Farming for Carbon Credits
The economic integration of greenhouse gases through smallholder agriculture in the Kenya Agricultural Carbon Project

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Abstract


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This MSc thesis analyzes a greenhouse gas (GHG) emission offsetting project implemented in smallholder agriculture. The project, which is the first of its kind, is called the Kenya Agricultural Carbon Project (KACP) and is located in western Kenya. The research question posed is: Does the carbon credit aspect of the KACP represent an integration of the economic externality of GHG emissions. The thesis analyses the KACP as a payment scheme for ecosystem services and applies a lens of neoliberal theory. The methods used are semi-structured interviews, participatory observation and transect walks. Data collection was done during field work at project sites in April and May 2014 and data sources include twenty interviews, eighteen analysed farms, participation in a KACP workshop and participation in a project related e-course organized by the World Bank. The results of the study showed that there are significant inconsistencies in the project that invalidates the KACP an economic integration of GHG emissions, likely resulting in false carbon credits.

Key words: Emission offsetting, carbon credits, payments for ecosystem services, integration of economic externalities, rational choice, carbon sequestration, Kenya Agricultural Carbon Project.
Summary

In accordance with the Clean Development Mechanism (CDM) under the Kyoto protocol industrialized countries may offset their greenhouse gas (GHG) emissions through emission offsetting projects in developing countries. This allows for continued growth (and emissions) as emission offsets are counted as reductions of actual emissions. Since the Kyoto protocol came into force in 2005 the number of offsetting projects has increased rapidly and parallel to the CDM offset market a voluntary offset market has also developed. In the voluntary market there is no international standard for offsetting projects and there is a wide range of different standards and methodologies. The voluntary market is progressively prospecting new areas of project implementation. The Kenya Agricultural Carbon Project (KACP) is the first offsetting project involving smallholder agriculture in Africa and the first payments to participating farmers were issued in February 2014. In the project farmers are to adopt what is called Sustainable Agricultural Land Management (SALM) practices which are designed to cause carbon sequestration. An accounting methodology has been developed and payments to farmers are issued according to the estimated sequestration they provide.

This MSc thesis explores whether or not GHGs are integrated into the economic systems through the KACP. This is done by examining whether or not emissions are actually offset through the project and if the implementation of the project is consistent with neoliberal theory. The project is analysed as a payment schemes for ecosystem services, applying rational choice theory and the concepts of economic externalities.

The methods used are semi-structured interviews, participatory observation and transect walks. The data collection was conducted during field work at project sites in western Kenya during April and May 2014. The field work included twenty semi-structured interviews, the analysis of eighteen farms, participation in a three-day-long project workshop, participation in a project related e-course organized by the World Bank, and informal interactions.

The analysis showed that the estimations used as the baseline scenario in the project are only valid on some of the analyzed farms and the project applicability criteria are shown to be invalid in many cases. The ecosystem services provided by farmers do not correspond to the ecosystem disservice that is to be offset, likely resulting in false carbon credits and temporal invalidity of offsets. Payments for the ecosystem services provided by farmers have a low incentivizing potential and the relationship between services and payments is not causal. Farmers never own the carbon credits that they are providing, do not know what their services are worth and are not paid according to the individual amount of services provided.

The thesis concludes that the KACP does not represent an economic integration of GHGs. Moreover the project is dependent on economic inequality and employs practices that are dependent on a path on non-industrialization. More case studies are needed in order for the debate on emission offsetting to keep up with the development of the emission offsetting “industry”, particularly as it advances into new territory.
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**List of abbreviations**

AFD – The French Agency for Development

AR5 – Assessment Report 5

DANIDA – Danish development Cooperation Agency

CAP – Common Agriculture Policy

CF – Community Facilitators

COP – Conference of the Parties

CSR – Corporate Social Responsibility

ES – Ecosystem Services

ETS – Emission Trading System

EU – European Union

FAO – Food and Agriculture Organisation

GDP – Gross Domestic Product

GHG – Greenhouse Gas

IPCC – Intergovernmental Panel on Climate Change

KACP – Kenya Agricultural Carbon Project

MA – Millennium Assessment

MSD – Mainstream Development Discourse

NGO – Non-government Organisation

PES – Payments schemes for Ecosystem Services

RCT – Rational Choice Theory

REDD – Reduced Emissions from Deforestation and Forrest Degradation

SALM – Sustainable Agricultural Land Management

SAP – Structural Adjustment programmes

SOC – Soil Organic Carbon

SIDA – Swedish Development Cooperation Agency

TEEB – The Economics of Ecosystems and Biodiversity

ViA – Vi Agroforestry

UN – United Nations

UNDP – United Nations Development Programme

UNEP – United Nations Environment Programme

UNFCC – United Nations Framework Convention on Climate Change
US – United States
USAID – United States Agency for International Development
VCS – Verified Carbon Standard
VCU – Verified Carbon Units
VER – Verified Emission Reduction
WKCDD/FMP – Western Kenya Community Driven Development/Flood Mitigation Project
1 Introduction

The fifth assessment report (AR5) by the IPCC asserts that there is no longer any doubt that humanity is causing climate change (IPCC, 2013). The current era is commonly referred to as the Anthropocene (e.g. Rockström et al., 2009) connecting to geologic timescales. Rockström et al. (2009) argues that the planet has transgressed from the Holocene to the Anthropocene as humanity has become the dominating force affecting the living space of the planet as opposed to geophysical processes. Climate change has however been on the global agenda for decades. The global environment was first put on the agenda in global politics at the Stockholm conference 1972 and in 1988 the United Nations (UN) intergovernmental panel on climate change (IPCC) was established. At the Rio Summit in 1992 the United Nations framework convention on climate change (UNFCCC) was established and in 1997 the Kyoto protocol was negotiated in an attempt to legally bind industrialized countries to set caps for their levels of emissions. Under the Kyoto protocol, which however did not come into force until 2005, the clean development mechanism (CDM) was also established (Bumpus & Liverman, 2008). The mechanism allows developed countries to offset their emissions through projects in developing countries and to count those offsets as reductions of their own emissions. The CDM thereby allows for continued growth (and continued emissions) while still successfully maintaining caps and reaching emission reduction goals. Parallel to the CDM a voluntary carbon offset market has developed and there is a multitude of standardized methodological frameworks for accounting emission offsets (Michaelowa, 2012). Voluntary offset organizations have been around since the late 1990s but the sector did not really take off until 2005. However, at that point it boomed, growing by 200% between 2005 and 2006 (Lovell et al., 2009). There are currently hundreds of private actors and NGOs selling what is referred to as carbon credits, which is the units that represent emission offsets (Lovell, 2010).

In offsetting schemes the basic idea is that an actor that emits a certain amount of greenhouse gases (GHGs) can pay another actor to sequester the same amount and thereby offsets the impact of the emitted GHGs. Any project that can demonstrate that it provides reductions of emission or sequestration of carbon that would not otherwise have been provided can produce carbon credits under one of the voluntary standards. There is a multitude of different kinds of offsetting projects ranging from improved wind turbines and methane extraction from sewage and waste, to avoided deforestation and promotion of fuel efficient cooking stoves (Bumpus & Liverman, 2008). Offsetting schemes are debated and while promoter argue that it is a convenient and cost efficient way to reduce emissions which also finances green development, critics argue that it sustains emission levels and slows down real progress in reducing emission in the developed world (Bumpus & Liverman, 2008). The concept of offsetting is seemingly simple, however beyond the veil of simplicity offsetting is far more complex and Lovell & Liverman (2010) refers to offsetting as a “black box”. Moreover, critics argue that projects have high uncertainties regarding emission reduction implementation and whether or not emission reduction actually are additional to what would have been in absence of the projects (Michaelowa, 2012). The debate on emission offsetting tends to be abstract and polarized, not reflecting the complexity and the variety of technology and implementation structures in use (Lovell & Liverman, 2010). Studies that problematize the theoretical and conceptual framework of individual projects throughout implementation are scarce and as the sector advances into new territory it is important to examine the functioning of offsetting schemes in the new areas of implementation.

In 2007 smallholder agriculture in Africa was for the first time prospected as a possible offsetting sector by the World Bank. In 2009 the project called the Kenya agricultural carbon project (KACP) was initiated. The project represented a new frontier for offsetting schemes, connecting African smallholder farmers to the global carbon market (World Bank, 2014).
World Bank financed the project through its Biocarbon Fund in collaboration with the Swedish international developments cooperation agency (SIDA). The project, which is implemented through the Swedish NGO Vi Agroforestry (ViA), issued the first carbon credit payments to participating farmers in February 2014.

The concept of the project essentially consists of farmers adopting farming practices, called sustainable agricultural land management (SALM) practices, which will cause the soil to sequester carbon. In order for the service of carbon sequestration to be tradable it needs to be conceptualized as an ecosystem service (ES) that is provided by the participating farmers. The farmers receive payments for the ES they provide which is conceptualized as carbon credits. Hence, the carbon credit payments constitute payments for ecosystem services (PES). The concept of PES is founded on neoliberal ideology and requires the commodification of chosen parts of the biosphere (Gomez-Baggethuns, 2010). As a neoliberal technology the PES scheme is based on rational choice theory (RCT) and represents an attempt to account for GHG emissions in the economic system (Van Hecken & Bastiaensen, 2010). This thesis analyses the KACP as a PES and explores the theoretical framework of the project in relation to its implementation.

There have been studies of the KACP that have dealt with the methodological and organisational structure of the project at a theoretical level as well as statistical estimation of various parameters (Shames et al., 2012; Tennigkeit et al., 2012). However, information on the project is scarce and the information that is available is not easily found. The project has received criticism for having high uncertainties as the physical measurements of parameters, such as carbon sequestration, are few (Sharma & Suppan, 2011). There has also been a study that has dealt with a discourse of blame that has been identified in the implementation of the project (D'Souza, 2012) and an analysis of the politics of the project (Atela, 2012). However, no study has been conducted since the issuing of carbon payments and no study has analysed the KACP as a PES.

The project is portrayed by its promoters as a successful pioneering endeavour, breaking new ground and developing frameworks to be used in future projects. According to the World Bank the project will have positive spill-over effects and result in a “win-win-win” regarding food security, climate change mitigation and climate change adaptation (Atela, 2012). The World Bank contribution to the project consists of technical support i.e. developing methodological frameworks for estimating carbon sequestration and monitoring and evaluation frameworks regarding carbon accounting. The project involves enrolling 60,000 farmers who are to participate until year 2029 and field management is provided by twenty-seven field officers from the ViA (Shames et al., 2012). Carbon payments have been expected to be low and Shames et al. (2012) estimated that the average farmer will receive 2.47 USD per year.

