-season, which is for many farmers a time that they do not have money. This makes it already hard for farmers to participate. Also, farmers say that you have to pay money to the leaders to obtain land. The leaders as well as the FC officers state that the leaders use this money to hire people to demarcate the land into portions for everyone. However, the FC and also some farmers mention that it is a bribe and the only way for you to get access to land. In policy documents it is not specified who should demarcate the different portions for the farmers, only Ministry of Lands & Natural Resources (2016) puts forward that farmers should be able to demarcate and register their land and trees in the community. Moreover, this payment to the leaders also determines how much land you can obtain:

> *'… So the number of acre you take you have to pay for it. So every acre is 50 cedis.' (Farmer #43, female, Nkatieso)*

50 Cedis is around eight euro, so you would have to pay around 8 euros for every acre of land. Yet, there are only two or three farmers who specifically mention this, all from Nkatieso. The local situation seems to influence whether farmers can practice the Taungya based on the power of the leaders.

Moreover, it is hard to start up the Taungya system without money. My observations and also Farmers put forward that the initial weeding of the land is hard work, so if you are not strong you need to hire workers for that (Section 4.4.2). Moreover, you have to buy the material for the food crops you want to plant.

> *'We don't have enough capital to start up during the MTS-season. Sometimes we will clear the land, but don't have money to buy the plantain suckers and then others.' (Farmer #15, male, Nkwanta)*

> *'… she does not have the strength to go to the farm and do it all by herself, so because of that for any activity that has to be done in the farm she has to hire labourers to do it. The cost of labourers to weed in your farm is very costly …' (Farmer #39, female, Nkatieso)*

As such your financial situation influences whether you can practice the Taungya and how much land you can acquire according to both farmers and the FC. For the ones with less capital, who need the Taungya the most to sustain their families, it is harder to get access to it. There are no specific

differences between gender, MTS/non-MTS farmers and communities, except that only farmers from Nkatieso mention that farmers need to pay 50 cedis per acre of Taungya land to the leaders.

4.4.2 before I was young and strong to do the work, but now… (RQ2)

Your health and strength is a huge determining factor in whether you can do the Taungya and how much land you can get. Between 50% to 75% of the farmers mention this as a reason for not doing the Taungya or taking less land. The FC did not see this as a reason for farmers not to engage in the Taungya.

> *'… then the leaders demarcate the land for you based on your strength you get 1 or 2 acres …' (Farmer #6, female, Teabenti)*

First off, farmers state the leaders demarcate the land, based on strength. If you are stronger you can get more land than others or if you have enough money to hire labourers to work for you. In my observations of Taungya land in the forest that was just allocated I could see the weeds were substantive, as such weeding the land is hard. Farmers also mention that the weeding of the land is very hard work, which is mainly mentioned by women. Therefore, if you have a bigger land you need to weed more; you need to be strong or have capital. Farmers say the youth and the elderly cannot do the Taungya, because they do not have the strength. However, they are the ones who might be more in need of an alternative livelihood, since in my observations there is not much they can do, especially since most of them didn't go to school as is mentioned by multiple farmers.

Moreover, who are not healthy, have an illness or had an accident are not able to do the Taungya according to farmers. Mainly women state that the Taungya farms are far away in the forest and it is hard to get there. Above that, it is hard work you cannot do when you are not healthy. Also, mainly men state that it is hard to combine with their cocoa farm. This restricts farmers from being able to practice the Taungya.

> *'… she was very young and healthy and she could work as she was supposed to. But now that she is older, she does not have the strength as she was used to …' (Farmer #24, Female, Teabenti)*

> *'… But when he went there he nearly died, so he fell sick and then they brought him to the community. So since then he decided not to do it, because he is not healthy.' (Farmer #50, male, Nkatieso)*

There were no specific differences between the communities and MTS/non-MTS farmers.

4.4.3 It depends on who you know and who knows you (RQ2)

It is only non-MTS farmers who mention that the leaders share the land only with their family and friends (nepotism), making that not everyone has equal to engage in the Taungya, some even call it corruption of the leaders. That only non-MTS farmers say this influences the percentage of farmers that name this as a reason (Figure 10). In total, it is less than 25% that states that nepotism influences who gets to do the Taungya. Farmers say that sometimes, the leaders have already shared the land before you hear that there was Taungya land available.

> *'They discriminate in this community. They have to know you very well and you need to have a friend at the traditional council, before they give it to you. So even when they were giving it out, she didn't know, so they will have already given it out before you hear about it. So no matter how hard you try, you can't get it. Now she is not even motivated to try, since she can't get it anyway.' (Farmer #30, female, Nkwanta)*

'Sometimes too, the chiefs will come for it and then distribute it to his favourites. So to me, the real people who need it don't get it. … So you don't really go to look at the background of the applicants to see even the credibility of the names that they have presented to us, whether they are really people that are real farmers or interested in farming. But we go and demarcate the land for them.' (FC officer #1, male)

The FC sees nepotism as a reason why the farmers who need it the most do not get the land. They even mention that they do not have the capacity to do a background check and see if the farmers who apply, need the land or are even farmers. In the end, the situation of who you know and who knows you shapes how farmers think about the Taungya and also who gets to do the Taungya.

There are no specific differences between communities and gender on this aspect.

4.4.4 'if you are in a higher ranking, you get a bigger portion' (RQ2, RQ3)

'They didn't get the acreages equally, it is based on strength. But also he said it's based on leadership, if you are higher in ranking you get a bigger portion. …' (Farmer #4, male, Teabenti)

'… if you are a leader, you first have to select your own portion that you think is very good for you, then you take 1 hectare of it. Then you share the rest to your group members.' (Farmer #41, female, Nkatieso)

Less than 25% of the farmers state that your role in the community determines how much Taungya land you can get. It is only the leaders and the FC who mention this. Hierarchy in the community shapes the practice of the Taungya. This hierarchy is described as their way of doing things. In my observations I also saw that the leaders found it very normal that they had bigger portions of the land. The leaders say they get at least 1 hectare of the Taungya land, while most farmers state to get 1 or 2 acres. However, this means that getting more land because you are higher in ranking deprives others of getting (more) land, who might need it more based on their needs (e.g. to feed the family).

Since the Taungya leaders I interviewed are all MTS-farmers and men (except for one woman), it is MTS-farmers and mainly men who mention this aspect. Moreover, there are no specific differences between the communities.

In sum, these four discourses on why farmers do not do the Taungya are not based on the Taungya itself. They are all implications of why they didn't get access, but not that the system itself was bad. It is only to a minimal extent that farmers mention it is a waste of time or it is tedious work without benefit. This is also why these are not incorporated in Figure 10. However, it shows that it is rather accessibility than that farmers do not like the Taungya, which implicates why farmers are not practicing the Taungya. This contradicts with the intention of the policy to make it equally accessible to all farmers (Agyeman et al., 2003).

4.5 'We can't plant cocoa and cassava in the forest' (RQ2, RQ3)

In policy documents regarding the MTS I did not find specifically which food crops can be planted under the MTS. I found that major crops produced under forest plantation schemes, of which the MTS is one, are: Plantain, Cereals including maize and millet, Tubers including yam, cocoyam and cassava, and vegetables including tomato and pepper (Forestry Commission, 2017). In Ghana Forest Service (1998) I found that permanent food crops are not allowed to be planted and cassava is only allowed under special circumstances. The farmers and the FC also describe that only certain crops can be planted in the Taungya, which is related to step 6 of the Taungya (Figure 7). However, the farmers and

the local FC states that planting cassava is not allowed at all. Farmers mainly describe they can plant only food crops including plantain, cocoyam and yam and only some mention maize and vegetables.

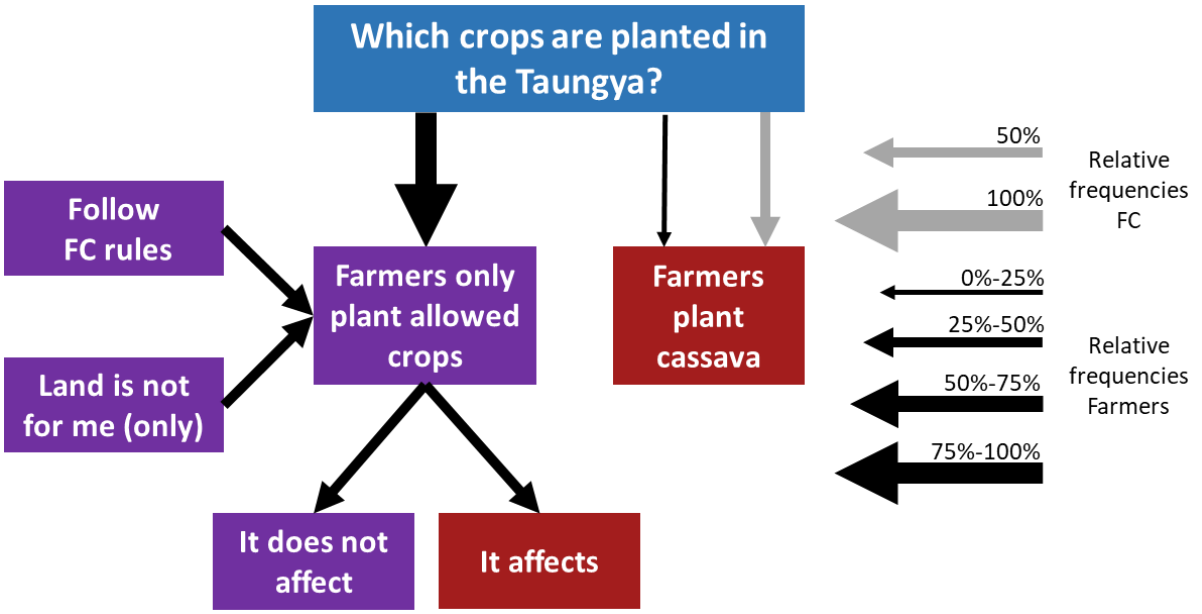

Figure 11 The practices linked to the planting of the crops in the Taungya.

Farmers main concern is that they cannot plant cassava on the Taungya land and to a lesser extent cocoa as well. Yet, less than 25% of the farmers mention that farmers plant cassava on the land (Figure 11). One of the FC officers also mentions that some farmers still plant cassava in the farm. However, more than 75% of the farmers say that they only plant the crops that they are allowed to plant. Moreover, in my observations of the Taungya land I haven't seen cassava being planted.

The main thing farmers say is that the FC will (threaten to) destroy their farm if they plant crops that are not allowed to be planted. The FC confirms that they threaten the farmers with this sometimes. It seems to be effective, since 25 to 50% of the farmers mention this as a reason why they don't plant cassava and cocoa. The FC uses its power strategically to steer the farmers not to plant all crops they would want. Moreover, when I asked if the farmers ever did some activities or planted some crops that were not allowed, I heard a strong 'no' or they would say the FC would not let them do that. This situation influences farmers strongly. This fear for the FC is a reason why farmers say that it doesn't affect them (25-50%) that they cannot plant cassava or cocoa in the forest. Namely, it is government land, so they find that they should follow the rules.

> *'No, because the government did not give it to us just to plant any crop we want, so we cannot do it like that.' (farmer #35, female, Nkatieso)*

However, there are also farmers that say the opposite, specifically non-MTS farmers. Namely, the Taungya creates a situation where farmers can use land in the forest, yet it is not their land. This makes that farmers take less good care of it, since it is not for themselves anyway. I also saw Taungya land in the forest that was not taken care of properly; full of weeds and without any trees.

> *'Here in Africa we have the mentality that when something does not belong to us we also do not take good care of it. So because it is of the government, the farmers think they can farm it anyway they want, because soon they will be leaving the place.' (Farmer #48, male, Nkatieso)*

Others understand that if they plant cassava or cocoa in the forest it will stay there forever. They say the forest is not only for me, it is for everyone (25-50%, Figure 11). When they would plant those crops it will destroy the forest and there will be no forest for future generations to also get land to do the Taungya. As such, part of the farmers see the importance of the forest, specifically with the eye on future generations.

As shown in Figure 11, farmers mention to the same extent (25-50%) that they are affected by not being allowed to plant cassava and cocoa.

'It affects him in a way that while they have planted plantain over there, they are not allowed to plant cassava and cocoa. so they can get the plantain, but not the cassava, so they cannot pound fufu. So now they have to buy the cassava before they can make their food.' (farmer #4, male, Teabenti)

'It's because the cocoa is what we have been doing since we were young, even my grandparents did it before the Taungya.' (Farmer #25, male, Teabenti)

Cassava is part of their traditional food. They use cassava and plantain to make fufu (Figure 12), 'their food'. I observed that it is part of their diet and also I ate it often myself. Now they can get a lot of plantain from the Taungya land, but for cassava they still have to buy it. Moreover, even cocoa belongs to their traditions and customs. They describe themselves as cocoa farmers and their main activity is also cocoa farming. It is part of their lives. Therefore, it affects them that they cannot plant cassava in the Taungya.