However, the payments have turned out to be even lower than what has been estimated. One of the respondents in the study for this thesis was Mrs Munialo Her group received 265 KSH per farmer in her group, equivalent to around 20 SEK, for two years of KACP participation. Regarding the carbon payments she said “it was not a lot” and her husband continued “but we appreciated it because it could not have come from heaven” (Munialo and husband, personal communication, April 22nd 2014). However, the 20 SEK that Mrs Munialo earned is actually supposed to have come from thin air, by a detour through the global economic system.
1.1 Aim and research question

This MSc thesis sets out to explore the KACP and analyse it as a PES scheme. The PES scheme of the KACP by definition represents an attempt to internalize the economic externality of GHG emissions. In order to analyse the function of the PES applied in the KACP the research question for the thesis is formulated as follows:

Does the PES in the KACP represent an integration of the economic externality of GHG emissions?

In order to answer the question four sub-questions are posed:

Does the KACP live up to its applicability conditions?

Is the KACP consistent with neoliberal theory?

Does the ES bought correspond to the ES disservice that is to be offset?

Are the carbon credit payments key incentives for participants in the KACP?

The thesis does not set out to go into depth regarding the debate on the implications of development aid in general. However, implications of relevant historical development interventions are broadly outlined and some reflections on the findings are made relating to the general debate on development aid.

1.2 Structure of the thesis

The first section of the thesis is the theoretical framework which consists of a description of how the biosphere became divided into ES and an outline of RCT which is fundamental to neoliberal ideology. The section also connects the concept of ES to the concept of economic externalities and the merging of the two concepts that results in the concept of PES. Lastly the concept of emission offsetting is described.

A contextual background for the study is then provided, including relevant historical development interventions since independence, an outline of the climate change mitigation and adaptation potential of agriculture, the development of the carbon market, and finally a description of the KACP project.

The methodology is thereafter described in two sections. The first section covers the method in theory and the second covers the method in practice. The main method for the study is semi-structured interviews with respondents selected through snowballing. The semi-structured interviews are complemented by participatory observation and transect walks on farms. Triangulation of the findings of the different methods is used in order to increase the robustness of the results. The delimitations of the study are described, the methodology is problematized and an elaboration on research ethics is provided.

In the second methodology section the practical application of the methods is described as well as the context in which it is applied. This includes a description of the respondent selection process and interview and transect-walk implementation. An outline of the interaction with ViA staff and the participatory observation at a workshop is also provided as well as brief description of a World Bank e-course on soil carbon monitoring that I attended during the fieldwork. Additionally, transparency issues of the KACP relating to the fieldwork are outlined.

The following analysis section describes the agricultural context and different applied farming practices in relation to the promoted SALM practices as well as the differences prior and post project enrolment. The KACP framework is updated with new data and changes in the
framework. The project applicability conditions are scrutinized and the significance of the carbon credit payments is analysed as well as the issue of ownership of the carbon credits. Finally, a brief analysis of the perception and communication of climate change is provided.

The results of the study are presented starting with the applicability conditions and the importance of those for carbon accounting. Inconsistencies between the KACP implementation and neoliberal theory are then described. Discrepancies in the trade between the ES bought (carbon sequestration) and the ES disservice supposedly offset (GHG emissions) are showed. The significance of the role of the carbon credit aspect is described and, additionally, assumptions of development in the agricultural sector, that are inherent in the project, are elaborated.

In the following section the findings of the study are discussed. The framework of the project is problematized and inconsistencies in theory and implementation are elaborated. Issues with the KACP as a PES are elaborated as well as the concept of offsetting in relation to the implementations of the KACP. The discussion also connects to development and inequality issues and the offsetting sector in general.

In the final section the conclusions of the study are presented.

2 Theoretical framework

This section describes the development of the concept of ecosystem services and how that connects to the concept of economic externalities as well as the concept of emission offsetting. Rational choice theory is also described and the concept of *homo economicus* is juxtaposed to the concept of *homo reciprocans*.

2.1 The biosphere as ecosystem services

In mainstream development theory the perception prevails that society needs to separate from nature in order to develop (Sluyter, 2003). This view is for instance represented in the perception of “tribal/natural” societies as pristine, exotic, in harmony with nature and, most of all, not yet developed (Sundberg, 2003). The concept of tribal societies also cements the hegemony of the dichotomous development paradigm as it implies that what separates “us” from “them” is that “they” live in symbiosis with the natural environment and are directly dependent on it whereas the modern society is not. The discursive dualism of nature and society arguably enhances the perception of nature as external to society and therefore also facilitates the isolation of the economic system from the environment.

In classical economics commodities where ascribed user values but with the transition to neoclassical economics the value of commodities shifted and they were instead ascribed exchange values (Gómez-Baggethun et al., 2010). Economic theory was as a result of that shift gradually disconnected from the physical world.

The concept of ecosystem services (ES) was conceived by environmental scientists in the 1960s. It was initially created as a discursive reminder of human dependency on natural ecosystems and as a way to highlight and create awareness of the dichotomy of society and nature (Gómez-Baggethun et al., 2010). In the 1990s the influential book *Nature's services: societal dependence on natural ecosystems* (Daily, 1997) was published. The complexities and interdependencies of ecosystems where at that point emphasized as well as the danger of keeping to narrow a focus, singling out and decontextualizing important ecosystem services. Economic valuation was at that point perceived as problematic but nevertheless highlighted as a way forward (Daily et al., 1997).
The use of a market metaphor for the value of nature was perceived as necessary among environmental scientists in order to communicate our dependency on the biosphere to a public that became increasingly distanced from it (Norgaard, 2010). However, the market metaphor was so successful that it consequently became established as a framework for progressive research through the Millenium Ecosystem Assessment reports (Norgaard, 2010). In combination with a focus on environmental degradation in developing countries and the international advances of neoliberal ideology, carbon markets and emission offsetting schemes in developing countries boomed. The point and purpose of the ES concept linking the economy to the physical world and in that way harnessing growth was lost in the mainstreaming process (Norgaard, 2010).

Hence, ever since the 1990s the focus has been one of monetary valuation of ES (Gómez-Baggethun & Ruiz-Pérez, 2011). The concept is now used as a neoliberal technology to internalize market externalities i.e. impacts on the biosphere that are external to the market but that has negative effects on outputs of the biosphere that are perceived as of special importance to conserve. In order to internalize these externalities, nature, or at least chosen bits and pieces of it, needs to be commodified. In turn, commodification requires property rights. In order to exchange commodities they need to be owned by a legal entity. Thus, outputs of nature need to be framed and conceived as commodities that are private property.

Discursively, the development towards converting communal or open access resources to private property and the later stage of privatization has been backed up by the concept of the tragedy of the commons (Gómez-Baggethun & Ruiz-Pérez, 2011). The tragedy of the commons originates from Malthusian theory and is based on the idea that common pool resources will inevitably be degraded as a result over-usage, unsustainable use or plain bad management as no one in particular has an exclusive personal benefit from sustainable management or can be held accountable for degradation.

PES can be described as mobile technologies of neoliberalism (Roy, 2011) constructed in the context of the global north. However, PES has mostly been applied with regard to conservation in the global south. As such it has been heavily criticized for being yet another eurocentric blueprint model that has been exported in a neocolonial manner. Moreover, a model that is allowing powerful market actors to access newly invented markets in low-income countries and directly affect the livelihoods of local people (e.g. Beymer-Farris & Basset, 2012; Dressler et al., 2012; Mahanty et al., 2012). The implementation of PES in locations with a cultural context different to where it was conceived also raises the potential for clashes of rationalities (Watson, 2003) as institutional structures and worldviews may vary.

2.1.1 Ecosystem services as economic externalities

“It is easier to imagine the end of the world than it is imagining the end of capitalism” (Jameson, 2003;6).

From a neoliberal point of view the only way to fix problems outside the market system is to integrate them. Costs or benefits that are incurred on a party but are not accounted for in the economic system are termed externalities in economic theory. The interest in external impacts of the economic system has promoted recent initiatives such as The Economics of Ecosystems and Biodiversity (TEEB) study which has its roots in the Millennium Assessment report (MA) and for which The TEEB Interim Report was presented in 2008 at the COP9 Summit (Ring et al., 2010). Even though economic valuation of ES is increasingly gaining momentum few actual numerical estimations have been produced. Initiatives outside the neoliberal context include the entire field of ecological economics which has emerged as a response to
the failure of traditional economics to account for the externalities of the biosphere (Gillespie et al., 2012).

The integration of externalities has however proven to be problematic. Externalities are externalities precisely because the cost or benefit caused have no impact on the market actor that incurred them on a timescale that is relevant in the economic system. Therefore it is not rational to include them. Hence, the integration of externalities is either done through regulation, which means market intervention and manipulation, such as, through restrictions, taxes or other economic incentives, or for brand building and image enhancing purposes often referred to as goodwill, corporate social responsibility (CSR) or greenwashing, depending on context and point of view. Voluntary carbon offsetting schemes such as the KACP belongs to the latter category.

2.1.2 Emission offsetting

There are currently two main emission offsetting systems in use. One is the CDM under the Kyoto protocol which allows developed countries to offset their emission through projects in developing countries in order to reach their emission reduction goals. The other offsetting system is a voluntary system that has developed as a parallel system and is governed by a mix of NGOs and market actors (Lovell, 2010). In the voluntary market it is generally not states but market actors that offset their emissions and it is driven by carbon finance (i.e. market actors purchasing carbon credits to offset emissions and thereby financing a PES scheme). The voluntary system has a range of standardized methodologies but the most widely used is the Verified Carbon Standard (VCS) (Michaelowa, 2012). There are a range of different offsetting units in the voluntary market however carbon credits is the generic term for any such tradable unit worth one metric tonne of CO₂ emissions or the equivalent amount of any other GHG. The KACP is a voluntary offsetting project and employs the VCS standard were the carbon credits are called verified carbon units (VCUs) (Shames et al., 2012).

Additionality is the lead word for emission offsetting schemes. Additionality means that carbon credits can only be accounted for through avoided GHG emissions or carbon sequestration that would not have occurred in absence of the project. Hence, offsetting projects can only occur under the circumstances of a constant state of non-change or degradation. The VCS standard states that projects must “…demonstrate that GHG emission reductions or removals would not occur without revenue from the sale of VCUs” (Verified Carbon Standard, n.d.A). In the KACP the insurance of additionality is represented by a set of project applicability condition.

2.2 Rational Choice Theory

The KACP is founded on the idea that paying for the ecosystem service of carbon sequestration will incentivize a modification of people’s behavior that enables carbon sequestration. The governing logic of KACP, and all other neoliberal technologies, is essentially one of rational choice theory (RCT). In RCT people are perceived as homo economicus i.e. functioning by the logic of maximizing personal benefits.