Figure 12 Farmers' traditional food 'fufu' made of cassava and plantain and the way they prepare it.

Moreover, generating income is a main driver of the farmers. Custom wise, they are looking for ways to generate an income to take care of the family and for example pay for the children's school fees. Cocoa and cassava give a lot of money according to the farmers, therefore they see it to be bad that they cannot plant it in the Taungya land. Especially so, because the farming activities, such as the weeding, are similar to their cocoa farm, yet they cannot plant cocoa.

'It affect her that she cannot plant cocoa, because all the farming activities you have to do for the cocoa to be strong, they are also doing the same in the Taungya farm. But then they cannot plant the cocoa there. They just work there for some years to only protect the trees and only get plantain. So she cannot plant cocoa to get money out of it. so that's why it affects her.' (Farmer #55, female, Teabenti)

Differences between gender, communities and non-MTS/MTS farmers could not be analysed. The questions on which this information is mainly based were included in the interview guide (Appendix I) later on when an amount of interviews, to make a reasonable comparison impossible, was already conducted.

4.6 The trees are planted vs. the trees are not planted (RQ2, RQ3)

This part has to do with steps three and step seven to eleven of the Taungya system, see Figure 7. There is a large amount of tree species recommended to plant in forest plantations, of which the MTS is one of the plantation schemes, according to Forestry Commission (2016), specifically see appendix III of this reference, page 87-89. According to Forestry Commission (2006) main tree species planted in the MTS are among others exotic species as *Tectona grandis* (Teak), *Cedrela odorata* (Cedrela) and indigenous species as *Terminalia superba* (Ofram), *Mansonia altissima* (Oprono) and *Terminalia ivorensis* (Emire). In the Taungya land in my study area mainly *Cedrela odorata* and *Terminalia superba* were planted. According to policies regarding the MTS, the farmers are the ones supposed to plant the trees on the MTS-land (Ministry of Lands & Natural Resources, 2016). On the contrary, in practice there are many different narratives from both the farmers and FC officers about whether the trees are planted or not and by whom. Figure 13 shows the main ways in which is talked about the planting of the trees. These are both sayings about why the trees are not planted as well about why they would be planted. The data informing this figure is mainly filtered from the interview transcripts in general, as such it is not based on specific asked questions. Only the box showing 'trees important' was informed by a specific interview question on this, which could induce the high frequency of farmers mentioning this. In both pictures in Figure 13 you can see the food crop plantain, the difference is in the trees, in the picture that says 'MTS without trees there are no trees visible meaning the trees were not planted or died. Generally, from my observations of the Taungya land in the forest of the three communities, I saw more land without than with trees, which is why the font size of 'MTS without trees' in Figure 13 is larger than 'MTS with trees'. I will explain all the boxes of Figure 13 and how they relate to the planting of the trees.

Figure 13 The practice linked to the trees in the Taungya.

4.6.1 MTS with or without trees – Benefit in the trees or not? (RQ2, RQ3)

Farmers do not know that they have benefits in the trees. The MTS describes that farmers have a 40% in the trees (Forestry Commission, 2017). However, less than 25% (Figure 13), consisting of mainly MTS-farmers and males, mention this or know this. Therefore, this only contributes in a small way in planting the trees in the Taungya. Also, it is mainly Taungya leaders who state to know about this financial share in the trees. Many farmers (25-50%) do not know that they have a benefit in the trees, which seems to be the biggest contribution to why the trees are not planted. This makes that they do not have the motivation to plant them. Moreover, more than 50% of the farmers (Figure 8) mention that the purpose of the Taungya is afforestation. They say that if they are planting trees for the government, then they should also get something out of that. This is also based on their drive to generate an income.

> *'He sees that because of lack of transparency between the farmers and the FC; the farmers are not encouraged or motivated and they don't do it as they used to. Because the farmers can see now that even when they plant the trees they don't get any benefit from it. When the farmers plant the trees, at the end the timber contractors will come and take the trees and they will not give the farmers anything of that. …' (Farmer #27, male, Nkwanta)*

> *'No, in case of the benefit-sharing aspect, they know, they know. Because we before we even demarcate or allocate the area, we educate them that when you do it and do it well, at the end of the day when it is due for harvesting, you will get a benefit out of it.' (FC officer #2, male)*

The point this farmer makes about transparency or maybe more communication is interesting. The FC states that farmers really know that they have a 40% share in timber revenues. They also name that since the MTS was introduced, in which farmers have this share in the trees, the trees are now planted. As such, the FC officers are saying mainly the opposite of the farmers; that farmers know they have a benefit in the trees and that is why they are planting the trees. Moreover, there are farmers who say that the FC promised them some money or some percentage for planting the trees. Yet, they say there are not sure if they will get it or they are sure that they will not get it. Also, in my observations it mainly seemed that it is the leaders who know more about this share in timber revenues than the farmers. Therefore, maybe the FC officers communicate it to the leaders, but perhaps the leaders do not communicate it to the farmers.

There are no specific differences found between the communities in this part.

4.6.2 MTS with or without trees – why hire workers, why not pay the farmers? (RQ2)

The policy states that farmers are supposed to plant the trees in the MTS under the supervision of the FC (Ministry of Lands & Natural Resources, 2016). However, since not all farmers plant the trees, the FC hires workers to plant trees in the Taungya farms. Namely, the FC states they have to reach yearly targets of the amount of trees planted. Therefore, they hire workers to reach these targets, which contributes to the trees being planted in the Taungya (Figure 13). Moreover, zero to 25% of the farmers also mention that hired workers are planting the trees. However, there is also zero to 25% of the farmers who say that the hired workers do not plant the trees and that the hiring of the workers by the FC demotivates the farmers to plant the trees themselves. It is only farmers of Nkwanta and Teabenti that state this, whereas farmers of Teabenti state it more often than those of Nkwanta. Also, it mainly concerns male farmers. Based on my observations and informal conversations it seemed Teabenti was in conflict with the FC about the hiring of the workers. The farmers see it as an insult, since they can plant the trees themselves.

'She's saying that the only thing that is also worrying them is that they don't understand why the fc has to pay labourers to plant the trees for them, while they are also in the farm. The fc can also give them the money so that they will plant the trees. They don't pay them anything. So maybe next time the fc should give them the money so that they will plant the trees' (Farmer #1, female, Nkwanta)

Farmers do not understand why the FC pays workers to plant the trees and why they do not pay the farmers, which causes the demotivation. Also, there are farmers that say that it is a new measure that the FC is hiring workers. Yet, other farmers say that the new measure is that farmers now have to plant the trees instead of hired workers.

There are no specific differences between MTS and non-MTS farmers on this aspect.

4.6.3 MTS with trees – 'trees are very important' (RQ2, RQ3)

'Through the trees they can inhale good air, because trees absorb carbon dioxide in the air, that is bad for human beings. When they plant trees it will stabilize the environment.' (Farmer #12, female, Nkwanta)

Between 50 to 75% of the farmers (Figure 13) describe trees to be important to sustain the forest, consisting of farmers form mainly Nkatieso and Nkwanta. They state among others that it gives fresh air, it gives more rainfall and it combats climate change. Farmers have seen the degradation of the forest and its effects on their lives through their own experience. Through this experience they see the forest and planting of trees to be important. However, if you asked what farmers would plant if they owned the land in the forest, almost all mention that they would plant cocoa and cassava, which will destroy the forest. Besides, sometimes it seemed farmers would state that they have heard in trainings that sustaining the forest is important, rather than believing it themselves.

The FC rather says the interest of the farmers is their food crops and not the trees, which is also a reason the FC givers for why the trees are not always planted. Furthermore, they do not mention that farmers plant the trees, because they want to sustain the forest.

'Our interest as the FC is the tree component, but also for them their interest is their food stuffs.' (FC officer #2, male)

There are no specific differences found between men/women and MTS/non-MTS farmers in this part.

4.6.4 MTS with trees – 'I am even afraid of the FC destroying my crops' (RQ2)

As well as the previous discourse, 50% to 75% of the farmers (Figure 13) state that they should follow the rules of the FC, otherwise sanctions will follow. It is mainly MTS-farmers that state this. Furthermore, there are no differences found between the communities and men/women. One of the rules is the planting of the trees, therefore this discourse contributes to farmers planting the trees. This discourse relates to what I described in Section 4.5 and Figure 11. Farmers are afraid the FC will destroy their crops, as such they will comply with the rules and plant the trees. The FC also confirms these sanctions and say that sometimes they are needed. Another explained sanction when the trees are not planted is that the FC will not give the Taungya again to the community the next time.

'Only what they know is that it is a government land. So whilst they are taking their crops from it, they should also plant the trees. Otherwise if they won't plant the trees, the FC will come and destroy their crops.' (Farmer #45, female, Nkatieso)

'Oh you know, we don't really have a binding document with them, with their leaders. But they know that the sanction is that next year when you come you will be denied the land.' (FC officer #1, male)

In my observations I could also see that a lot of farmers are scared of the FC in the way they answered my questions. For example, MTS-farmers told me that they never bend or break the rules of the FC, while non-MTS farmers do state that there are MTS-farmers who break the rules and for example do not plant the trees.

4.6.5 MTS without trees – 'Then we plant it and then it all dies' (RQ2)

Up to 25% of the farmers mention that the reason why there are no or not many trees on the Taungya land is because they die of drought (Figure 13). In my observation of the Taungya land I did see dead trees, which could have died of drought. This section has to do much with step 3 of the Taungya (Figure 7); the release of the land by the FC. The farmers indicate that the FC releases the land late, namely in the rainy season, because of that when the farmers are done clearing the land it will be dry season, so when they will plant the trees they will die of drought. The FC states quite the opposite, they say they release the land mainly on time. Yet, sometimes they have to wait for approval from the head office in Accra, this is when the release of the land can be late. Also, one of the FC officers states that it is the farmers who refuse to plant the trees on time, which causes the trees to die due to dry season. During my field observations, which was in the dry season, I saw farmers rushing to plant trees on the Taungya land, yet I couldn't find out whether it was because of the late release by the FC or farmers reluctance.

> *'they are not doing it properly. The farmers will plant the trees when it comes close to dry season, because of when the land/seedlings were given, so then the trees will die.' (farmer #29, male, Nkwanta)*

There are no specific differences found between communities, men/women and MTS/non-MTS farmers.

4.6.6 MTS without trees – 'they never came to inspect' (RQ2)

Less than 25% of the farmers (Figure 13) state that the trees are not planted in the Taungya, because the FC does not do proper monitoring, which is mainly mentioned by men. The FC does not come to check if the trees are planted. There are farmers that say the FC does not care about the trees, but just about money, which is only said by male non-MTS farmers. Therefore, it is not farmers who did this themselves who say this, it is other farmers who claim to know about these kinds of practices. This poor supervision makes that farmers do not see the need to plant the trees. Moreover, in my observations I saw that close to the communities and to the bigger roads the trees were well planted, yet the further I went in the forest and the poorer the road was, the fewer trees I saw. This could indicate that the FC only checks where access to the MTS land is easy, one farmer also indicated this.

The FC officers state that they do monitoring and regular check-ups. However, they also say that they do not have the capacity to go everywhere and check everything.

> *'… any activity can be carried out in the forest, since there is no supervision from the whole FC. If we didn't do something like that, the forest will not be sustainable.' (Farmer #51, male, Nkatieso)*

In policy documents is documented that farmers should be maintaining the trees and the FC should provide trainings for farmers to carry out these activities properly (Forestry Commission, 2017, Agyeman et al., 2003). However, farmers often mention that these trainings are absent or limited, which the local FC again relates to their lack of capacity. Furthermore, although the policy states overall supervision is the responsibility of the FC, management and control of the MTS is a joint responsibility for the FC and farmers together (Ministry of Lands & Natural Resources, 2016), and as

such not as farmers and the FC in my study area indicate that it is the responsibility of the local FC only.

There are no specific differences found between the communities.

4.6.7 MTS without trees – 'you have to leave the land while you invested in it' (RQ2, RQ3)

Farmers state that if you plant the trees, they form a canopy after two to three years, so then you have to leave the land, which is also what the FC and the policy indicates (Agyeman et al., 2003). Therefore, if the farmers do not plant the trees, they can stay on the land for longer (0-25%, Figure 13). This is mainly mentioned by non-MTS farmers from Nkwanta and Nkatieso. There are no differences found between men and women on this topic. Farmers indicate that the land is fertile, as such if you do not plant trees, you can get a lot of money and food without having to invest in acquiring and cultivating new land. Their customized drive to acquire food and an income to sustain the family can shape that they don't plant the trees, because they want to stay on the land for longer.

> *'… When she engaged with someone the person said that; the farmers are thinking that when they plant the trees they have to leave the land because their plantain will not grow well after 2 years when the trees are grown up and have formed a canopy. So as a result of that the farmers do not plant the trees.' (Farmer #49, female, Nkatieso)*

In my observations in the forest, I saw Taungya land on which only part of the trees were present, the woman who was working on the land told me she was there already for five years, because the workers did not come to plant the trees.

4.7 Advantages – 'food and money' (RQ1)

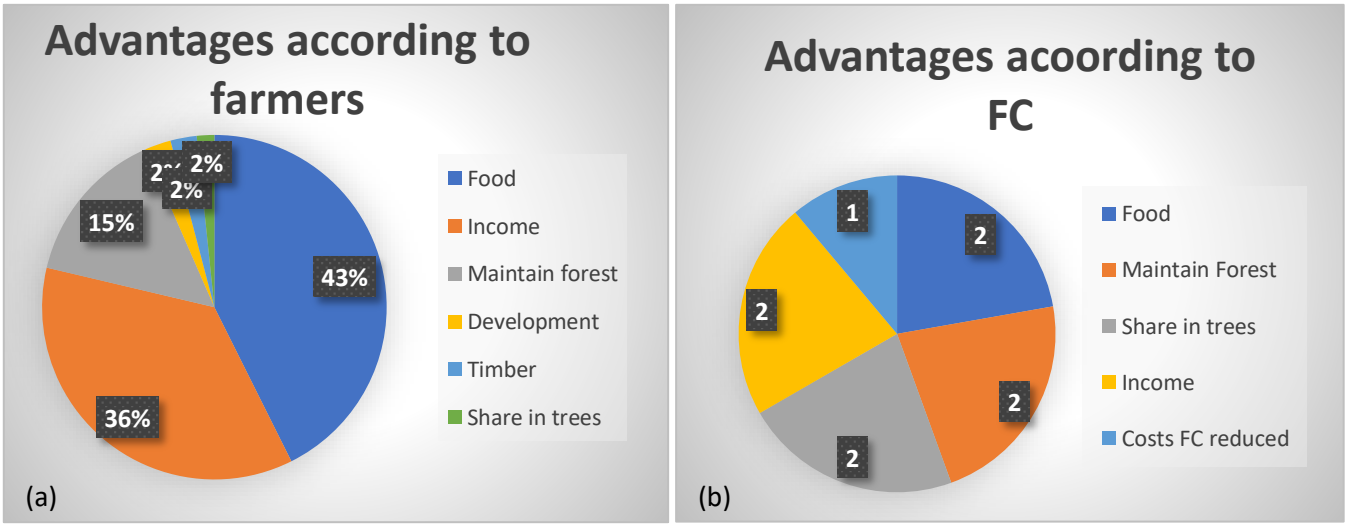

Figure 14 Advantages of the Taungya according to (a) farmers and (b) the FC.

It is not only the steps in the Taungya that have an implication on its practice. The advantages of the Taungya that farmers see also have important indications for practice. Figure 14a shows the main advantages the farmers describe of the Taungya. Note that these are advantages that were specifically named when I asked about the advantages of the Taungya. This means that other advantages named elsewhere in the interviews with the farmers are not included here.

Food is the main advantage of the Taungya according to farmers, followed closely by generating an income, with the latter one mainly indicated by women. This can be linked to Section 4.3, where I explain that farmers mainly engage in the Taungya, because they do not have other land left to farm

on and because they get food and an income from it, which I also observed. Moreover, in Section 4.3, I also describe that it is their custom to acquire food and an income to sustain the family. Similarly, the FC sees one of the main advantages as well to be food and an income for farmers. The policy also states one of the goals as improving food security (Forestry Commission, 2017).

Moreover, the FC describes the financial share farmers have in the trees as one of the main advantages that farmers have (Figure 15b). This is also what the policy indicates as one of the main benefits (Forestry Commission, 2017). However, it is 2% of the farmers that describe this as an advantage. This can be linked to Sections 4.1 and 4.6.1, where I show that farmers do not know that they have a (40%) share in tree revenues. Maintaining the forest is for both the FC and the farmers an advantage of the Taungya. Yet, it is less than a quarter (15%, Figure 14) of the farmers, mainly Taungya leaders and men, that state this as an advantage. On the contrary, Figure 13 shows that 50 to 75% of the farmers find trees important.

For the farmers remaining advantages are the use of timber (2%) (e.g. to construct their houses and furniture) and development (2%); meaning that the government can use the income they get from selling the trees for developmental activities in the communities like installing a water pump. For one of the FC officers another advantage concerns saving costs (Figure 15b). Normally, they would have to hire workers to establish plantations, weed and take care of the trees. Yet, now the farmers are doing this, so it saves the FC costs.

There are no specific differences between the communities and non-MTS/MTS farmers in the advantages they describe.

4.8 Disadvantages – 'the major problem that we are facing is financial' (RQ1)

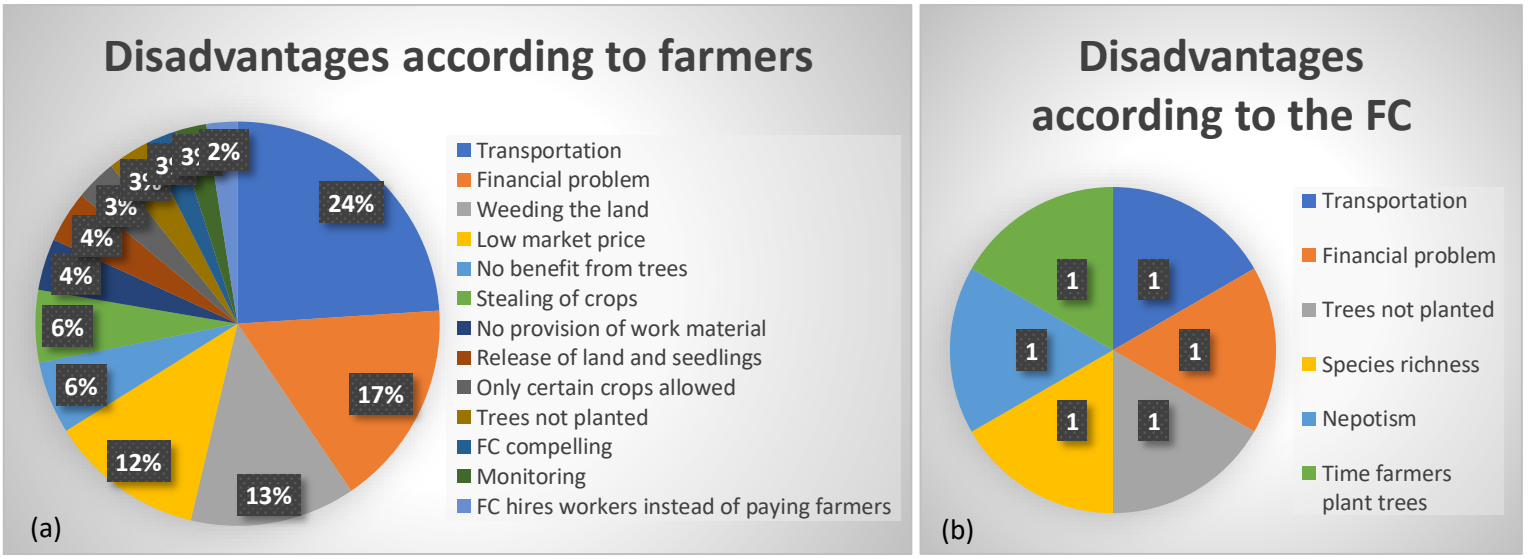

Figure 15 Disadvantages of the Taungya according to (a) farmers and (b) the FC.

There are more disadvantages described by farmers than advantages, see Figure 15a. However, many of these disadvantages are only mentioned in low quantities (2-6%). The main disadvantage is connected to transportation (24%). Farmers say the road is bad, it takes long to get to the farm and on top of that you have to carry work material and plant material (crop/tree seedlings), see Figure 16. In my observations I also saw and experienced the bad road as well as the time it takes to get to the MTS-land; I walked at least an hour before I reached what was only the beginning of the Taungya farms. Mainly farmers from Nkatieso mention this disadvantage of transportation. Nkatieso, is the

community furthest away from the forest reserve. Farmers see financial problems to be the second-largest disadvantage (17%). It is hard to start up the farm without capital; sometimes there is no money for buying work material and the food crops. Also, the farm is far and farmers have to carry the tree seedlings and their farm products there, yet often there is no money to pay for transport. As such, the farm product and seedlings decay before they get to the farm.

Figure 16 The road to farmers' Taungya land (a, c), a farmer carrying tree seedlings to the Taungya farm (b).

The weeding of the land is another disadvantage, which is mainly mentioned by women. According to farmers and my observations the land is fertile making weeds grow hard and in large quantities, which makes weeding the land a difficult task. Moreover, based on my observations and farmers responses the main crops that are planted in the Taungya are plantain, yam and cocoyam, which are also described as MTS crops by the policy (Forestry Commission, 2017). Nowadays, more and more people are doing the Taungya, therefore more and more people sell the same products. This makes that there is too much of the same food on the markets, which decreases the selling price. This disadvantage is mentioned by 12% of the farmers.

The rest of the disadvantages are mentioned in low frequency. 6% of the farmers state it is a disadvantage that they do not have a financial share in the trees, which is linked to what I describe in Section 4.6.1. Most other disadvantages are also linked to what I describe in the whole of Section 4.6, where I explain situations and discourses that can explain why the trees are or are not planted in the Taungya. The disadvantage of monitoring, in which farmers state that the forestry commission does not do proper monitoring, is only mentioned by farmers of Nkwanta. The three disadvantages that are not linked to Section 4.6 are 'no provision of work material', 'stealing of crops' and 'trees not planted'. For example, farmers often go to the farm on their slippers, they do not have proper boots, therefore they say it is a disadvantage that the FC does not provide them with work-material. Besides, the policy indicates that the work material to carry out the activities should be provided by the FC (Ministry of Lands & Natural Resources, 2016). Moreover, thieves steal the food crops of the farmers when they are not at the farm, which makes the farmers run at a loss. There are farmers (3%, Figure 15a), who find it a disadvantage that the trees are not planted. It is mainly non-MTS farmers that state this. Also, I have not encountered one MTS farmer who told me that he or she did not plant the trees themselves. It is only Teabenti farmers that state that it is a disadvantage that the forestry commission is compelling; meaning that the forestry commission steers or forces them too much, to do this and that at specific times.

The disadvantages the FC mentions in Figure 15b, which are similar to the ones of the farmers, are: 'transportation', 'financial problem' and 'trees not planted'. They see that for some farmers it is hard to get to the farm, since it is often far away from the community. It is as well hard to obtain Taungya land, since one of the FC officers says you have to pay the leaders before you get land. He suggests this is because the leaders use this money to hire workers to demarcate the different portions for everyone. However, by some farmers it is seen as a bribe, which I explain in Section 4.4.1. Moreover, that the trees are not always planted is also seen as a disadvantage by one of the FC officers. One of the FC officers also mentions a specific ecological issue, which is the species richness, meaning that mostly only a few species are planted in the MTS. This makes that it becomes more a plantation, than a diverse forest. Figure 15b shows that nepotism is as well a disadvantage according to the FC. This entails that the leaders share the land mostly to their friends and family and that they and sometimes their family members take bigger portions of the land. This is linked to what I explain in Sections 4.4.3 and 4.4.4, where I explain that not everyone who wants to do the Taungya can engage in it. The last disadvantage the Forestry Commission mentions is the time farmers plant the trees. They say that farmers often refuse to plant the trees on time, which makes that the trees die due to dry season. This is the opposite of what farmers say, namely that the forestry commission releases the land late, which makes that they can only plant the trees when it is already dry season.

4.9 The Taungya system is good (RQ1)

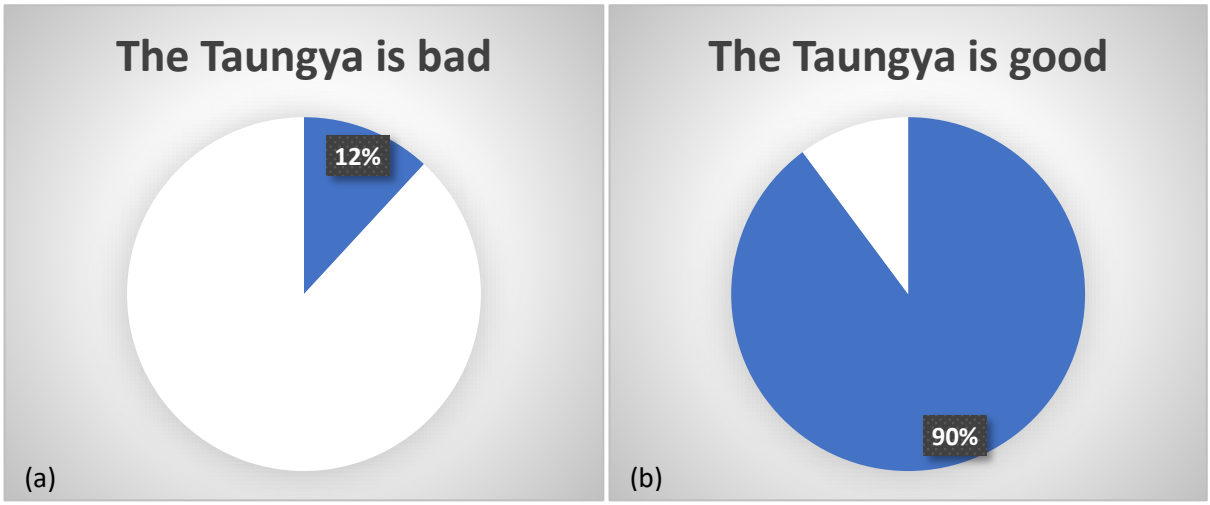

Figure 17 The percentage of farmers that describe the Taungya bad (a); the percentage of farmers that describe the Taungya as good (b).