Boudon (2003) describes RCT as a set of 6 postulates: 1 – Choices, actions, attitudes etc. cause social phenomena. 2 – Actions can be understood (even if they are not rational). 3 – Actors have conscious reasons for any action. 4 – Reason is derived from awareness of the consequences of the actor’s actions. 5 – Actors are mainly interested in the consequences of their own actions on themselves. 6 – Actors are able to balance the costs and benefits of the outcomes of each action and choose the most favorable action in order to maximize personal benefits. Scott (2000) offers more straightforward description and states that RCT dictates that
all actions are instrumental, calculative and rationally motivated; other actions do therefore not exist. Scott (2000) juxtaposes this definition of RCT to other theories on social action that involve reciprocity, social obligation, emotional action, and traditional action to name a few. Cosmides and Tooby (1994) argue that economics is based on assumptions of rational behavior. Moreover, they argue that economics depart from the notion that rationality is a natural state which does not require explanation. Explanation is therefore only required when behavior deviates from the natural rationality.

Goode (1997) criticizes RCT and argues that people are largely irrational or non-rational. Even if people were rational the theory assumes that when individuals choose their actions they have complete information which is not likely to be true in any situation. Additionally, rationalities are founded in culture and two rationalities may clash (Watson, 2003) without either of them being irrational. Cosmides and Tooby (1994) state that “at present [in 1994], economics hovers, scientifically unsupported and isolated in mid-air, theoretically levitating on the assumption of rationality” (Cosmides and Tooby, 1994:328), a statement that is arguably still relevant twenty years later.

Hence, the concept of homo economicus is problematic as it is a simplification of human behavior. However, the employment of RCT has been persistent as it is fundamental to mainstream economic theory. It has also been argued that it is an underlying notion in many other contexts of theoretical reasoning even if human behavior may not always be simplified to the very same extent (Goode, 1997). In this thesis it is important because economic systems including externality markets, PES and other economic incentives essentially operate on the basis of rational choice theory.

2.2.1 Homo reciprocans

The concept of homo reciprocans stands in contrast to the concept of homo economicus. To homo reciprocans the motivation for actions lie in the common good. Bowles and Gintis (2002) suggest that acts that may seem to be altruistic can in fact be motivated by direct or indirect reciprocity, such as, expecting reciprocal favors or reputational gain. However, they state, large scale cooperation in “one-shot” projects (i.e. projects that are not repeated) show that self-interest is an insufficient explanation. They also suggest that the altruistic punishment of free-riders is contributing to sustain cooperation. In an experiment using game theory Fehr and Gächter (2002) show that actors would punish free-riders without having any possibility of personal gain. Actors would even punish free riders at a personal cost. This act, Bowles and Gintis (2002) suggest, is just as altruistic as acts directly contributing to the public good. While both negative and positive reciprocity may be an expression of altruism Dohmen et al. (2006) quantitatively show that negative and positive reciprocity are dependent on different personal traits rather than one and the same tendency, highlighting the complexity of choice.

3 Background

This section starts off with a description of the impacts of the interventions of Green revolution and the implementation of the structural adjustment programmes in Kenya. It then goes on to describe the climate change mitigation and adaptation potential of soil carbon and agricultural practices. The carbon market and carbon finance is then briefly outlined and finally the KACP project itself is described.
3.1 The Green Revolution in Kenya

In the 1960s the World Bank, along with fellow institutions USAID, the US development advisory service, the Rockefeller and the Ford foundations, initiated the so called Green Revolution in developing countries (Cleaver 1972). The Green Revolution was composed of the spread of modified high-yielding seeds, pesticides, synthetic fertilizers, irrigation and intensified cultivation practice (e.g. Matson et al., 1997; Cleaver 1972). At the time the US foreign policy was focused on facilitating opportunities for US multinational corporations to expand and Cleaver (1972) argues that the Green Revolution was very much a part of an effort by US elites to set the path of development in low-income countries. The combination of modified seeds, fertilizers and irrigation gave significantly higher yields. However without fertilizers or irrigation the modified varieties would generally yield that same or lower than traditional varieties (Cleaver, 1972).

The Green Revolution increased food production significantly in many developing countries and was particularly successful in Asia (De Groot et al., 2005). In Africa however, it was less successful, but technical innovations in maize production, particularly regarding modified seeds and fertilizers, led to increased production in southern and eastern Africa (De Groot et al., 2005). After Kenya’s independence in 1963 many large scale commercial farms came to be run by local elites with connections to politically powerful actors. The policy on maize production reflected the interests of these large scale commercial farms, which spearheaded the development, and Kenya and Zimbabwe where the countries strongest affected by this maize Green Revolution (De Groot et al., 2005).

While the green revolution brought increased production in the short term, impacts of the practices introduced would eventually start to show. In the late 1970s yields started to decline and by the mid-1980s areal expansion of maize production had stopped increasing (De Groot et al., 2005). As the population simultaneously kept increasing the culmination of maize production had food security impacts and in 2005 the per capita production of maize had more than halved since the mid-seventies (De Groot et al., 2005). The World Bank (2009) classifies 65% of Kenya’s agricultural land as severely degraded and states that “from 1945-90, the productivity loss from soil degradation alone has been estimated at 25% for cropland” (World Bank, 2010:2). The impacts of the practices introduced by the Green Revolution include biodiversity loss, loss of soil organic matter, soil erosion, nutrient pollution, and GHG emissions (Matson et al., 1997).

3.2 Structural adjustment programmes in Kenya

The decade after Kenya’s independence in 1963 is referred to as the golden decade and socioeconomic development was substantial (Rono, 2002). GDP grew by 6.6% in the first decade, primary school enrolment increased by five times in the first twenty years, and life expectancy rose from forty-four at independence to sixty-nine in the 1980s. However the oil crisis in 1973s and the global economic recession that followed took its toll on Kenyan economy which was sensitive to global market price fluctuations (Rono, 2002). The most notable of the Kenyan government’s responses to this economic downturn was the implementation of structural adjustment programmes (SAPs). Kenya was one of the first countries to implement SAPs and the first programmes were introduced in the fiscal year of 1980/1981. The implementation was stepped up in 1986 (Rono, 2002).

The purpose of SAPs was to stimulate economic growth through macroeconomic policy measures. The general SAP package includes currency devaluation, cuts in government spending and services, deregulation of the market, and liberalization of trade (Benería, 1999). SAPs have received massive criticism in the decades after their implementation and even the
World Bank, which initiated and supported these programmes, admits that SAPs do not work (Rono, 2002).

In Kenya the SAPs contributed to the decline in practically all areas of development (Rono, 2002). The programmes affected government spending by decreasing salaries, social and economic services and inflation and simultaneously the spending on foreign debt grew significantly. Unemployment increased affecting families and the poor most. Poverty increased and the gap between the rich and the poor grew. The SAPs are also connected to an increase in violent crime and the marginalization of the poor in education. The general level of education, particularly in primary school, dropped in the 1980s and 1990s and medical and other services decreased in both quantity and quality in the 1990s as the implementation of SAPs were stepped up. Another impact of the SAPs is that the government lost legitimacy and the perception of political leaders was reduced to a status of tribal chiefs (Rono, 2002). This contributed to ethnic tensions and conflicts where hundreds of people died and thousands where displaced.

3.3 Mitigation and adaptation potential of soil carbon sequestration

The level of soil organic carbon (SOC) is measured by soil organic matter which correlates with carbon levels (Seufert et al., 2012). The amount of carbon stored in soils exceeds that which is stored in vegetation by far. In 1997 it was estimated that 1.8 times more carbon was stored in soils than in vegetation and, additionally, eighteen times more nitrogen was stored in soils compared to vegetation (Daily et al., 1997). The organic matter in agricultural soils has decreased over time and around 90% of the mitigation potential of agriculture is constituted by soil carbon sequestration (Gattinger et al., 2012). Cultivated soils could, based on 2004 values, potentially offset 5% - 15% of annual global GHG emissions (Lal, 2004a) and in 2010 as much as 40% - 72% of emissions from agriculture (El-Hage Scialabba & Müller-Lindenlauf, 2010).

The SOC level is generally lowered when land is brought under agricultural cultivation. In tropical climate the organic matter in soil is lost at a much higher pace than in temperate climate (Matson et al., 1997). The rate of loss also depends on a range of practices such as tillage, organic input, fallows, and crop coverage (Matson et al., 1997). In high-input intensive agriculture synthetic fertilizer tend to replace the use of manure. Fertilizers do not contain carbon whereas manure does and soils therefore lose organic carbon quicker if manure is not applied. The amount of tillage also affects SOC levels and higher levels of tillage leads to higher emissions of carbon from soils. Tillage, lack of cover crops and lack of fallows also enables erosion which is another significant reducer of SOC. Since organic matter has a lower density than mineral matter it is more easily eroded (Lal, 2004b).

The practices that have been observed to increase carbon stocks include applying organic fertilizers such as compost, manure or slurry, extending crop cycles, planting grass-clover and legume forage and avoiding bare fallows (Gattinger et al. 2012). Such practices are not applied in conventional agriculture but are essential to organic agriculture. In a twenty-year-long study in Pennsylvania, USA, where organic and conventional agriculture was compared, organic systems was observed to increase the soil carbon by 981 kg per hectare and year (Pimentel et al., 2005).

Soil organic matter increases the resilience to drought because the soil organic matter helps conserve water resources (Pimentel et al., 2005). Organic agricultural systems, which generally have higher biomass content in soils, have been observed to have significantly higher yields compared to conventional systems during drought years. Another indication of the water conserving capabilities of soil organic matter is that in irrigated systems yields are
35% lower for organic agriculture on average but in rain-fed systems yields are only 17% lower (Pimentel et al., 2005).

More soil organic matter also enables more soil biodiversity. Biodiversity has been proven to be important to agriculture as it suppresses pests (e.g. herbivorous insects) and disease (Lin, 2011). The occurrence of pests is expected to increase as climate changes as well as respond quicker to the changes in climate than plants. This may result in increased yield losses, should the adaptation of agriculture occur at a slower pace than the adaptation and migration of pests. Biodiversity also supports agriculture with other ecosystem services, such as nutrient recycling, microclimate and hydrological regulation, detoxification of chemicals and suppression of organisms that have negative impacts on production (Altieri, 1999). Biodiversity is lost through the lowering of crop diversity, a focus on fewer crops, and the introduction of monocultures. The use of pesticides and herbicides also lowers biodiversity. Hence, emissions from agricultural soils can to be re-sequestered and the mitigation potential of agricultural soils is significant. Moreover, fertile soils are important for the resilience and adaptive capacity of agriculture, particularly regarding resistant to drought, pests and disease.