Figure 17b shows that 90% of the farmers see the Taungya to be good when you ask how they feel in general about it. Few farmers (12%, Figure 17a) mention that the Taungya is bad. Also, few mention that the Taungya is both good and bad, but in different aspects, that is why figure Figure 17a and Figure 17b do not form 100% together.

The reason for the Taungya to be described as good is that it improves farmers lives. It gives them food and money and it increases broader food security.

'if they take that land from me, I am dead. Eeeey madam' (Farmer #10, male, Teabenti)

Farmers depend on this system. The quote I used is what one of the farmers spoke in English. The rest of the interview was in the local language, yet this he stated firmly in English. That farmers depend on the Taungya relates to what I explained in Section 4.3, that they do not have other land left to farm on and that they need a place to get food and money to sustain their families. The FC describes as well

that farmers see the Taungya in general to be good and helpful. One of the FC officers mentions that he would ban the Taungya if it was not for the livelihood aspect. He states that there are farmers that use the Taungya as a cover to encroach the forest illegally. Namely, they will say they are going to the Taungya farm, while they are actually going to an illegal farm in the forest they established.

The reasons why some farmers state that the Taungya is not good is related to capital and the forest. They say it is bad because the trees are not planted well, so the forest is not regenerated. Others say that you do not get anything out of the system, you only run at a loss. It is only farmers from Nkwanta and Nkatieso that mention that the Taungya is bad, no farmers from Teabenti mentioned this.

4.10 Changes needed for MTS adoption or improvement? (RQ4)

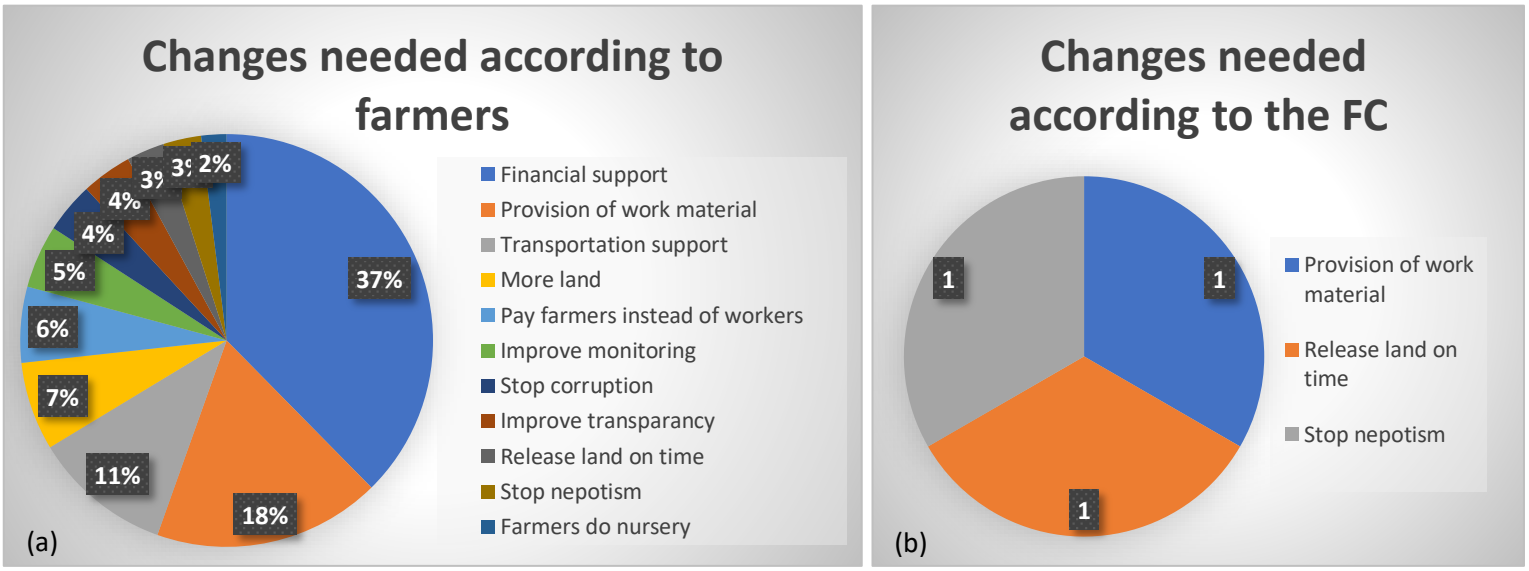

Figure 18 Changes needed in the MTS policy according to farmers (a) and the FC (b).

I asked farmers and the FC which changes they think are needed to make the Taungya more attractive for farmers to adopt. Actually, many farmers are adopting and carrying out the Taungya, since they depend on it. I found the changes that are needed are not per se for farmers to adopt the system, but rather to improve the system and make it more effective.

The main change farmers describe that is needed is financial support (Figure 18a). 37% Of the farmers describe that they need financial support in general, which is named mostly by farmers from Teabenti. While others name specifically that work material should be provided (18%) and that there should be support in transportation (11%). These are still related to financial support, because if the Forestry Commission would give them money, they would be able to buy work material and pay for transport. One of the FC officers also mentions the provision of work material (Figure 18b) as something that would improve the MTS, since it would motivate the farmers to do the work according to him. The other changes that are needed according to farmers are only mentioned in small quantities. It is mainly women that describe that the Forestry Commission should provide them with more land (7%) as well as the support in transportation. Furthermore, MTS farmers more often state that the changes that are needed are the provision of work material and that the Forestry Commission should pay farmers instead of workers (6%) for planting the trees. On the contrary, stopping corruption (4%) and nepotism (3%) is only mentioned by non-MTS farmers. Moreover, non-MTS farmers are the ones affected by nepotism. One of the FC officers states stopping nepotism as a disadvantage (Figure 15b) as well as something that needs to change (Figure 18b) to make the Taungya better.

Improved monitoring (5%) and transparency (4%) are also named by farmers in Figure 18a to be needed. A lack of both these aspects is described as some of the reasons that the trees are not planted on the Taungya land. Farmers do not know they have a benefit in the trees, which demotivates them to plant it. Also, farmers describe effective monitoring of the system to be lacking. This also holds for releasing the land on time (3%). Namely, farmers claim that if the land was released on time, then they would plant the trees in rainy season, which would prevent them from decaying. This timely release of the land is also mentioned by one of the FC officers to be needed. Even though, as I stated in Section 4.6.5, the same FC officer claims to release the land mostly on time in another part of the same interview.

5 Discussion

I start this chapter by answering and discussing the findings of the specific research questions. Accordingly, I discuss the findings on the main research question and its implications. Also, I highlight the theoretical and methodological implications as well as improvements and recommendations for further research.

The main research question (MRQ) and the specific research questions were as follows:

MRQ. *How do indigenous cocoa farmers in the Juaboso district practice Ghana's Modified Taungya System?*

RQ5. How is the MTS described by the local FC and by indigenous cocoa farmers in the study area?
RQ6. How does indigenous cocoa farmers' *situated agency* shape the way in which they practice the MTS in the study area?
RQ7. How does indigenous cocoa farmers' *logic of practice* shape the way in which they practice the MTS in the study area?
RQ8. What needs to change in the current MTS in order for farmers to adopt and carry out the system in the future?

5.1 Description of the MTS by local FC and indigenous cocoa farmers

In general, the Taungya itself and how it works is described similarly by both farmers and the local FC. They both describe it as a system where degraded land is released to groups of farmers for two to three years and where trees and crops are planted simultaneously inside the forest. Moreover, both describe that the system is good and improves farmers livelihoods as well as that farmers depend on the MTS. This is similar to what is described in policy documents (Ministry of Lands & Natural Resources, 2016, Forestry Commission, 2006). However, there are as well considerable differences in the specific descriptions of the workings of the system as well as in how the system is perceived. Both with their related implications for what happens in practice, indicating that there is no straight line from policy to practice. Moreover, the way the Taungya is described is sometimes different from how it is acted upon.

First of all, farmers describe the Taungya system (TS) rather than the Modified Taungya System (MTS). It is only less than a quarter of the farmers who say they have heard about the MTS and only two farmers described the policy correctly that the difference is that they now have a (40%) share in timber revenue. However, not even one farmer described that 5% of the benefit of the trees goes to the community as is part of the MTS policy (Ros-Tonen et al., 2013, Acheampong et al., 2016, Forestry Commission, 2017). Moreover, the MTS, where a 40% share in timber revenues was initiated, is a way in which the government uses power strategically to motivate farmers to plant the trees, as is informed by the concept of *governmentality* (Rose et al., 2006, Kalame et al., 2011). Besides, the local FC officers state that farmers know that they have a 40% financial share in the trees at the harvest. Specifically, the FC officers described this share in the trees as one of the main advantages for the farmers, yet only 2% of the farmers said the same. Therefore, according to farmers description, this benefit in the trees is non-existent, which even demotivates them to plant the trees. Besides, a lack of supervision as well as low farmers' representation in management is still present, though according to the MTS policy as compared to the TS this should be improved (Agyeman et al., 2003, Ministry of Lands & Natural Resources, 2016). This makes that in the study area it seems farmers still practice the TS and not the MTS.

This difference in the way farmers and the local FC officers describe the MTS can be due to a lack of communication between farmers and the local FC about the policy. Even more so, the farmer groups have their leaders, who are mainly the ones talking to the FC officers. Therefore, the lack of communication can also be (partly) caused by the leaders. The leaders seem to have different or more information about the MTS than the farmers in their groups. It can be hard to transfer information from the FC to the farmers through the leaders as intermediaries. Different interests and ontologies are at play and therefore information may be shared or received differently or may be reframed (Pauwelussen and Verschoor, 2017, Kwiek, 2020). Apart from a lack of communication or information loss, another possible cause can be the lack of tree registration and contract forms, indicating as well a lack of trust. As other papers also describe tree registration is often lacking and there are no formal contracts (Johnson Gaither et al., 2019, Acheampong et al., 2016). This means when the trees are ready for harvest, which is at least 20 years after the farmers cultivated the land, it is hard or impossible to track which trees belong to which farmer. Without registration, it becomes hard to receive your financial share in the trees as a farmer. Maybe this also causes farmers not to believe that they have a share in timber revenues, even if they would know about it, which is also what Acheampong et al. (2016) describes. Also, in general farmers are hesitant to participate in agroforestry practices on their land, since they are not sure they will receive tree revenues based on a lack of registration and as such tree tenure insecurity (Fountain and Huetz-Adams, 2018, Bani and Damnyag, 2017, Oduro et al., 2014).

The purpose of the MTS policy is to improve farmers' livelihoods in forest fringe communities without harming the forest (Adjei et al., 2012, Ros-Tonen et al., 2013, Ministry of Lands & Natural Resources, 2016). However, more than 50% of the farmers, as well as both of the FC officers, state that only afforestation is the purpose of the MTS. It is only one of the FC officers that states that the purpose is also to improve farmers livelihood. As such, it can be imposed by the FC that farmers state afforestation as the purpose of the MTS (Odysseos, 2011, Menjivar and Lakhani, 2016). Yet, farmers are also divided about who has to plant the trees; there are farmers that state that the workers, hired by the FC, are supposed to plant the trees. Besides, farmers delineate that they get demotivated to plant the trees, since the FC pays workers to plant the trees instead of the farmers. This, together with naming afforestation as the purpose of the MTS, could mean that farmers see the MTS as a labour system. Farmers even state that they are planting trees for the government, because the government wants to replace the trees that they cut down. The paper of Adjei et al. (2018) states as well that the primary purpose of the MTS for the government is the planting of the trees, yet the government sees it as a co-management system, rather than a labour system (Acheampong et al., 2016). It indicates that farmers see the MTS differently as the government (Blaser, 2009). In cocoa agroforestry, the purpose is to increase tree cover, but also to sustain farmers cocoa production and yields, since trees protect the cocoa form the sun. However, farmers often still prefer full-sun cocoa farms (Ruf, 2011). Therefore, it is not just the MTS that is seen differently by different stakeholders, it is also agroforestry systems in general.

All communities describe the purpose to be afforestation in similar quantities. Whereas there are more farmers in Nkwanta and Nkatieso that describe afforestation and livelihood improvement as the purpose, more farmers in Teabenti describe only livelihood improvement as the purpose of the MTS and they state least of all that trees are important for maintaining the forest. Also, in Teabenti it was hard to find non-MTS farmers. Teabenti is the smallest of the three communities with the least access to markets as well as few opportunities for other ways to generate an income (Lax and Köthke, 2017).

This could make that farmers in Teabenti depend on the MTS and see the livelihood aspect to be the purpose. This can as well strengthen why other farmers see it as a labour system to plant trees, rather than naming afforestation as the purpose because of imposition of the FC. Moreover, even though more men state maintaining the forest as an advantage, it's only 15% of the farmers. On the contrary, for the FC it is one of the main advantages of the MTS. They are both stakeholders in the matter, but with seemingly different interests and ontologies leading to different descriptions of the MTS (Blaser, 2009, McKee, 2009).

The disadvantages of the MTS are as well mainly described differently by the FC officers and the farmers. The first seven disadvantages farmers mention, see Figure 15, all have financial grounds, even though the policy states that the MTS will financially support farmers (Ministry of Lands & Natural Resources, 2016). Among others, farmers have no money to pay for work material or to hire workers to weed the land. Moreover, they receive less income because of the low market prices and people stealing their crops. Therefore, financially the system seems to help farmers, but also gives them a lot of problems. The FC partly also describes these financial issues for farmers. Yet, they are also concerned that the trees are not always planted or that farmers plant the trees too late, which makes that the trees die due to drought. This again shows this different interest in the system of both the FC and the farmers (McKee, 2009, Blaser, 2009). Differences between the interests of stakeholders is also found in cocoa agroforestry practices (Ruf, 2011, Anglaaere et al., 2011). For example, Anglaaere et al. (2011) describe farmers' interest in planting cocoa hybrids that need less shade, which decreases the diversity and amount of trees that are being planted, resulting in a lower conservation value.

On a general note, both farmers and the FC describe the Taungya to be good, because it improves farmers' lives. However, as I described there are differences in how the system is described by both the FC and the farmers. These differences also make that they see the MTS differently based on different norms, values and beliefs. This, in turn, has implications for what happens in practice, indicating that there is no straight line from policy to practice. These findings also support the concept of *governmentality*, specifically *realist governmentality (McKee, 2009)*. Namely, the FC tries to steer farmers to certain practices based on the policy, yet farmers also internalize the policy in a certain way based on their norms and beliefs (McKee, 2009). For example, Teabenti farmers only see the livelihood aspect to be the purpose of the MTS and not afforestation, because they depend on the MTS since they have little other options.

5.2 How farmers' situated agency shapes practice

There are multiple ways in which farmers' *situated agency* shapes practice. This is related to different types of 'situations'. Mainly, it is related to the social structure imposed by the policy and FC officers (McKee, 2009, Behagel et al., 2017). However, more specifically it is also linked to among others communication, local politics and the physical environment.

The policy, as well as the FC officers, states that the MTS is there to reduce the land scarcity problem and support farmers without harming the forest (Forestry Commission, 2006). This is also a way in which policy makers use power strategically to induce farmers to practice the MTS (Rose et al., 2006, Menjivar and Lakhani, 2016). Farmers also see that they have no other land to farm on and to generate an income through. In this way, *situated agency* shapes that farmers engage in the system. This is not only related to the social structure imposed by the FC, yet also by the physical environment. Namely, apart from the MTS there is hardly an option for farmers to acquire land for farming (stated by more than 75% of farmers, Figure 9), because of the forest reserve and their land that is all converted to

cocoa and subject to climate change (Adjei et al., 2018, Knudsen, 2007, Ruf et al., 2015). Therefore, farmers have no other option but to engage in the MTS, which was also found by Adjei et al. (2018). The same can be said for cocoa agroforestry, due to climate change cocoa farms suffer from drought, making agroforestry, because the timber trees offer shade to the cocoa trees, one of the only options for farmers to save their cocoa farms (Asante et al., 2017, Schroth et al., 2016)

The planting of the trees is also imposed by the physical environment as well as the social structure imposed by the FC. The FC informs the farmers about the importance of planting the trees in the forest and how it for example, combats climate change. Similarly, farmers have seen and experienced the physical environment and with that the degradation of the forest. In this way, farmers' agency is situated and 50-75% of the farmers say the trees are important to maintain the forest (Arts et al., 2014). This, in turn, can be a reason for farmers to actively plant the trees on the Taungya land. Other papers also suggest that personal experience and trainings can stimulate in this case farmers to plant trees (Aidoo and Fromm, 2015, Atkins and Eastin, 2012). However, in this case, the physical environment also works against farmers planting the trees. Namely, farmers describe that when they realized that their crops do not grow anymore when the trees form a canopy, farmers stopped planting the trees. As such their crops would grow well and harbour produce for longer. Acheampong et al. (2016) and Ros-Tonen et al. (2013) also indicate there is a lack of income between canopy closure and harvest due to competition with the food crops. In this way, the *situated agency* of farmers, imposed by the physical environment, negatively influenced the implementation of the MTS policy. Moreover, farmers state that often when they plant the trees, they die due to dry season. They say it is because the FC releases the land late, which makes that it will be the dry season when the farmers are ready to plant the trees. On the contrary, the FC says it is the farmers that do not want to plant the trees on time and that is why the trees die.

Another way in which the FC steers the farmers to plant the trees is through the 40% share in timber revenues farmers have (Rose et al., 2006, Forestry Commission, 2017). However, farmers do not seem to know about this, which demotivates them to plant the trees. Therefore, it can be that the situation of this communication lack induces farmers not to plant the trees based on their demotivation (Krott and Giessen, 2014). The paper of (Maguire-Rajpaul et al., 2020) strengthens this as they found that proper dissemination of information helped to increase cocoa farmers adaptive capacity, making them adopt cocoa agroforestry practices more easily. In general, farmers see the main disadvantages to be financial, even though one of the goals of the policy is to financially support farmers (Ministry of Lands & Natural Resources, 2016). Financial issues are often a reason why policy implementation is not completely effective (Hames, 2007, Acheampong et al., 2016, Kalame et al., 2011). Moreover, perhaps that the purpose is often seen as afforestation by farmers stimulates a *situated agency* where farmers expect compensation or payment for planting the trees. Besides, the situation in which the FC hires workers to plant the trees really demotivates farmers to plant the trees themselves. They do not understand why the workers get paid while they do not get paid when they plant the trees. The FC does not seem to realize this, which seems caused by this lack of communication between farmers and the FC, leading to unfavourable practices.

However, the *situated agency* of farmers does also lead to practices that are in line with the policy. Namely, it seems farmers mostly do not plant cassava and cocoa in the Taungya land based on my observations and interview responses. Farmers state they are afraid of the government destroying their crops as well as that they see that the forest land does not only belong to them. In this way, their agency is shaped by the steering power of the FC as is described by the concepts of *situated agency*

and *governmentality* (Rose et al., 2006, Arts et al., 2014). Some cocoa farmers and one of the FC officers mentioned that some farmers still plant cassava in the forest. Farmers say it is because of a lack of monitoring and supervision of the FC, which was also found in other studies (Kalame et al., 2011, Acheampong et al., 2016). This is as well another reason why the trees are not planted. The FC states that they do not have enough staff for proper supervision and monitoring, especially now that many farmers engage in the MTS. Other papers, like Adjei et al. (2018), Acheampong et al. (2016) and (Ros-Tonen et al., 2013) found this lack in capacity also to be an issue. There are also studies on agroforestry and forest management in general that found that capacity building and community participation is important for monitoring and evaluation (Neeff and Piazza, 2019, Chiemela et al., 2017). Increasing awareness on (importance of) management activities and increasing representation of local needs stimulates participation of local people in monitoring and evaluation practices (Villaseñor et al., 2016, Nath and Inoue, 2009). The MTS policy also indicates farmers are part of monitoring, they should maintain and take care of the trees and the FC should provide trainings for farmers to carry out these activities (Forestry Commission, 2017, Agyeman et al., 2003). However, as the FC mentioned, they do not have the capacity to do this creating a lack of monitoring and farmer awareness and participation in management. It could be said that the local FC officers are part of practice, maybe more than part of the policy making. They are the ones to implement the policy on the ground, yet even their *situated agency* seems to shape practice. For instance, the lack of staff and financial means makes that they cannot give proper trainings or do proper monitoring to improve policy implementation, as is also described by Adjei et al. (2018).

The *situated agency* of farmers is not only based on the steering of the FC nor the physical environment, also local politics play a role. Farmers practice the MTS in groups, with each of them having their leaders. The leaders I interviewed all stated they got 1 hectare of land or even more, while most farmers I interviewed got only 1 or 2 acres. Moreover, the leaders are often people of more wealth and higher ranking in the community. As such, they are in lesser need of the land than others. The studies of Mrema (2017), Pellissery (2007) and Johnson Gaither et al. (2019) Also state that local politics often makes that the elites capture most of the benefits. Furthermore, nepotism is described as a problem by the FC officers as well as non-MTS farmers; leaders share the land with their family and friends. Those who need it, but do not know the leaders will not get it. Different studies align with this, as they describe that co-management or decentralization of policies, like the MTS, is not always effective based on among others issues as nepotism and corruption in local settings (Awono et al., 2016, Coulibaly-Lingani et al., 2011, Etiegni et al., 2017). The FC mentioned nepotism as well as an issue of the MTS, which they want to solve by doing for example a background check. Yet, they do not have the capacity to do this, which again implies that even the local FC is part of practice.

Farmers financial and physical capacity also determines whether they can get access to the MTS. When you are not healthy or strong enough, like the elderly and the youth, you cannot practice the MTS, since the work is hard and the land is far. Yet, for example the youth are much in need of alternative livelihood options to generate an income since there is often no money to attend school (Garekae et al., 2017). Apart from this, the MTS requires financial means. If you don't have the strength to weed the land you need to pay workers to do it. Also, transportation costs and costs for buying food crops can be high. Financial issues are also described as main disadvantages of the MTS (Acheampong et al., 2016, Kalame et al., 2011). Furthermore, if you want MTS land you have to pay the leaders before you can get it. Some farmers say it is a bribe, yet it is also said that it is for the leaders to be able to demarcate the portions of the land for all the individuals in the group. Altogether, this makes that the

poorest farmers, who might need the MTS land the most, will not get access and as such practice it. The MTS policy indicates that the MTS should alleviate poverty and should be accessible to everyone specifically vulnerable groups like women (Ministry of Lands & Natural Resources, 2016, Agyeman et al., 2003), yet it seems to support only the wealthier farmers and the elite in practice. This indicates that there is no straight line from policy to practice.

In sum, the results indicate that farmers' *situated agency* does shape the practice of the MTS, both effective and non-effective, indicating that there is no straight line from policy to practice. The steering of the FC makes farmers afraid to lose their crops, which makes them plant the trees and only the allowed crops. However, on the other hand, that there is no financial compensation for planting the trees as well as other financial issues makes farmers demotivated to plant the trees as well as decreases the accessibility to practice the MTS. Moreover, adoption of the policy is large, since farmers have no other land to farm on. However, mainly the elites and the wealthier farmers seem to enjoy the benefits of the MTS. Besides, not only the *situated agency* of farmers, but also the *situated agency* of the local FC seems to influence how the MTS is acted upon in practice. This makes that my findings also sustain and complement the concept of *situated agency* itself, see Section 5.6.

5.3 How farmers' logic of practice shapes practice

Farmers' *logic of practice* shapes the practice of the MTS in different ways. There are ways in which the traditions and customs of farmers influence the implementation of the MTS negatively. However, it also seems that traditions and customs can become less prominent and even that the MTS could become part of their traditions and customs (Behagel et al., 2017, Krott and Giessen, 2014, Arts et al., 2014). Some farmers stated that they did the MTS, because they followed their parents. Moreover, some farmers are already doing the MTS or TS for more than 50 years.

Cassava is next to plantain, the other main ingredient of farmer's traditional food called fufu. They got a lot of plantain from the MTS farm, yet they are not allowed to plant cassava there. This affects 25-50% (Figure 11) of the farmers. For them, it is bad that they have a lot of plantain, but still have to buy cassava, which is expensive, to prepare their traditional food. Acheampong et al. (2016) also found that farmers do not understand the ban on the planting of cassava. The same can be said for cocoa farming. Cocoa farming is what they do and what represents their traditional farming practice, which is also indicated by Fountain and Huetz-Adams (2018). It affects farmers that the farming practices for the MTS are similar to cocoa farming, yet they cannot plant their cocoa. In this way, farmers' traditions, their food and main farming practice shape how farmers see and describe the MTS (Behagel et al., 2017). The same can be said for cocoa agroforestry, based on farmers traditions they prefer full-sun cocoa farms without timber trees (Ruf et al., 2015). However, cocoa farmers also seem to see the need of shifting towards agroforestry cocoa farms, since farmers' cocoa production and yields in full-sun systems are decreased through climate change (Asante et al., 2017, Schroth et al., 2016). In my research, this shift also seems to happen, since cassava and cocoa are (almost) not planted in the forest, based on my observations and interview responses. This could be due to farmers' being afraid of the FC destroying their crops as I explained in the previous section. However, it could also be that the MTS is becoming part of their life and *logic of practice* in which farmers understand that they cannot plant those crops in the forest. Namely, 25-50% of the farmers state that it does not affect them that they cannot plant those crops. Moreover, 25-50% of the farmers say they understand that the forest is not only for them but for everyone so they should not destroy it by planting those crops. In the same way, 50-75% of the farmers state that trees are important for maintaining the forest. Farmers have experienced the effects of forest degradation and therefore see the importance to

conserve the forest through the MTS. Especially, indigenous (rather than migrant) farmers could see this, because they have been in the area for longer and they could be attached to their natural environment, making that they care about what happens to it more (Aniah and Yelfaanibe, 2018, Yelfaanibe, 2011). Ballantyne et al. (2017) and Osberghaus and Demski (2019) indicate that personal experience helps in sense-making of imposed information. This could mean as well that conserving the forest is or could become part of farmers' *logic of practice*. As is also described by the *PBA*, practices are contingent and susceptible to change (Arts et al., 2014, Cook and Wagenaar, 2012).