3.4 The price of carbon

Carbon is ascribed monetary value in several sectors of the market, both in conventional ways such as through taxes and in more innovative ways such as emissions trading schemes and as PES schemes. One example is taxes on transport fuel as a valuation of carbon. Capozza and Curtin (2012) calculated the implicit prices of carbon for petrol and diesel fuel in Germany and arrive at a value of 66.7 Euros/ton CO₂ for petrol and 58.1 Euros/ton for diesel. Taxation and trading schemes has generally been applied solely with regard to decrease emissions while PES has been used to offset other emissions. In PES schemes the price is set individually in each projects and it is, for instance, 4 USD/tonne (≈3,16 Euros) in the KACP.

In emission trading schemes the governing body sets a cap for the maximum amount of emissions. The maximum amount of emission accepted are divided into emission allowances which are distributed by the governing body. Once distributed, the allowances can be traded between market actors. Hence, the value of carbon emission allowances is based on supply, which is fixed for a given period of time, and demand, which is determined by the amount of production and the technology used, and therefore fluctuates.

There are several such cap and trade markets of which the largest and oldest one is the European emission trading system (ETS). When ETS was launched in 2005 the price of the right to emit one metric ton of carbon was 25 Euros (The Economist, 2013). After 2008 the price of carbon in the ETS fluctuated around 15 - 20 Euros/ton, dropped from 20 euros to 10 euros during 2011 and decreased further down to 6 Euros in 2012 (Capozza & Curtin, 2012). In 2013 the value reached a record low of 2.75 Euros (≈3.48 USD) (The Economist, 2013) comparable to the price of 4 USD/tonne in the KACP.

3.5 The Kenya Agricultural Carbon Project

The KACP is implemented in western Kenya in the districts of Kitale and Kisumu. It was initiated in 2007 by the World Bank who contacted Vi Agroforestry. ViA has twenty-five years of experience of working with rural development in Kenya and was therefore seen as a good choice as implementing NGO (Sharma, 2012). ViA started to develop frameworks and methodologies for the implementation of the project and in 2009 the KACP was launched. The project will run for a total of twenty years and end in 2029.
The KACP is by its promoters described as a triple win referring to food security, climate change adaptation and climate change mitigation. The World Bank (2014) argues that these wins are achieved by farmers adopting a range of practices that increases the amount of SOC. Moreover the World Bank (2010), drawing on Malthusian theory, states that land in the project area is degraded and yields have been shrinking due to population growth which has caused intensive and unsustainable land management.

The project originally aimed to enrol 60,000 farmers and to cover an area of 45,000 hectares (Shames et al., 2012). There are twenty-seven ViA field officers in the project, each responsible for enrolling 400 farmers annually (Shames et al., 2012). If the enrolment target is not met then the missing number of farmers is rolled over to the following year (D’Souza, 2012). The enrolment period is during the first 6 years of the project and the goal is to enrol 10,800 farmers yearly. In 2012 around 20,000 farmers were enrolled (D’Souza, 2012).

Any farmer that is estimated to have the potential to sequester 0.5 metric tons of carbon over the twenty years of the project may participate. It is expected that the average farmer will farm 0.75 ha/year and the sequestration rate is expected to be 1.37 tons per ha/year. The sequestration goal for the entire project is 61,818 tonnes per year and 1,236,373 tonnes in total (Shames et al., 2012). The first carbon credit payments represent 24,788 metric tons of carbon dioxide, which is equivalent to emissions from 5,164 vehicles in a year (World Bank, 2014).

The World Bank has developed a VCS methodology which enables calculation of carbon sequestration and emissions from various practices. The VCS is a generic standard which acts as a base for the development of sector specific methodologies. The methodology developed
for the KACP is called the sustainable agricultural land management (SALM) methodology. In the VCS approved SALM methodology SALM is defined as any practice that increases the carbon stock on the land (World Bank, 2011). The farmers participating in the KACP are required to adopt SALM practices which essentially are a set of practices designed to sequester carbon and decreasing GHG emissions. A document on technical guidelines for the project provides a menu of SALM practices where the practices are listed and briefly described (Vi Agroforestry, 2011). The practices are a mix of technologies that ranges from being hundreds of years old to decade old. Through the VCS sequestered carbon and avoided emissions become verified emission reductions (VERs) and to facilitate trade the VERs are also conceptualized as VCUs. VERs and VCUs is essentially the same thing but calling them units allows for an easier understanding while trading. One VCU is equivalent to one metric tonne of CO₂ (Verified Carbon Standard, n.d.B).

Table 1. Practices listed in the menu of SALM. Source: Vi Agroforestry, 2011

<table>
<thead>
<tr>
<th>Practices listed in the menu of SALM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved crop varieties</td>
</tr>
<tr>
<td>Cover crops and green manure</td>
</tr>
<tr>
<td>Multiple cropping, crop rotations</td>
</tr>
<tr>
<td>Multiple cropping, intercropping (strip, alley, relay and contour strip cropping)</td>
</tr>
<tr>
<td>Mulching</td>
</tr>
<tr>
<td>Improved fallow</td>
</tr>
<tr>
<td>Manure management</td>
</tr>
<tr>
<td>Composting</td>
</tr>
<tr>
<td>Improving fertilizer use efficiency</td>
</tr>
<tr>
<td>Reduced tillage</td>
</tr>
<tr>
<td>Residue management</td>
</tr>
<tr>
<td>Terracing</td>
</tr>
<tr>
<td>Water harvesting structures</td>
</tr>
<tr>
<td>Agroforestry</td>
</tr>
<tr>
<td>Set-aside land (restoration and rehabilitation of degraded land)</td>
</tr>
<tr>
<td>Livestock management</td>
</tr>
</tbody>
</table>

The project design documents states that while accounting for sequestered carbon 60% of the carbon is discounted due to the impermanent nature of the sequestration (Shames et al., 2012). The discounting is estimated to cover the risk of sequestered carbon being re-emitted. Re-emission of sequestered carbon could arise from changed land use or changed practices. Farmers may decide to cut down trees that were planted in the project and in which the carbon
sequestration has been bought and used to offset other emissions. Farmers may start using farming practices that causes soils to emit carbon which has been used to offset other emissions. If carbon is re-emitted then the emissions that were offset by the sequestration would no longer be offset. Hence, according to the initial framework farmers do not get paid for 60% of the carbon that is estimated to be sequestered because that amount is discounted in the process of creating VCU.

In 2010 the World Bank Biocarbon Fund signed an emission reduction purchase agreement (ERPA) with the ViA. In the agreement the World Bank agreed to purchase 600,000 USD worth of carbon credits at a fixed price of 4 USD per credit (Shames et al. 2012). The Biocarbon Fund is divided in three so called tranches. The latest addition, the third tranche, is the one funding the KACP project. The current investors are the French agency for development (AFD) and the Syngenta foundation for sustainable development (World Bank, 2014). Syngenta is a multinational corporation in the agricultural sector producing seeds, pesticides and herbicides etc. (Syngenta, n.d.). The credits are purchased in advance in order to finance the project and the ERPA covers the period of 2010 to 2017 (World Bank, 2014).

Out of the revenue for carbon credits 30% is used to cover the ViAs costs of implementation and another 10% is used for administrative costs at the ViA Stockholm office. Hence 60% of the revenue generated by farmers goes to the farmers (Shames et al., 2012). The project is expected to generate returns of 1.98 million USD after discounting 60% (Shames et al., 2012).

The project is implemented through farmer groups. The groups are labelled self-help groups, youth groups or women groups. The ViA does not facilitate the creation of groups but only enrol groups that already exist. Farmers in the groups collectively join the project. Groups typically consist of between twelve and thirty members and carbon payments are issued to the group as a whole (Shames et al., 2012). ViA field officers implement the project and offer training and counselling. In addition to the field officers community facilitators (CF) have been recruited to help implement the project and to sustain the project once the ViA withdraws their officers. Community Facilitators are farmers that are participating in the KACP that receive extra training and have additional tasks compared to regular KACP participants (Shames et al., 2012).

The World Bank has a series of so called applicability conditions that have to be fulfilled in order for farms to be eligible for the project. These conditions are posed in order to ensure additionality. Hence, the emission reductions need to be additional compared to a scenario where the project is not implemented, in accordance with the VCS. These requirements are stated in the VCS SALM methodology (World Bank, 2011):

- the land has to be grassland or cropland at the project start
- the project does not occur on wetlands
- The land is degraded and will continue to be degraded or continue to degrade
- The area of land under cultivation in the region is constant or increasing in absence of the project
- Forest land, as defined by the national CDM forest definition, in the region is constant or decreasing over time
- that there are studies that show that the Roth-C model that is used for carbon accounting is appropriate
4 Methodology

The methods used in this study are semi-structured interviews, participatory observations and transect walks. Triangulation of these three methods is used to enhance the validity and reliability of the results. Respondents were selected using a snowball selection as this was perceived as the selection method subject to least bias out of the practically possible options.

4.1 Semi-structured interviews

The use of semi-structured interviews and participatory observation provides a deeper insight into the perspectives of the respondents than surveys or structured interviews. Structured interviews essentially consist of a list of questions and unstructured interviews are directed by the respondent rather than predetermined questions. Semi-structured interviews are somewhere in between the other two types of interviews and are conversational and flexible but has some predetermined order (Longhurst, 2010). Also, using a survey on a population which the researcher know little about and whose life-world is considerably different from that of the researcher would leave much room for misinterpretations, misdirected questions and missing out on important information. This type of research calls for a qualitative approach as it deals with perceptions, understandings and communication.

An exploratory study such as this calls for a qualitative approach as the issues dealt with are complex and multidimensional. Qualitative research allows for clarifications, follow-up questions and reflections by the respondent and therefore facilitates deeper understanding and insight into the worldview of the respondent. This is important as it allows for a contextual understanding of the issues dealt with. The positionality (Valentine, 2005) of the researcher is important to keep in mind when conducting participatory research, particularly as a European researcher in a former colony. How the researcher is perceived by respondents will shape their interaction and hence, also the interpersonal knowledge that can be produced.

4.2 Snowballing

In this study a snowball selection of respondents is used as I perceive it as the most appropriate approach in the context of rural Kenya. Snowballing basically consists of one respondent referring the researcher to another respondent who in turn refers the researcher to other respondents, and so on (Atkinson & Flint, 2001).