Even though conserving the forest might be or become part of farmers' *logic of practice*, the trees are still often not planted in the MTS. As I explained in Sections 5.1 and 5.2 this can be because farmers do not know that they have a share in tree revenues. Yet, it can also be explained by using the concept of *logic of practice*. In the west, we may see these local farmers to be noble savages that want to protect the forest, yet most of them also just want to generate an income and sustain their families (Hames, 2007, Howitt and Suchet-Pearson, 2006). Farmers in these local communities have the custom to look for food and an income to sustain their families. Therefore, this can also be a reason why farmers are demotivated to plant the trees without getting any benefit from it as well as that they describe having no other land to farm on (75-100%, Figure 9) as the reason for doing the MTS rather than protecting the forest. Similarly, the main advantages are described to be generating an income (36%) and acquiring food (43%) rather than maintaining the forest (15%) as shown in Figure 14. Moreover, apart from that cassava and cocoa are traditional for farmers, the crops generate a higher income than the other crops, which is also a way in which it affects farmers that they cannot plant these (Knudsen, 2007, Acheampong et al., 2016). This custom to generate an income can also explain why the main disadvantages described by farmers are financial and why the smallest community, Teabenti, sees the livelihood aspect to be the purpose of the MTS.

Traditions and customs do not have to be similar to all farmers. For instance, there are traditional differences between men and women. It is specifically female farmers that describe the livelihood aspect to be the purpose of the MTS and income to be an advantage of the MTS. On the contrary, it is mainly men that name afforestation as the purpose and maintaining the forest as an advantage. This difference can be because women are the ones taking care of food to feed the family (Koopman, 1991, LeBaron and Gore, 2019). Moreover, though improved, women are still less engaged in the cocoa farming business than men, therefore the MTS is for them likely the main way to generate an income themselves (LeBaron and Gore, 2019, Friedman et al., 2019). Likewise, this suggests why mainly male farmers name afforestation as the purpose, since their main way of generating an income or taking care of the family is through the cocoa farm (Koopman, 1991, Knudsen, 2007, Fountain and Huetz-Adams, 2018). Also, women representation is often less, therefore often receive fewer trainings from NGOs or the FC about the importance of the forest (Kiptot and Franzel, 2012, Tripathi and Thapa, 2019, Reed, 2008). Male farmers are also the ones who state that more people do not do the MTS, which can be linked to male farmers being mainly engaged with cocoa farming As such, traditional gender roles in local communities can shape the practice of the MTS differently (Ros-Tonen et al., 2013, Behagel et al., 2017, Koopman, 1991).

Apart from being linked to the concept of *situated agency*, local politics are also linked to the concept of *logic of practice*. A local hierarchy within the community in which higher rankings get more benefits and have more power is related to customary law and tradition in many local community setups (Tamanaha, 2011, Divon and Bøås, 2017). However, this induces that farmers who really need the MTS to sustain their livelihood will have fewer chances to get access to it. According to Western ontologies,

this would mean limited effectiveness of policy implementation. However, for the farmers it may be business as usual as it is part of their traditional lifestyle (Blaser, 2009, Arts et al., 2014, Tamanaha, 2011). Moreover, around 90% of the farmers I interviewed stated that the MTS is good, because it improves their lives. Also, no farmer mentioned that it is bad that the leaders take such a big portion of the land for themselves.

Altogether, the *logic of practice* of indigenous cocoa farmers shapes how farmers practice the MTS indicating that there is no straight line from policy to practice. The most important *logic of practice* of farmers seems to be to generate an income to sustain their families, which explains most of the downfalls farmers see in the MTS. However, it seems like the MTS is also becoming part of their life as they have been doing it for long and for example they seem to accept and understand more that they cannot plant cassava and cocoa in the forest. However, aspects as local politics and traditional differences between men and women seem rather unchangeable and therefore will keep shaping the practice of the MTS. My findings by using the concept of *logic of practice* also have implications for the concept itself, I elaborate on this in Section 5.6.

5.4 Changes needed for MTS improvement not adoption

To make my research more meaningful I added the research questions of what changes are needed in the current MTS to make it more attractive for farmers to adopt in the future. First of all, adoption does not seem to be the issue. 90% of the farmers states the MTS is good since it improves their lives. Farmers depend on the MTS as they have not many options for other alternative livelihoods and since their land is converted to cocoa as well as that they have lower yields from the cocoa due to climate change (Schroth et al., 2016, Oyekale, 2015, Acheampong et al., 2016). Although changes for adoption may not be necessary, improvement is desirable for farmers, the local FC officers as well as the effectiveness of policy implementation.

Since farmers' main issues with the MTS are financial, which is also described by other studies (Acheampong et al., 2016, Kalame et al., 2011), the main change farmers need is financial support. Also, in cocoa agroforestry this is also one of the main concerns; farmers are not sure if they will have profit in timber trees planted based on insecurity about tree tenure (Fountain and Huetz-Adams, 2018, Bani and Damnyag, 2017, Oduro et al., 2014). Improving information dissemination about policies can help in solving these issue (Maguire-Rajpaul et al., 2020). As I explained in Section 5.2, farmers in the MTS seem not to know that they have a financial share in the trees. Therefore, improved communication could make policy implementation more effective and make that farmers will plant the trees. According to Adjei et al. (2018) proper communication is described in the MTS policy to be of high importance for effective implementation. However, the compensation system can also be the problem. This benefit, farmers will only get after 20-30 years when the trees are grown up. Besides, the farmers do not have any contract that shows which trees they planted. Other papers also state that tree registration remains a problem in both the MTS and cocoa agroforestry (Johnson Gaither et al., 2019, Hansen et al., 2018, Acheampong et al., 2016, Fountain and Huetz-Adams, 2018). Furthermore, it seems farmers feel the need to generate an income now and not wait for long before they will be supported. Acheampong et al. (2016) describes there is a lack of income between canopy closure and time of harvest. This could mean farmers do not see the advantage in having a share in timber revenues, which is also what I found since only 2% mentioned it as an advantage. Therefore, perhaps a different compensation system is needed to compensate farmers for planting the trees. Even more so because farmers see that the FC is paying hired workers to plant the trees, but not them.

Another issue is the financial and physical capacity of the FC. The local FC mentioned they would want to provide the farmers with work material as well as release the land on time (Figure 18). However, this is impossible, because they do not have the finances for that as well as that approval of releasing the land has to go through the head office which can take long. As such, there are discrepancies between the national policy makers and the local policy implementers, leading towards an ineffective implementation (Hornberger, 2009). This also suggests that the local FC is more part of the practice of the MTS than the policy-making. Improved communication between the national and local government could improve policy implementation (Adjei et al., 2018). Moreover, the local FC does not have the capacity to do proper supervision and monitoring. Therefore, farmers indicate that they often do not know how to properly plant the trees or do not even plant the trees. Moreover, on policy-making level there are nowadays more stakeholders involved and the MTS is part of governance initiatives (Cocoa & Forests Initiative, 2018b, Cocoa & Forests Initiative, 2018a). However, the implementation is in the hands of only the local FC. More involvement of other stakeholders, like local and international NGOs as well as sponsors, could improve among others capacity building and as such monitoring and the financial issues in the implementation of the MTS.

Moreover, if the budget allows for it, stakeholders involvement like local NGOs could support in stopping nepotism. Perhaps with more capacity, it is possible to check who really needs the MTS and share it according to that criterium, such that not only the elite will benefit from the MTS. However, this can be hard and it should be taken into account that it is related to their traditional lifestyle and rule of law (Tamanaha, 2011, Divon and Bøås, 2017).

Making the system more community-based and improving community representation could also improve the system. Including farmers in management activities such as monitoring and evaluation as is also mentioned by the policy, while taking care of farmers' needs, can improve policy implementation (Villaseñor et al., 2016, Nath and Inoue, 2009, Forestry Commission, 2017). In my research area this does not seem to happen at all nor to be known. Namely, both farmers and the FC seem to find that the FC should do the monitoring. Yet, in my research and also in other papers I found that there are farmers that are concerned about the well-being of the forest (Dressler et al., 2010, Howitt and Suchet-Pearson, 2006, Danquah, 2015). Increasing local capacity for policy implementation would make it possible to recruit these farmers to do monitoring, which could be valuable and increase the effectiveness of the MTS. Moreover, it increases internal social control as it will be their people to monitor farmers behaviour, rather than the government imposing on them.

In sum, the main changes that are needed according to farmers are linked to the financial issues of the MTS. Apart from that, this study found that increased financial and physical capacity of the FC would sustain the MTS policy to become more effective in practice. This could also increase the accessibility to the MTS.

5.5 The practice of the MTS and its policy implications

The main research question of this study concerned how farmers practice the MTS. First of all, about 90% of the farmers state that the MTS is good, because they depend on it. It improves their lives, food security and community well-being. Therefore, farmers practice the system with many, meaning that policy adoption is not a problem. For these reasons, the MTS can be a useful policy to apply elsewhere. It can sustain both forests and livelihoods in places of vulnerable communities because of land scarcity imposed by forests and forest reserves, as is also found by Kalame et al. (2011). Moreover, in policy making processes this dependency on the MTS should be taken into account. For instance, in the

national implementation plan of the Cocoa & Forest Initiative they state that the MTS can be used in some areas to regain permanent tree cover, therefore making the MTS can only be carried out for around 25 years (Cocoa & Forests Initiative, 2018a). However, if there are no alternative livelihood options after the 25 years, smallholder farmers will be largely affected since they largely depend on the MTS. Moreover, this study enriched general knowledge on the MTS as well as more insights in the specific study area, since there seem to be no prior studies on the MTS in this area. Therefore, it gives IDH valuable information for decision-making processes, since the specific site is located in one of IDH focus areas (Cocoa & Forests Initiative, 2018a).

The implementation of the policy is not fully effective, which indicates there is no straight line form policy to practice. First of all the *situated agency* of farmers shapes practice and influences policy effectiveness. For instance, farmers see it as a labour system where they are planting trees for the government, yet they are not being compensated for planting the trees. This creates demotivation among farmers to plant trees. Furthermore, farmers' traditions and customs also influence practice. For example, farmers custom to generate an income probably makes them see many financial issues in the MTS. Therefore, it is important to take concepts as *situated agency* and *logic of practice* into account in policy making and implementation processes (Arts et al., 2014, Behagel et al., 2017, Krott and Giessen, 2014). It largely shapes farmers' practices which can divert from the intention of the policy. Therefore, taking this into account in the policy-making process can make policy implementation more effective. This can also apply to other cases and other policies involving local stakeholders, for example (cocoa) agroforestry. Of course, the local context matters and influences the specific way in which *situated agency* and *logic of practice* shape practice (Arts et al., 2014). Namely, in my study I also found differences between the communities I studied. Nkatieso was further away from the forest reserve and therefore named transportation more often as an issue than the other communities. Also, Teabenti seems to depend more on the MTS because it is the smallest community and there are not many other options for employment. Nevertheless, there are also general issues and similarities. For example, this custom of generating an income has led to policy implementation issues in more cases, i.e. cocoa farmers are hesitant to participate in cocoa agroforestry since they are not sure they will receive profit from the planting of timber trees (Dressler et al., 2010, Hames, 2007).

Situated agency and *logic of practice* can differ between men and women, making them influence practice in different ways. Therefore, considering gender and gender-based *situated agency* and *logic of practice* in policy-making processes, such as policies including women empowerment (Tamanaha, 2011), can be valuable as well. The same holds for local politics, which makes that the elite mostly enjoy the benefits of the MTS and not everyone gets access to participating in the MTS.

The power the FC uses to steer farmers to follow the rules of the MTS influences farmer practices (Rose et al., 2006, Odysseos, 2011, Menjivar and Lakhani, 2016). Farmers claim to be afraid the FC will destroy their farms, therefore they sate they have to follow the rules. However, this is not fully effective, since the FC does not have the capacity to do proper supervision and monitoring, especially nowadays that many farmers do the MTS. This leads to the trees not being planted, a lack of farmer representation in management and reduced accessibility to participate in the MTS. This also indicates it is not just farmers that shape practice. The FC officials also have their agency and their traditions (Hornberger, 2009), which could influence as well how they implement the MTS policy which shapes practice. Moreover, it seems more stakeholders are needed not only in policy-making, but also in the

policy implementation stage to increase capacity for doing monitoring, tree registration and proper supervision.