The selection of respondents may be biased based on who facilitates the contacts. The official contact persons in a project such as this are likely to be the ones most engaged and enthusiastic about the project, and therefore also likely to be keen on portraying the project as a success. If contact with respondents is facilitated through such contact persons the selection of respondents is likely to be highly biased as respondent may then consist of the most active, involved and project-knowledgeable. Another reason for using a snowball selection is, therefore, that it increases the likelihood of being able to reach deeper into the social network of the population rather than staying on the pro-project and enthusiastic surface of group leaders and CFs. A possible problem is, however, that it may be difficult to find another entrance into the social network of project participants and the contact persons therefore play the role of gatekeepers (Berg, 1998).

The project may be a sensitive issue for some stakeholders who may perceive the study as unfavorable to their interests. Gatekeepers can prevent the researcher from accessing respondents should the gatekeeper feels that it is unfavorable. While snowballing in the context of the project, guides (Berg, 1998) may be an important asset in navigating the social context and selecting respondents.
4.3 Participatory observation

Becker & Geer (1957) define participatory observation as participating in the everyday lives of the people who are studies, observing, listening and asking questions. They argue that participatory observation provides a more complete understanding than interviews alone would because the observer is participating in the events that otherwise would only be talked about (Atkinson & Coffey, 2001).

Participatory observation is in this study employed in two different ways. During a three day workshop for CFs and ViA staff participatory observation was used as the only method. During the analysis of farms it was used in combination with transect walks and semi-structured interviews.

4.4 Transect walks

Oudwater & Martin (2002) argue that local knowledge is highly localized and points to the importance of field visits when dealing with local knowledge and practices. Moreover they highlight the high level of detail and the direct link to the subject matter that transect walks provide. Transect walks was done on all the analysed farms in the study. All of the farmland belonging to each analysed farm was included in the walks. During the walks observations were made and the semi-structured interviews were initiated. The purpose of the transect walks was to ease into the interview situation by talking about the farm in general, the crops grown and the practices employed. This approach may also be beneficial as the subject of the interview becomes more tangible. Moreover it is assumed that it facilitates dialogue regarding things that respondents’ may otherwise take for granted and, hence, not mention. Therefore the transect walks are important tools to avoid misunderstandings and missing out on important information and adds to the scope of the analysis. It is also assumed that respondents’ will be more open and relaxed in the interview situation if an interest is taken in their farm and their everyday lives. During the walks questions were asked about the crops and practices on each field as well as other on-farm practices and the changes since prior to project enrolment. The interviews were then continued in a suitable location after the walk.

4.5 Triangulation

Methodological triangulation refers to the use of multiple methods in the study of one and the same phenomenon (Jick, 1979). Denzin (2012) states that triangulation is an in-depth approach to understanding a phenomenon. He argues that it is not a validation strategy but rather an alternative to validation and states that “The combination of multiple methodological practices, empirical materials, perspectives, and observers in a single study is best understood as a strategy that adds rigor, breadth complexity, richness, and depth to any inquiry” (Denzin, 2012:82). Whether triangulation of the three methods is used in this thesis replaces or enhance the validity of the findings in the study is not further scrutinized. It is however assumed that the use of triangulation increases the robustness of the findings. In this study the different methods are used simultaneously for the most part, particularly regarding semi-structured interviews and transect walks during analysis of farms. Participatory observation was the only method used during participation in a KACP workshop. During interviews with ViA staff semi-structured is only the method used. The findings were then triangulated, juxtaposing them during analysis.

4.6 Delimitations

The population studied is farmers participating in the KACP and to some extent also the ViA staff implementing the KACP. The study is temporally focused on the lifespan of the project
which is year 2007 to year 2029 but also includes farmer histories that extend further back than 2007. As the study involves carbon dioxide it also connects to timescales of the carbon cycle which extends to the millennial scale. Spatially the study is limited to the Kitale KACP area.

4.7 Critique of methodology

The human experience does not allow for objectivity as experiences and observations inherently are filtered through the human consciousness. In the process it is shaped by our ontological assumption, worldviews, values and characteristics. Qualitative methods may be more prone to subjectivity compared to quantitative methods as there may be more layers of interpretation, for instance, in the interpersonal knowledge that is produced during interviews compared to, let’s say, the counting of oxygen isotopes in ice cores.

As the methodology used in this study is qualitative it can be argued that it is more prone to biases compared to quantitative methods. Interviews are also affected by the historical and social context surrounding the relationship between the researcher and the respondent, which is what Valentine (2005) refers to as the researcher’s positionality. This may be particularly important if the study is conducted by a white European in a former colony as the colonial legacy may affect social interaction in several ways. Valentine (2005) argues that such social interaction has an inherent unequal power relation and respondents may feel obligated to cooperate and give answers they think the researcher want to hear. Adding to the layers of subjective interpretation in this study is the use of interpreters who also may add to the shaping of or reshaping of the respondent answers while translating. The issues that may affect the relationship between the researcher and the respondent may also affect the relationship between the researcher and the interpreter.

However, as the interpreter cooperates with the researcher over an extended period of time there is a chance of building trust and this issue should therefore not be as significant as between the researcher and the respondents. Issues in the relationship between the researcher and the respondent may be ameliorated by spending more time with respondents and applying participatory observation (Becker & Geer, 1957). Moreover, at additional visits by the researcher respondents may be more relaxed and trusting of the researcher as the researcher then is known and the respondent may have a better idea of the researcher’s intentions.

If respondents have a clear idea about the researcher’s intentions and do not perceive a strong agenda that may harm their interests there may be a greater chance of the researcher not being compartmentalized in a certain position in the minds of respondents. In this study I therefore made efforts to as clearly as possible express my background and my intentions when visiting respondents. Participants in the KACP may also be reluctant to express themselves critically regarding the project if they feel that they or their participation in the project is being scrutinized. Additionally, in Kenya land ownership is not always clearly established and respondent may therefore be reluctant to be completely open while expressing themselves on out of fear of losing their land.

Not only are the interpretations that form the basis of the analysis affected by the subjective worldview and ontological assumptions of the researcher but also the researcher’s familiarity with the context of the study. In order to familiarize myself with the context I spent two weeks in rural areas in Kitale and Bungoma before analysing any farms. During the time I also did interviews with ViA staff, attended a ViA workshop and participated in a World Bank e-course on soil carbon monitoring. In order to strengthen the robustness of conclusions drawn several methods are employed and triangulated in the study. However there is still
room for biases in the analysis and the choices of focal points and highlighted subject matter in the analysis are also dependent on the researchers collected biases.

Additionally, the selection of respondents is subject to a range of eventualities and biases. Even if the starting points for a snowball section of respondents are randomized, such as through a list of group leaders, such a randomization only provides a randomized selection of biases. This method was however deemed the most suitable out of few possible alternatives.

4.8 Ethics

In qualitative research it is important to keep research ethics in mind. Because of the unequal power relations inherent in the colonial legacy (Valentine, 2005), efforts were made to approach respondents as humbly as possible and to use Swahili phrases and culturally correct gestures.

The interviews with farmers mainly concerned the farming practices used, the differences brought by the KACP and the carbon credit payments. The topics of the interviews hence concerned general matters, did not involve other people and did not touch upon sensitive matters. The risk of negative implications for respondent farmers as a result of the publication of this thesis is therefore perceived as very low and no respondent asked to be anonymous. However, the names of the interpreters are left out in the thesis because of possible implications resulting from the publication of the thesis.

All of the interviews, aside from one, where recorded and all recordings of interviews were done after consent was given. The interviews with ViA staff was partly arranged by the ViA and partly requested by me. Most of the respondent farmers were telephoned in advance, with the help of my interpreters, and asked if they were willing to participate in the study. Some farmers were not reachable per telephone and where therefore visited without prior notification. Arriving at farms I would greet farmers, explain who I was and that I was studying the KACP project. I would then ask if I could see their farms and ask questions about their farms and the KACP project. Then I would ask if they allowed me to record our conversation.

5 Field work – method in practice

This section outlines the fieldwork in practice, both regarding interactions with the ViA and farmers. Moreover the process of respondent selection is described as well as issues that arouse which may have affected the result of the fieldwork. A total of twenty semi-structured interviews were conducted along with eighteen transect walks on farms, participation in a ViA workshop and a variety of informal interactions.

5.1 Interaction and interviews with ViA staff

Two interviews with ViA staff have been conducted and I have been interviewed twice by ViA staff. I interviewed Martha Kapuhka who is responsible for SALM at the ViA and Emmanuel Wachiye who is responsible for monitoring and evaluation of the KACP. The two interviews of myself was done by Lonah Mukoya who is responsible for interns and students within the ViA and Mr Wachiye. These meetings were also sources of relevant empirical data for the study. Aside from these formal interviews informal interactions have also been a significant source of empirical data. Informal communication with a range of ViA staff, CFs, other project participants, and non-project respondents such as voluntaries and staff at other NOGs as well as local residents has also contributed to the study.
5.2 Workshop

I attended a three day workshop for KACP CFs held by the ViA. The workshop was held in Chwele, Bungoma. It consisted of lectures mainly on SALM practices and climate change as well as exercises and interactions on the subjects between the CFs and ViA staff. Two days was spent in a conference room and one day was spent on fieldtrips to two of the community facilitators’ farms. The farms visited were referred to as model farms and are supposed to pose as examples for others to follow.

Figur 2. Workshop with Vi Agroforestry staff and Community facilitators in Chwele, Bungoma. Photo: Author

5.3 Transect walks and interviews with farmers

The fieldwork was carried out in the Kitale project area. The project area in around seventy kilometres south of Kitale Town in a region called Bungoma. ViA has an office in Bungoma Town and the KACP Kitale area is divided in three divisions and fifteen locations in the Bungoma region. The divisions correspond with official administrative divisions and are the divisions of Bumula, Malakisi and Sirisia. In each location there is between thirty-four and seventy-three farmer groups adding up to a total of 922 farmer groups.

A total of eighteen interviews with farmers were conducted. Thirteen of these interviews were with farmers in the KACP project, three of which were with CFs. Out of the five interviews with respondents that are not in the KACP, two were with farmers that have been in previous ViA projects and three were with farmers that have never been involved with the ViA. The World Bank has a strong presence in the region and many farmers that are in the KACP project are also in a project by the World Bank in collaboration with the Kenyan Government called Western Kenya Community Driven Development/Flood Mitigation Project (WKCDD/FMP). Only one of the interviewed farmers has not been in any NGO development project.
Three of the interviews were conducted outside the KACP areas in a region called Yuya close to Kitale Town. In the Yuya area ViA has previously been active but have no current projects. The reason for conducting interviews in the Yuya area is to compare what was previously called best practices (which since the KACP came about instead has been labelled SALM) to the SALMs implemented in the KACP and to see if farmers would still implement these practices years after ViA left the region.

The areas where interviews conducted are Lwandany, Namubila, Sirisia, Mukwa and South Bukusu (figure 1), aside from the three interviews that took place outside the KACP project area. The ViA office provided me with a register with contacts to all 922 group leaders in an Excel document and it was therefore possible to do an initial random selection of group leaders using the randomize function in Excel.

Figur 3. Kitale KACP location areas. Image provided by Kitale Viaf office.

The interpreter that I had made arrangement with and who frequently works with students in the Kitale region could not make it from Nairobi where she was located at the time due to high pressure on transportation caused by the upcoming Easter holiday. I therefore asked her to recommend another interpreter. Later on the first interpreter was available and I therefore have two sets of interviews with eight and ten interviews respectively.

The second interpreter lives in Malakisi and is familiar with farmers in the area. I estimated that a snowball selection through group leaders would be more likely to have a higher bias.
towards farmers that are most engaged and active in the KACP than a snowball selection starting with my interpreter. The interpreter is a group leader in a youth group in Malakisi but is not a farmer. Because the interpreter is a group leader (i.e. an authority figure) the area of Malakisi was not eligible for interviews as that might affects farmers’ answers. As a result the first eight respondents were selected using a snowball selection with my interpreter as a starting point and with further guidance from member farmers. The approach turned out to be somewhat biased towards high level of project engagement or resulting in not finding farmers in the project. Due to occasional communication issues during this first set of interviews the transect walks proved to be valuable as they provided specific examples as starting point for dialogue and thereby facilitated a more clear communication. Two farmers from the first set of interviews were also revisited with the first interpreter.

The other ten interviews were conducted with the first interpreter who was not familiar with the Bungoma area and could not act as a guide in selecting respondents. The second round of interviews was therefore selected through the list of group leaders provided by the ViA. After consulting the interpreter and local motorcycle taxi drivers I selected the location South Bukusu to represent the southern part of the Kitale KACP region.

For the second set of interviews I randomized all farmer group leaders in the South Bukusu location in an Excel sheet and picked the top three group leaders that had a listed phone number. The interpreter called these three group leaders and asked for numbers to group members. Two of the group leaders provided me with contacts to five members each and one provided me with contacts to three members. I started by calling the first number provided by the first responding group leader after which I called the fifth number provided by the secondly responding group leader. This approach turned out to correspond well with what I had anticipated as the first respondent turned out to be a CF and the second respondent turned out to barely be aware of her participation in the KACP. The following interviews represented a mix of respondent that covered a fairly wide spectrum of level of engagement in the project. However, this selection also seem to have been somewhat biased towards the more enthusiastic participants as the number of CF, group leaders and group secretaries was overrepresented in the selection.

The respondents in the Yuya region, who had not been in a ViA project for many years and of whom I had no register, where selected using a snowball approach that departed from contacts that my interpreter had and was completed by an unplanned visit of a neighbouring farmer during an interview.

### 5.4 Participation in World Bank E-course on soil carbon monitoring

During the fieldwork I also attended an e-course on soil carbon monitoring held by the World Bank. The subject of the course was the VSC methodology, the SALM methodology, and the KACP.

### 5.5 Transparency of the KACP

It became evident during the fieldwork that the ViA organization in Kenya does not want the KACP scrutinized. The Environment and Climate Change officer at the ViA said during an informal conversation that there is no documentation available to the public on the project because the project has received criticism and that it has been called green washing (personal communication, April 8th 2014).

During the fieldwork I received an email from the Country manager of ViA stating that I was not allowed to do my study within the KACP but that I was welcome to do it at any other ViA project. If I was to study the KACP I had to submit a research plan that would have to be
reviewed by a ViA officer and it would take some time (country manage, personal communication, April 10th). This was after the study had already been approved by the ViA. I had at the time already interviewed one ViA officer and participated in a ViA workshop.

I responded that my study had already been approved and that the scholarship provided by SIDA was awarded based on my study of the KACP. After a fairly long email conversation the Country manager agreed to let me continue with my study but asked that I would send him my research plan. Moreover I was requested to meet with the monitoring and evaluation officer for the project, Mr Wachiye, to review my research plan and to be advised on restrictions of the study. Mr Wachiye was however not available for the meeting and was replaced by Mrs Mukoya.

Mrs Mukoya stated that the World Bank sets the limits for what may be communicated about the project and what information the ViA may share. The World Bank does not want information about the project to get into media (Mukoya, personal communication, April 14th 2014). When asked if data on the project will be available to me she responded that what information I will be allowed depends on the focus of my study. The country manager will decide what information I will be allowed to access. The World Bank wants to be sure that the project works before information is released and it is still under evaluation, however she is sure that it works, she said. Another reason not to share information is that SALM is implemented in all ViA projects but payments are only issued in the KACP. There have been occasions where farmers in other ViA projects have learned about the payments in the KACP and has been agitated and requested payments for their implementation of SALM practices as well (Mukoya, personal communication, April 14th 2014). When asked if the World Bank had set any timeframe for when information on the project could be released Mrs Mukoya said that she did not know of one but that she would like to know that too.

Mr Wachiye also confirmed that they are selective in what information they share about the project and confirms that the country manager will decide what documents I will be allowed to access (Wachiye, personal communication, April 28th 2014). Mr Wachiye confirmed that they have a lot of statistics on the project and said that he would check if I will be allowed to access the data and confirms that it is up to the country manager to decide. Mr Wachiye, who also took the World Bank e-course on soil carbon monitoring, was not prior to the e-course aware that the World Bank has changed the name of the KACP to the Kenya SALM project. Moreover he said that the e-course is based on a presentation that he and other ViA staff developed for an earlier occasion (Wachiye, personal communication, April 28th 2014).

An important note regarding transparency is that the ViA is a Swedish NGO largely financed by SIDA which has an ambitious policy on transparency (SIDA, 2014).

6 Analysis

In this section the agricultural context is described along with differences in crops and practices prior and post KACP enrolment. Changes in the KACP framework and implementation are described along with information about aspects of the project that was previously unknown. The KACP as a nexus between NGO and state engagement is also described as part of the intricate web of facilitating the project and hence the PES. Moreover, the applicability conditions of the project and the carbon payment significance are scrutinized. The issue of ownership is problematized along with perceptions of climate change mitigation and adaptation.
6.1 Differences in farming practices and SALM

This subsection provides an outline of the average farm in the Kitale project area and a
description of the changes that the KACP has brought regarding what crops are grown and
what practices are used. A requirement for the project is that land is degraded and not
managed sustainably. SALM methods should therefore not be extensively used by
participants prior to their project enrolment as that would indicate that the land was already
managed sustainably. For some the difference that the KACP has brought has been great and
for others it has been less significant. In the study there was examples of all the SALM
practices that the ViA promotes being implemented. However, some practices were only
implemented by a few farmers and the most common SALM practices where in many cases
already being used before the KACP enrolment.

- The average farm

The Kitale area is very lush and green in general and is commonly referred to as Kenya’s
kitchen. Farms in the studied area are usually around one hectare but range from a bit more
than half a hectare up to around four – five hectares in size. Farmers have between five and
fifteen perennial crops at one time and the average farmer has approximately two
cows and a few chickens. Regarding livestock there is a lot of variation however and some only have a
few chickens while others have chickens, cows, goats, rabbits, ducks, turkeys, bulls, doves,
and some even keep bees. The average farm has a few fruit trees, some agroforestry trees, a
few other trees such as trees for timber or herbal medicine, and boundary trees around the
borders of the farm. The number and type of trees is subject to variation but all farms had
some trees and most have many of many different kinds. The cropland is divided into
different fields that either have different crops, a different combination of crops or a different
planting technique but the same crops as another field. The average farmer is a woman and
some are widows. Only on four out of eighteen analysed farms was the “head” farmer a man.

Figur 4. A typical field in the Bungoma area with maize and beans intercropped, grass strips at the edges, some trees
in the field and boundary trees in the far end. Photo: Author

- Crops types
All interviewed farmers grow maize and most also grow beans. Maize is the single most important crop and its importance is primarily for food security. Beans are also grown by the lion part of all farmers and are usually intercropped with maize. Groundnuts are also common and are sometimes intercropped with maize and beans. Sweet potatoes, cassava and sukumawiki (a crop that is similar to spinach) are also commonly grown but are usually not intercropped. Napier grass is grown for fodder and sometimes also as grass strips to prevent erosion. Other crops that are fairly common are millet, Irish potatoes, sorghum and tomatoes. Some farmers only grew maize on most of their land prior to the KACP enrolment and in those cases the difference in crop diversity has been very significant. For most farmers, however, the crop diversity was not significantly affected by the KACP as they already cultivated many different crops when they joined the project.

Bananas are grown by most farmers and many also grow plantains, or *matoke* in Swahili, which is a type of banana that is cooked. Passion fruit, guava, avocado, papaya and lime are fairly common and some also have jackfruit. A few farmers have a few oil palms and most of the farmers that do plan on expanding their oil palm cultivation. The farmers that cultivate banana also did so prior to the KACP however most farmers has started using hybrid banana strains since their enrolment. Most of the commonly grown fruits were grown prior to the KACP but the cultivation of passion fruit has increased in some farms with the project.

Cash crops are different in the northern and southern part of the project area. Coffee is the main cash crop in the northern parts of the Kitale project area which are located a bit higher up on the slopes of Mount Elgon that the southern parts. In the southern parts sugarcane is the main cash crop.

- **Crop rotation and intercropping**

A few farmers only grew maize prior to the KACP and, hence, did not rotate crops. Some farmers had many different crops in the same field each season and were not concerned with rotation as most crops were grown every planting season. However, many of the interviewed farmers practiced crop rotation prior to their project enrolment. Most of the farmers that practiced crop rotation prior to the KACP did so by their own initiative. For instance Mrs Wasolo in South Bukusu stated that “I did intercropping even before ViA came and we also did crop rotation” (personal communication, April 23rd 2014). Some farmers were told to practice crop rotation by other NGOs whose projects they were in prior to the KACP. One such example is Mrs Nakhungu who was taught about crop rotation among other things in a project by Danish International Development Agency (DANIDA) which she was in prior to the KACP (Nakhungu, personal communication, April 22nd 2014).