In all, policy necessity and adoption is large, but policy effectiveness is limited based on farmers' practices. Locally getting more financial support for the farmers as well as capacity building, improving communication and stopping nepotism could considerably increase policy implementation effectiveness.

5.6 Theoretical implications – local FC part of practice

Using a *practice-based approach* to *governmentality* appeared to be a suitable concept to apply to this research. They were both useful theories and the *practice-based approach (PBA)* enriches *governmentality*. *Governmentality* is mainly described as the government using power strategically to steer subjects, in my case farmers, towards certain practices or behaviour (Foucault, 1997, Rose et al., 2006). In my study this was also evident; the local FC steered farmers to do the MTS as well as to plant the trees and only plant the allowed crops. However, farmers also have their norms, values and power to translate the policy into practice differently. In my study farmers did not always plant the trees for example, since they didn't get proper compensation for this according to them. In this way my study sustains the concept of *realist governmentality*, where it is not just about the government steering subjects, but also the subjects having an influence. It is more about thick descriptions and ethnography than just discourse analysis (McKee, 2009). The *PBA*, with the concept of *situated agency* and *logic of practice,* enriches the concept of *governmentality* here (Arts et al., 2014, Behagel et al., 2017). It relates practice to the use of power and how they are entwined. Farmers' practices gave a lot of insights into how they are steered, but also how their agency and traditions play a role. For instance, their traditional lifestyle makes that mainly the elite profit from the MTS, which was not the intention of the policy. Therefore, it is valuable to add the *practice-based approach* to *governmentality,* to enrich the concept of governmentality by also looking into practices and how these inform the policy too. Also, my study adds on both the concept of *governmentality* as well as *realist governmentality* since It highlight that there is no straight line from policy to practice and that policy implementation is not always effective nor smooth as I showed in the conceptual framework that was developed for this study (Figure 19a).

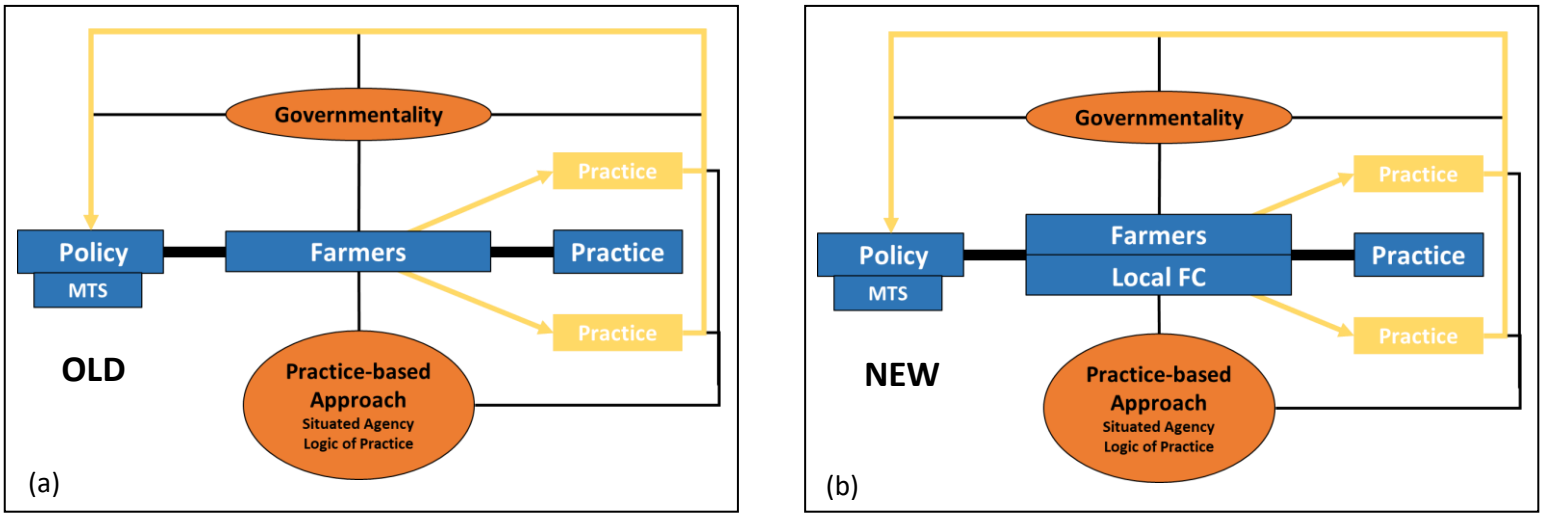

Figure 19 The old and new conceptual framework. There is not always a straight line between policy and practice as is indicated by the yellow colour. Farmers and the local FC (b) translate (*governmentality*) the MTS policy through *situated agency* and the *logic of practice* in practices (practice-based approach). Accordingly, farmers and the local FC (b) can steer, through these practices, the MTS to change (*governmentality*).

Empirical studies using the practice-based approach mainly use it to research the practices of the people on which a certain policy or institutional structure is imposed (Behagel et al., 2017, Arts et al., 2014). I also did this, yet I found out that researching the practices of the actor(s) implementing/imposing the policy is also valuable. Namely, as I explained in Section 5.5 it is also the local FC and their *situated agency* as well as their *logic of practice* that shapes the practice of the MTS (Hornberger, 2009). This enriches the *practice-based approach,* since the theory can also be applied to policy implementers and their practices. Moreover, this generated a change in my conceptual framework, as is shown in Figure 19b. In the new framework is shown that both farmers and the local FC can alter the policy in practice and can inform decision-making processes and policy improvement. Moreover, this conceptual framework can as well be used in other cases. In my case, it was the MTS policy and farmers and the local FC, yet it can as well be other policies and other stakeholders that are involved in the practices of a certain policy.

My study sustains the concept of *situated agency* of the PBA. My study agrees that the *situated agency* of farmers, meaning the entwinement of social structure and agency, shapes practice (Arts et al., 2012). For example, the rules of the policy combined with the fear of farmers for the FC made farmers plant the trees and only the allowed crops. However, there are also differences. *Situated agency* describes the entwinement of social structure and agency, indicating that agency of actors is influenced by political dilemmas, social disruption or shock events (Behagel et al., 2017). Yet, my study found that the physical environment and its gradual change also influences farmers agency. For example, the farmers in my study, who are attached to their environment, have seen the effects of climate change and deforestation making them more concerned about the forest and the planting of the trees in the MTS. Moreover, my study found that a lack of social structure, in my study a lack of communication about the policy, also imposes a *situated agency* which shapes practice. As such, I would say *situated agency* is not only linked to institutional or social structure, but also to the lack of it as well as to other factors as the physical environment. This enriches the concept of *situated agency* and confirms the *PBA*'s assumption that practices are context-specific.

My study also sustains the concept of *logic of practice,* in which traditions and routines (engrained logic) shape practice (Arts et al., 2012). For example, in my study traditional differences between men and women made that women saw the livelihood aspect of the MTS to be more important than men. However, what the concept of *logic of practice* does not describe, but what my study found is that the reverse is also possible; meaning that the MTS practice induced by the policy can change farmers' *logic of practice*. For example, I found that farmers understand that they cannot plant cassava in the forest, since it would negatively influence trees, even though it is part of their traditional food. This would indicate that farmers' *logic of practice* does not only shape practice, but that practice induced by a policy can also change or become part of farmers traditions and customs. This is also linked to a more general aspect of the *practice-based approach*, namely that there is no straight line from policy to practice and which implications this has. Studies, showing empirical examples of using the practice-based approach, show as well as my study that there is no straight line from policy to practice (Figure 19) (Arts et al., 2014, Behagel et al., 2017). However, it is not explicitly part of the *PBA*. Including this in the *PBA* and its sensitising concepts would enrich the theory. It recognizes that if there is no straight line from policy to practice based on among others situated agency and logic of practice, then practices can in turn also inform the policy, making the *practice-based approach* go two ways; from policy to practice and from practice to policy (Figure 19). It can be used as a strategy by policy-makers/-implementers to make policies, just like practices are, context specific and open for change. However,

it should be noted that a lack in capacity at policy implementation level can be a limitation in realizing this.

If time had allowed it would have been interesting to also involve the third concept of the *PBA*, performativity, in this study. The concept describes that discourses and knowledge are not just a way in which we see and describe the world. Rather, discourse and knowledge are entwined in practice, it influences the way people act (Arts et al., 2014). It would have enriched this research to also understand how knowledge and discourses of farmers shape the practice of the MTS. In addition, other concepts like different world views and differences in ontologies could also enrich studying the practice of the MTS and the different stakeholders involved (Blaser, 2009, Hames, 2007, Howitt and Suchet-Pearson, 2006). Ontologies, for example Western and indigenous ontologies, can largely differ, leading towards different descriptions and practices, which has implications for policy-making and policy implementation. Studying these ontologies between the FC and the farmers or even other stakeholders involved in governance initiatives, like the CFI, can give further insights into the policy implementation process of the MTS. Besides, indigenous knowledge of farmers on forest management could be studied to further improve the MTS. Namely, the idea of the MTS is to co-manage the forest with both the FC and the farmers, knowing more about farmers' indigenous knowledge on this topic can strengthen effective policy implementation (Athayde et al., 2017, Siahaya et al., 2016).

5.7 Methodological implications – ethnography and the Q-method

The use of both qualitative and quantitative data enriched my research as it gave insights into both what discourses and practices are there and also which ones are more prominent than others (Bernard, 2011, LeCompte and Schensul, 2012). Interviewing and observing both men and women and MTS and non-MTS farmers in similar quantities was useful, as it increased the internal validity of the research (Denzin, 2015). Namely, the *logic of practice* of farmers differed between men and women shaping the practice of the MTS differently. Moreover, interviewing and observing also non-MTS indigenous cocoa farmers helped to find out about accessibility issues.

The quantitative implications of the research could have been stronger with fewer variables. I interviewed both female and male MTS and non-MTS farmers of three communities, which creates very different groups, making it impossible to do more statistical analysis (Bernard, 2011). If the research would have concerned one specific variable, while keeping other variables constant, the results could have statistically been more valuable. However, this would have limited finding thick descriptions and holism of the practice of the MTS. Besides, more random selection might have been possible, which could have enabled doing statistical tests and strengthening the results (Bernard, 2011). Namely, snowball sampling was used and the saturation point where the same names start to pop up again was not reached (Noy, 2008). Also, many people in the area seem to do the MTS or know about it, therefore random selection might be possible. This would have reduced the bias snowball sampling induces (Noy, 2008).

The amount of interviews is valuable for combining qualitative and quantitative data and strengthening the findings (Guest et al., 2016). However, due to a time lack, it limited the possibility to do more proper ethnographic research. 'Being there', building rapport and establishing trust are key elements of ethnographic research and as well key to finding more in-depth knowledge on the practice of the MTS (Ortner, 1995, Van der Arend and Behagel, 2011). For instance, now it is uncertain what exactly is the reason that the trees are not planted in the MTS. Furthermore, studying three communities enriched my study in the sense that it gave different perspectives, yet it limited me in

building rapport and going more in-depth (Bernard, 2011). Studying one community for a longer time would have enhanced my research in finding out more about what happens in practice. This would have also allowed me to do more participant observation and build trust (Bernard, 2011). However, considering this is a timely process and time was limited in my research, the approach I took was suitable.

Other methods such as focus group discussions and the Q-method could have enhanced this research. Focus group discussions allow for discussing a specific topic and assessing the group's interaction and heterogeneity and homogeneity in responses (Marková et al., 2007, Perecman and Curran, 2006). Interviewing aggregate farmers groups practicing the MTS will give more in-depth knowledge on their shared or differentiating beliefs, traditions and agency and how this shapes the practice of the MTS. The Q-method describes the use of statements in data collection and data analysis. First informants are asked to develop and accordingly rank statements in boxes according to the degree in which they agree with the statement. After this can be analysed which statements informants most agree and disagree with as well as the similarities and differences between informants (Amaruzaman et al., 2017, Langston et al., 2019). This method would add valuable data, since it would show differences in views and discourses between policy-makers and indigenous cocoa farmers on the MTS itself and on how to improve it. These methods, like focus group discussion and the Q-method, can still be used in further research. In the study area, little research has been carried out so far, especially on the MTS, therefore more research on this topic including these methods is valuable for improving the MTS policy and its implementation.

Since my research indicates that local FC officers are more part of the practice of the MTS and less part of policy-making processes, including national MTS policy makers in the research would give valuable information. Namely, it would indicate differences in how national and local policy makers describe the MTS and what implications this has on practice. Specifically, it would highlight how national policy makers also, maybe indirectly, steer local policy implementers towards certain behaviour as is described by the concept of *governmentality* (Rose et al., 2006). Besides, it would indicate how local FC officers' *situated agency* and *logic of practice* shapes the way the MTS is practised (Behagel et al., 2017, Arts et al., 2014). Moreover, including other stakeholders in the research that are part of governance initiatives involving the MTS, could have added valuable a different dimension to the research.