Most farmers used intercropping before they joined the project. However the KACP promotes intercropping in separate rows as opposed to the same row which is the most common way of intercropping. Maize and beans are very important crops which are intercropped and this is one of the most significant changes in practice as it affects practically all participating farmers. However farmers also experiment with this practice and have one field with separate rows and one with mixed rows in order to see the difference. Having separate rows gives each plant more space but a field can fit more plant with mixed rows. Mrs Lidonde who has her farm in the Yuya area was in ViA projects from 1986 to 2002. She was taught the same practices as the KACP farmers including intercropping maize and beans in separate rows. However she has stopped using separate rows in order to conserve space and have more crops on the same field instead (Lidonde, personal communication, April 25th 2014).
Figur 5. Intercropping of maize and beans in separate rows at community facilitator Mr Ndiwa’s farm in Sirisia. Photo: Author

Figur 6. Intercropping of maize and beans in the same row and groundnuts in separate rows at community facilitator Mr Ndiwa’s farm in Sirisia. Photo: Author
- **Manure**

A significant difference that the KACP has brought for many of the participating farmers is the use of manure. Before the project some would discard cow dung as waste, some would leave it were it was and some would throw it in the fields as a fertilizer. Out of the KACP farmer that I interviewed no one was making manure prior to the KACP enrolment. The manure is made by mixing cow dung, crop residues and leaves in a pit. The mixture then has to sit for a given time period before it can be applied to the field. In order to know when the manure is ready the ViA teaches farmers to put a stick in the heap that will act as a thermometer. The farmer can pull out the stick and feel if it is warm or cold which indicates if the compost manure is ready or not. However some farmers said that the compost was ready when the stick is warm (e.g. Wanyonyi, personal communication, April 24th 2014) and others said it was ready when the stick is cold (e.g. Nakhungu, personal communication, April 22nd 2014). Moreover, only a few farmers had enough livestock to provide any significant amount of manure. Some did not have compost pits and some had pits that were not in use. A few of the farmers also make so called green manure or compost from kitchen waste which is also promoted by the ViA.

![Compost heap with thermometer stick at community facilitator Mr Wanyoni's farm. Photo: Author](image)

- **Crop residues**

The KACP also promotes leaving crop residues in the fields. The residues which are often used as firewood or are collected and thrown away will then act as manure and the carbon in the residues will go back into the soil. Many farmers did not leave the residues in the fields before they joined the project. Another use of crop residues that is promoted in the KACP is so called thrash lines which are used to prevent soil erosion. Thrash lines was however only observed on very few farms.
- **Improved varieties**

Improved crop varieties are commonly used and the ViA facilitates contacts with seed companies. However, improved varieties were widely used prior to the KACP as well. Modified seeds are used for many crops including maize, banana, cassava and rice, for instance. The seeds for these varieties are bought from seed companies and farmers are not allowed to produce their own seed or sell to other farmers “you can’t produce your own, they say that it is not certified for planting... …it is not allowed” (Wanyonyi, personal communication, April 24th 2014). Examples of seed providers that farmers referred to are the Western Kenya seed company and Monsanto.

A modified banana variety has been introduced which gives higher yields but is more sensitive to drought compared to the indigenous variety. Some farmers have both varieties and intend to keep having both saying that the indigenous one is for home consumption and the modified one is for selling. Others are in the process of phasing out the indigenous variety and replacing it with the modified variety and some have already replaced the indigenous variety with the modified one. Many farmers that grow banana also grow plantains. It is not uncommon that farmers have all three varieties and I did not come across any farmer that grew only plantains.

- **Planting techniques**

The differences in planting techniques generally consist of improvements of techniques that are already used. Planting bananas in pits is common practice and most farmers used pits before they joined KACP. However, the ViA promotes larger pits than was commonly used prior to the project as well as applying manure in the pits before planting the banana seedlings. Similarly, eucalyptus trees for timber was commonly planted before the KACP but the ViA promotes planting trees wider apart than they usually are in order for the trees to grow thicker.

![Banana pit at a KACP model farm in Bungoma. Photo: Author](image)

Figur 8. Banana pit at a KACP model farm in Bungoma. Photo: Author
- Livestock keeping

Most farmers have chickens and many have one or a few cows. Most cows are an indigenous breed but some have crossbreeds of European breeds or a mix of indigenous and crossbreeds. The crossbreeds produce several times more milk than the indigenous breed (Ndiwa, personal communication, April 21st 2014). Also goats, turkeys, rabbits, doves, ducks and bees are kept by some farmers.

Regarding livestock the KACP promotes zero grazing units which essentially are small stables for one or a few cows. The cows are kept and fed in the unit. Such units make it easier to collect manure and compose a healthy diet for the livestock. The ViA teaches farmers that a free range grazing results in a bad diet for their cattle and that a bad diet causes the cattle to emit more methane which exacerbates climate change. Hence, reducing the methane gas emitted from cows by changing their diet is considered a climate change mitigation practice. Farmers are also advised to have fewer heads of cattle and instead having cattle of more productive breeds. Mrs Kapukha from the ViA said:

“Regionally in these areas farmers could have ten cows, fifteen cows and even some richer farmers twenty. But they are not very productive. They just walk everywhere and drop dung all over and you know dung also releases these gases methane and nitrous oxide. So we’ve been advising farmers to have just a few heads of cattle, then they manage them well, under intensive management, so that they produce more, they release less of the gases and dung is well managed”.

(Kapukha, personal communication, April 7th 2014).

Moreover, Mrs Kapukha stated that in the applicability conditions of the design document for the project “livestock should decrease in numbers but not increase.” (Kapuhka, personal communication, April 7th 2014).

Figur 9. Zero grazing unit at Mrs Maina's farm in Sirisia. Photo: Author
In the KACP the ViA promotes rabbit keeping and beekeeping as a source of income. Out of the three farmers that I interviewed that keep bees only one had the equipment and knowhow to harvest the honey. One farmers beehives where broken and she had no bees at the moment. The other farmer had had bees for six months but has never harvested honey because she could not afford the equipment which is expensive (Wasolo, personal communication, April 23rd 2014). It may seem like having a lot of equipment is not completely necessary when harvesting honey. However, honeybees in Kenya have not been domesticated to the same extent as in Europe and are therefore more aggressive than European bees which are comparatively docile (Krausa, personal communication, May 5th 2014).

![Rabbit and beekeeping](image)

**Figure 10. Mrs Mangoli in Sirisia and her rabbit cages. Photo: Author**

- **Agroforestry**

Most farms in the project implement agroforestry. The trees planted are predominantly the usual agroforestry trees promoted by the ViA and fruit trees. Almost all farms have at least some of their boundary edges marked by a line of trees and many farms have trees along the edges of fields. The ViA used to give tree seedlings to farmers for free which was much appreciated by farmers. For some farmers, such as Mrs Munialo, the seedlings were the main change brought by the KACP because they already used many of the other SALM practices (Munialo, personal communication, April 21st 2014).

It was common to have trees on farms prior to the KACP as well. Particularly fruit trees and boundary trees was common but also trees for other uses such as timber and firewood. It is however clear that the KACP has resulted in more trees on most farms and the planting of rows of trees in between fields and even in field. The trees planted in or close to field are usually nitrogen fixing trees.
Figur 11. Agroforestry trees in the center and boundary trees at the far end at Mrs Munialo’s farm in Sirisia. Photo: Author
Figur 12. Agroforestry in the center and boundary trees at the far end at community facilitator Mr Wanyoni’s farm in South Bukusu. Photo: Author

- Soil erosion and water harvesting

In order to prevent soil erosion the KACP promotes terraces on sloping land, grass strips at the edges of fields and cover crops during falls. A few of the interviewed farmers have constructed terraces since they joined the KACP but most have not. In the Kitale project area land is generally gently sloping. There is some flat farmland and very little steeply sloping farmland. Grass strips at the edges of fields are however widely used and particularly using Napier grass, which is used for fodder, for this purpose has increased in the KACP farms. The KACP promotes ditches and big pits for water harvesting as well as other water collection constructions. Such constructions were observed in both KACP farms and non-KACP farms. However big pits for water harvesting was only observed on farms where the ViA have or have had projects. Generally, water harvesting structures were quite uncommon.
Figur 13. Water harvesting construction at Mrs Maina's farms in Sirisia. Photo: Author

Figur 14. Water harvesting pit at community facilitator Mrs Wanyama's farm in Mukwa. Photo: Author
- Records

Prior to the KACP farmers did generally not keep records of yields and crop types. In the KACP they are instructed to keep records. This is something that many farmers perceive as a big difference and as an aid in improving their farming. Most farmers have divided their fields were they grow different crops and usually have grass strips to prevent erosion at the edges of every field. The ViA promotes dividing fields and assigning each field a number for keeping records of crop varieties and yields. Numbering fields and keeping records is also essential for the accounting of carbon sequestration.

- Stoves

The KACP promotes the use of stoves that use less firewood and produce less smoke. Mrs Anyanga in South Bukusu said “We were taught that we should not allow a lot of smoke into the atmosphere, so we were showed how to construct this Meko [special stove]. It uses less firewood and produces less smoke” (personal communication, April 23rd 2014). Only a few of the interviewed farmers had such stoves but all of the CFs visited or interviewed had them.

Figur 15. Meko stove at community facilitator Mr Wanyama’s farm in Mukwa. Photo: Author

- Summary

The SALM practices promoted in the KACP has meant significant differences for a few farmers. Some of the SALMs are new to practically all farmers such as composting and record keeping. Some of the SALM practices were widely used prior to the KACP. These include crop rotation, intercropping, and grass strips to prevent soil erosion. SALM practices are used by non-KACP farmers as well. One such example is Wicklyfe Simiyu who has not been in any NGO project but still implements terraces, agroforestry, crop rotation, intercropping, and grass strips for instance.
Figur 16. Agroforestry, terraces, intercropping, and grass strips at Mr Simiyu's non-KACP farm in Mukwa. Photo: Author

Figur 17. Agroforestry, terraces, intercropping, and grass strips at Mr Simiyu's non-KACP farm in Mukwa. Photo: Author
6.2 An update of KACP framework

In this subsection changes to the administration of the project is described as well as important aspects that is not disclosed in project design documents

- **Stopped enrolment**

The World Bank has ordered a stop on the enrolment of new KACP practitioners in the Kitale project area. The enrolment was stopped because the World Bank only agreed to purchase a certain amount of credits (Kapuhka, personal communication, April 7th 2014). The current number of participants is around 20,000 which is far from the original goal of 60,000. Enrolment is still on-going in the Kisumu area and the recruitment has been slower there (Wachiye, personal communication, April 28th 2014).

- **Impermanence discounting**

A significant change in the project is that the discounting of sequestered carbon due to impermanence that was originally set to 60% has been lowered (Wachiye, personal communication, April 28th 2014). During the validation of the project the risk was re-evaluated and was observed to be 8.25% (Holland et al., 2013) and the lowest risk that the VCS standard allows is 10% (Verified Carbon Standard, 2008) which is what is now used in the project. This has significant effects on carbon payments as only 10% instead of 60% is deducted in the process of creating carbon credits. The payments that have been issued in the project was issued after the validation and hence with the 10% deduction instead of the 60% deduction. The lowering of the risk is also the reason why the ViA has been able to pay as much as they did to farmers (Wachiye, personal communication, April 28th 2014). Hence, if the risk had been set to the original 60% when calculating the carbon sequestration then the payments to farmers would have been 50% lower.