6 Conclusion and recommendations

The aim of this study was to gain more insights in policy implementation processes and the discrepancies between policy and practice, by using a *practice-based approach* to *governmentality* to study how indigenous cocoa farmers practice the MTS in the Juaboso district of Ghana. The results show that there is no straight line from policy to practice. Farmers adopted and resisted or amended of the MTS in their practices, making that policy implementation effectiveness is limited. First of all, there are both similarities and differences in the way the MTS policy is perceived by the FC and the farmers. Both describe it to be good for improving farmers' livelihoods and see income and food as the main advantages of the MTS. However, the FC describes the MTS, whereas farmers mainly describe and practice the TS in which there is no proper supervision by the FC and no compensation for planting the trees, which seems due to a lack of capacity of the FC and a lack of communication between the FC, the leaders and the farmers.

Farmers' *situated agency* shapes practice both positively and negatively. On the one hand farmers depend on the MTS because there is no other land left to farm on and they describe to be afraid of the FC, which makes them follow the rules. However, the trees are often not planted, which is partly due to that farmers do not know they have a financial share in the trees (lack of communication). Also, farmers see financial issues, such costs for transportation and work material, to be the main disadvantage of the MTS, while the policy purpose is among others to support farmers financially. Farmers' *logic of practice* shapes the practice of the MTS as well. It seems that the MTS is becoming part of their traditional lifestyle, i.e. most farmers understand that they cannot plant cocoa or cassava in the forest. Yet, not everything in practice is according to the policy. Traditional community hierarchy and local politics, make that mainly the elite and wealthier community members enjoy the benefits of the MTS. Therefore, the poorest farmers, who need it most, have limited access to the MTS. Moreover, traditional gender differences also inform the practice of the MTS differently, whereas women are more interested in generating an income, men seem to be more concerned with maintaining the forest, which seems due to men seeing it more as a labour system to plant trees for the government since men, more than women, get their income from cocoa farming.

The main change that is needed according to farmers concerns more financial support including support in transportation and the provision of work material, the latter also being mentioned by the FC. Moreover, the local FC as well as the results of this study indicate that capacity building could improve implementation effectiveness of the MTS. Namely, it could contribute to improved communication between the FC and farmers about the policy as well as increased farmer representation in management, which could improve monitoring and evaluation of the MTS on for example if the trees are planted. This in turn could lead to more sustainable practices.

This study enriches knowledge on the MTS policy and its practice, both in general and in the specific study area (Juaboso district, Ghana). Moreover, it highlights how policy implementation is not always effective and does not follow a straight line. This was found for the MTS in my study, yet it is also true for other policies and policy domains, for example cocoa farmers are hesitant to adopt agroforestry policies since they are not sure whether they will receive financial benefits from the planted timber trees. My study also contributed to the conceptual development of *governmentality* and the *practice-based approach.* Studying practices showed how not only policy-makers steer subjects to certain behaviour (*governmentality*), but also how subjects translate these policies in their practices and how this in turn informs policy. Therefore this study complements the concept of *governmentality.*

Moreover, my study enhances the concept of *situated agency* by showing that the physical environment and its gradual change also informs agency and shapes practice as well as that a lack of social structure also creates a *situated agency* that shapes practice. Also, *logic of practice* does not only seem to explain how the policy is translated into practice, but also the reverse how practice induced by the policy can become part of *logic of practice.* My study highlights that the *practice-based approach* shows that there is no straight line from policy to practice, which enhances the concept. Besides, the *practice-based approach* can be used two ways; showing how policy is translated to practice, but also in turn how practice informs policy; making policies context-specific.

6.1 Recommendations

First of all, I found that not only farmers shape the practice of the MTS, but also the local FC is part of practice. For instance, due to their lack in capacity they are not able to do proper supervision or monitoring. Further research on how the local FC shapes practices, based on their *situated agency* and *logic of practice*, can enrich knowledge on the effectiveness of the implementation of the MTS. Besides, researching how policy implementers shape practice would also be interesting in other policy domains.

Policy-makers should take how the MTS is practiced by farmers into account in policy-making processes to make the policy and its implementation more effective. The national implementation plan of the Cocoa & Forests Initiative in Ghana, facilitated by IDH, plans to use the MTS for a period of 25 years to increase tree cover in degraded forest land. However, farmers really depend on the MTS for generating an income and sustaining their livelihoods, especially in smaller communities. Also, the trees are often not planted in the MTS. Therefore, this policy of using the MTS for 25 years to increase tree cover is prone to fail, since farmers might not plant the trees such that they can still do the MTS after 25 years. Also, in the CFI, multiple actors are involved in policy-making processes, yet only the FC is responsible for implementation. The lack of capacity of the FC can limit policy implementations effectiveness as shown in this study. Therefore, strengthening actor capacity in policy implementation should be considered and could be further researched to assess its value in the implementation of the MTS. I used CFI as an example, yet other initiatives should also consider the practice of the MTS in their policy-making processes.

Also in other policy domains, since often there seems to be no straight line from policy to practice, practices should be studied and considered in policy-making processes. Practices are context specific, which I also found in studying different communities in this study, making it harder to use them to develop general policies. However, there are also aspects I found in my study that relate to the practices of other policies, like (cocoa) agroforestry policies. Namely, farmers drive to generate an income seems more widespread, since cocoa farmers are hesitant about adopting agroforestry policies, since they are not sure they will benefit from the trees based on registration issues. Moreover, other studies on forest management found as well that a lack in capacity can influence agency and as such shape practice differently than was intended by the policy. As such, it is important to take this into account into policy-making processes to make policies and policy implementation more successful. Besides, my conceptual framework can be useful in other context-specific policy implementation studies to research the discrepancies between policy and practice and how this can create feedback for the policy and policy-making process, which could increase policy implementation effectiveness in multiple policy domains.

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Appendix I – Interview guide Farmers

Formal semi-structured interview Guide for farmers in Juaboso district

To stay in line with the interview transcriptions and the order in which I asked the questions, the numbering does not follow a logical order, this is because the question order was changed. '[only MTS]' indicates that the question was only asked to MTS-farmers. '[only non-MTS]' means the question was only asked to non-MTS farmers.

1. Gender
2. Indigenous → yes/no
3. Occupation
    a. Which crops? main crop?

4a. Have you heard of the TS?
4b. If yes → Have you heard of the MTS?
4c. If yes → what is the difference between the TS and the MTS?
4d. From where did you hear about the TS/MTS?
5a. How big is your own land?
5b. How big is your MTS-land? [only MTS]
5c. Which land is more important to you and why? [only MTS]
1. How does the MTS work?
21. How often do you go to the MTS farm? [only MTS]
2. What is the purpose of the MTS?
9. What is the main advantage of the MTS?
    a. any other advantages?
10. wat is the main disadvantage of the MTS?
    a. any other disadvantages?

8a. Why do you think the FC want you/farmers to plant trees in the MTS?
8b. Are the trees also important to you?
8c. Did you get any trainings or teachings? If yes, what and from who?
19. If the land in the forest was your own land would you farm it the same way as the MTS farm?
    a. If yes → why?
    b. If no, how would you then farm and why?
    c. If no → does it affect you that you cannot farm the MTS land the way you want? Why/Why
11. How many years are you doing the MTS? [only MTS]
12. What made that you started to practice the MTS? [only MTS]
22. Why are you not practicing the MTS? [only non-MTS]
13. Did you/farmers give up anything in order to practice the MTS?
    a. If yes → how does it feel
    b. Does the MTS interfere with any traditions or customs?
14. Which changes occurred in the MTS over time?
    a. what has changed in your farming activities in the MTS farm over the years? [only MTS]
16. Do/did you/farmers have any problems with the FC?
    a. Did/do you/farmers do things in the MTS farm that are not according to the rules?
15. Are there more farmers who practice the MTS or who do not practice the MTS? Why?
17. Which change is needed to make the MTS more attractive?
23. Would you practice the MTS if these changes were made? [only non-MTS]
18. How do you feel in general about the MTS?
20. Is there anything else you want to share?

Appendix II – Interview guide local FC

Formal semi-structured interview Guide for the FC in the Juaboso district

When the questions are similar to those asked to the farmers, '[number]' after the question will indicate to which question of the interview guide for farmers it refers to as well as to the number that is used in the transcription of the interviews with the FC officers for these particular questions.

1. Age [1]
2. Occupation [3]
3. How does the MTS work? [6]
4. What is the purpose of the MTS? [7]
5. What is the difference between the TS and MTS? [4c]
6. Who implements the MTS?
7. Are there other stakeholder involved in the implementation of the MTS? Who?
8. What is the role of the farmers in the MTS?
9. Which stakeholders are involved in the decision-making process?
    a. Are farmers part of the decision-making process? How?
10. What is the main advantage? [9]
    a. Any other advantages? [9a]
11. What is the main disadvantage? [10]
    a. Any other disadvantages? [10a]
12. Do you think farmers see the same problems as you do?
13. Why are there trees planted in the MTS? [8a]
    a. Who plant the trees?
    b. Why do you hire workers to plant the trees?
14. Do you give trainings to farmers about the trees?
    a. If yes → about what?
    b. Do the farmers also get other trainings?
15. In which ways do you support the farmers? Why?
16. What changes occurred in the MTS over time? [14]
17. Is the MTS implemented similarly in all communities? Why (not)?
18. What problems do you have with the farmers? [16]
19. How many communities are engage in the MTS?
    a. What are reasons for communities/farmers not to practice the MTS?
20. What change is needed according to you to make the MTS more attractive? [17]
21. How doe farmers in general feel about the MTS? [18]

Appendix III – Introduction letter from my University (WUR)

WAGENINGEN
UNIVERSITY & RESEARCH

P.O. Box 100 | 6708 PB | The Netherlands

To whom it may concern

Environmental Sciences Group

DATE
September 23, 2019

SUBJECT
Letter of Introduction

POSTAL ADDRESS
P.O. Box 100
6708 PB
The Netherlands

Dear Sir/Madam,

100years
1918 — 2018

This is to testify that Hinke Wiersma is a student on the Forest and Nature Conservation Masters course at Wageningen University, The Netherlands. She is conducting research for her thesis on cocoa farmers and agroforestry systems (specifically the Modified Taungya System), in collaboration with IDH in the Western North Region (Juabeso-Bia landscape) of the Republic of Ghana.

We thank you in advance for your collaboration with her.
Please do not hesitate to contact me if you have any questions

With kind regards,

Dr Verina Ingram
Assistant Professor

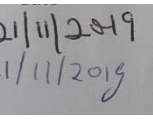
Appendix IV – Assurance/Guarantee Form

To whom it may concern,

The student Hinke Wiersma, attending the MSc in Forest and Nature Conservation at the Wageningen University from the Netherlands is going to carry out a research about agroforestry systems, specifically the MTS, in collaboration with IDH in the Western North Region (Juaboso-Bia landscape) of the Republic of Ghana. For this she may work together with others in conducting the research.

Both the researcher (Hinke Wiersma) as well as the persons she works with agree to deal with confidentiality as follows:

1. The name of the participant or any identification data can only be used in the study with the participants' consent.
2. Literal quotes of participants can only be used in the study with the participants' consent.
3. interviews will only be recorded with the participants' consent.
4. The researcher will make clear that participation is on voluntary basis. Participants are free not to participate in the study and withdraw from the study at any moment without justifying this.
5. Both the researcher and local translator (and possible other persons involved in conducting the research) will ensure every participant anonymity on information that they provide that could harm them or their surroundings in any way.

Name	date	signature
Mensah Stephen Elliot Hinke Wiersma	21/11/2019 21/11/2019	

Appendix V – Informed Consent form

My name is Hinke Wiersma and I am a student on the Forest and Nature Conservation Masters course at Wageningen University, The Netherlands. I am conducting research for my thesis on cocoa farmers and agroforestry systems (specifically the Modified Taungya System), in collaboration with IDH in the Western North Region (Juaboso-Bia landscape) of the Republic of Ghana. I promise that I will use all the gathered data discretely; therefore I will never intentionally harm anyone.

In my research I wish to find out how agroforestry policies, specifically the MTS, are practiced and whether this matches with the intention of the policy. I want to study this in order to inform policy making processes and to make the adoption or practice of the MTS more attractive for farmers in the future.

> [I explained every participant what my research is about and what the purpose of my research is. Moreover, I explained my collaboration with my research assistant and with IDH. Also I ensured them that me and the persons who engage in conducting the research handled all data discretely (see assurance/guarantee form)]
>
> [After explaining this, I asked them if their verbal consent for the below listed items]

After the explanation of the purpose of my study I asked every person if they want to participate in my research. If they want to participate I ask them if they consent to the following:

1. Permission to use name of community
2. Permission to take notes
3. permission to record
4. Permission to quote