- **SALMs or best practices**

The SALMs that are implemented in KACP are the same practices that the ViA has promoted in agriculture before the initiation of the project. Before the KACP they were simply called best practices (Kapuhka, personal communication, April 7th 2014). These best practices were promoted in all ViA projects and now after the renaming of the practices ViA instead implements SALM in all their projects (Kapuhka, personal communication, April 7th 2014). The same best practices are promoted by other actors as well. The government agricultural extensions promote the same best practices aside from agroforestry (e.g. Khisa, personal communication, April 25th 2014). The World Bank project WBCDD/FMP encompasses zero grazing units and hybrid banana varieties and the NGO Gridis also promotes hybrid banana varieties among other practices (e.g. Mayende; Wandambwa; Ndiwa, personal communication, April 21st–23rd 2014) and DANIDA has promoted crop rotation and intercropping (Nakhungu, personal communication, April 22nd 2014) for instance. Hence, SALM is old wine in new bottles.

- **Changing title**

During the World Bank e-course on soil carbon accounting I learned that the World Bank has changed the name of the Kenya Agricultural Carbon Project to the Kenya SALM project. Interviews (e.g. Wachiye, personal communication, April 18th 2014) and informal chats showed that the name change was unknown by ViA staff. All ViA projects implement SALM and what separates that KACP from other ViA projects is the carbon credit aspect. The name change may thus be problematic and misleading as it could refer to any ViA project. The carbon credit aspect has been discursively downplayed in the project by proponents on several
previous occasions (e.g. Hooda 2014; Seufert et al. 2012) as well and indicates that it is an undesired discursive focus for the World Bank.

- **Enterprise promotion**

At the ViA workshop in Chwele non-carbon related practices like beekeeping, rabbit farming and sericulture (cultivating silkworms) was also promoted. The tutoring in the KACP is also focused on income generating production and market prices on different produce. One farmers stated that the main difference since they joined the KACP is that they were taught to produce food products like chapati and mandazi (a deep-fried sweet bread) for added value rather than just selling crops at the market (Nakhungu, personal communication, April 22\(^{nd}\) 2014). A few farmers in the KACP practices beekeeping and some practices rabbit farming. Farmers who practices rabbit farming said that they have started doing so after the ViA promoted it in the KACP (e.g. Mangoli, personal communication, April 21\(^{st}\) 2014).

- **Uncertain future**

The emission reduction purchase agreement (ERPA) is running up until 2017. Thereafter there is not yet a buyer for the credits that will be produced until the project ends in 2029. Moreover, the ViA funding from SIDA is up for reevaluation in 2016 and the ViA does not know whether or not they will still be operating after 2016 (Wachiye, personal communication, April 28\(^{th}\) 2014). Should there be no buyer of the remaining credits after 2017 then the payments will cease and the “bonus” incentive will vanish. Should the ViA not receive funding after 2016 then the “bonus” incentive would disappear and, perhaps more importantly, so would the support from ViA. However ViA is supposed to phase out its field support of the project by 2016 anyway.

Lacking carbon payments the project would be likely to suffer from discontent among farmers. Given the very low payments in the first round of payments farmers are already disappointed and many state that payments did not live up to their expectations (e.g. Ndiwa; Nassambo; Mangoli; Ayanga; Lijuma; Fundi; personal communication, April 21\(^{st}\) – May 1\(^{st}\) 2014). Most farmers are hoping for higher payment in the future.

- **KACP: NGO and state collaboration**

The ViA collaborates with other NGOs as well as government agricultural extensions. When competencies that the ViA does not have are required third parties are hired. This includes government extension officers which the ViA hires to advise in their projects (Wachiye, personal communication, April 28\(^{th}\) 2014). The actors that were recurrently referred to by farmers as jointly advising on agricultural practices were the NGO Griadis and the government agricultural extensions. The relationship between the ViA and the state hence seem inverted. In this case the state offers its services to a foreign NGO that effectively replaces the state and does what, many would argue, it is supposed to do in the first place.

The WKCDD/FMP is perceived by farmers as separate and clearly delimited from other projects and NGOs and each project structure has a sign with the letters WKCDD/FMP. However other projects and NGOs are not as clearly separated from each other. This made it sometimes difficult to determine if the change was brought about by the KACP or by some other project since these organizations collaborate.

Farmers are usually not aware of the cooperation between ViA, other NGOs and government extensions. Therefore the farmers generally do not know if interventions by, for instance, Griadis are part of the KACP or if it is a separate project. Mrs Lijuma stated that in addition to the ViA, the government agricultural extension service is having meetings with the farmer group and they are also being advised by Griadis (personal communication, April 24\(^{th}\) 2014).
Moreover, Mrs Lijuma stated when Griadis first came they came with a field officer from the ViA (personal communication, April 24th 2014). However there is no clear connection between these organizations. Mrs Mayende said “we got this [improved banana variety] from Griadis which is another project that is not from ViA, it’s an NGO” (personal communication, April 23rd 2014).

6.3 Project applicability conditions in practice

The project applicability conditions are essential to the conceptualization and accounting of the carbon credits because these conditions represent the link between theory and practical implementation. Some of the project applicability conditions are difficult to scrutinize and some must arguably have been very difficult to assess in the first place.

- the land has to be grassland or cropland at the project start

My analysis did not show any uncultivated land being part of the project however there are examples of land in the project that was afforested prior to the project.

- the project does not occur on wetlands

No wetlands where encountered as part of the project.

- the land is degraded and will continue to be degraded or continue to degrade without the project

A few of the analysed farms only grew maize season after season prior to the project and had done so for decades. These farms were highly dependent on high input of synthetic fertilizers, the production of which also causes GHG emissions, during the time. If the farmer cultivating the land could not afford fertilizers the yields would automatically be low. Land that is under such practice and has been for such a long period of time can be said to fulfill the condition being degraded. However the continued degradation of the land is subject to semantic issues. The condition does not state for what period of time the land should continue to be degraded in order for the condition to apply. While it may be reasonable to assume that such degraded land would not start ameliorating tomorrow, as it has not done so for some time, it is also reasonable to assume that the fertility of the land would start improving at some point. Any other assumption would imply that farmers in the area are incapable and do not possess the capacity to improve soils even though they have substantial experience. Even if the temporal framework for this condition was limited to the lifespan of the project it does not seem likely that degraded land would not start to ameliorate before 2029 given that the production practices introduces in the Green Revolution seem to be decreasing in popularity.

Moreover, on the lions part of the farms intercropping and crop rotation was used prior to the project. These practices are by the World Banks definition sustainable agricultural land management practices. Moreover, it is those practices, and others, that are supposed to restore the supposed degraded land. These practices had either been initiated by other NGOs or by the farmers themselves. Some practices that where already employed on most farms where changed such as the size of pits around banana, the space between trees and intercropping in separate lines instead of in the same line.

Hence, assuming that SALM practices defines improvement as opposed to degradation, the first half of the applicability condition applied to some farms but not others and far from all. Even though the project has brought significant changes to some farmers, for others the changes was mainly the tree seedlings that where given out in the early years of the project because they already employed most SALM practices prior to their project enrolment. The function of this condition is essential to carbon sequestration accounting. It is likely that the project has resulted in improvements of soil fertility but the inaccuracy of this condition is
likely to cause discrepancies between actual increase in carbon sequestration and accounted increase in carbon sequestration. The project assumes causality between its implementation and any carbon sequestration or prevention of emissions. This means that only carbon sequestered as a result of the project or emissions prevented as a result of the project can be accounted for as carbon credits. Carbon that would have been sequestered even if there was no project cannot be conceptualized as carbon credits. If SALM practices were used prior to the project and can be assumed to continually being used then the condition causes false carbon credits. My analysis show that the majority of the farms used SALMs before they joined the project and the condition of land degradation is therefore not applicable.

- **the area of cultivation is constant or increasing without the project**

  This condition is problematic as the timescale for what is meant by “constant” is not defined. Nothing is infinitely constant and as this project involves timescales of the carbon cycle which extends to the millennial scale, a definition for this condition is required in order to scrutinize the condition. Moreover, the area of cultivation is not defined either and may differ depending on the scale of reference. Looking at a decadal scale on the regional level uncultivated land is increasingly is being brought under cultivation. However, on the smallholder farm level land is generally constant or decreasing as farmland is increasingly divided due to population increase. The area of cultivation per farm is very different from the area of cultivation nationally or regionally. As the KACP involves a set of scattered farms and not whole regions it is arguably more appropriate to assess this condition, and all other conditions, per farm and not per region. However, the project description does not state how this condition is assessed.

- **forest land is constant or decreasing**

  This condition has the same problem as the previous condition. It is clear that the project has resulted in more trees on farms but I was not able to assess whether or not forest land was constant or decreasing prior to the project. It seems likely that unproductive forest land was either constant or decreasing on a decadal timescale but growing eucalyptus trees for timber has seemingly increased in popularity during recent decades.

- **that there are studies that show that the Roth-C model that is used for carbon accounting is appropriate**

  This condition has not been extensively scrutinized as is perceived as of low relevance. There are various studies of the Roth-C and other carbon models and I assume that there are studies that show that it is appropriate.

### 6.4 Carbon payment significance

The issued carbon payments are for two years of carbon sequestration and cover the period of 2010 and 2011. The highest payment issued to a farmer group was 19,372 KSH (1,502 SEK), the lowest payment was 1,113 KSH (86 SEK) and the mean payment was 5,327 KSH (413 SEK) (Khisa & Wambua 2013). These payments were made to the farmer groups but the report that presents these figures does not disclose the number of farmers in the groups. Mrs Munialo who is a farmer in the northern part of the Kitale area said that her group of seventeen farmers got 4,500 KES (349 SEK) as their carbon bonus (personal communication, April 24th 2014). The payment per farmer in Mrs Munialo’s case would amount to 20 SEK. Speaking of payments divided per farmer Mr Ndiwa in Sirisia said “maybe at the end of the day I could have bought sugar and it would not have aided me” (personal communication, April 21st 2014). No group in Mr Ndiwa’s region divided the payment nor had any of the respondent farmers’ groups divided the payments. All interviewed farmers that had received
payments stated that the payments were lower than they expected. Many stated that they are hoping for higher payment in the future and but many also stated that they would keep on using SALMs even without the payments (e.g. Ndiwa; Wanyoni, personal communication, April 21st and April 24th 2014). Some farmers were not aware of the payments at all (e.g. Nakhungu; Wasolo, personal communication, April 22nd and April 23rd 2014).

Some farmer groups had not yet received their payments at the time of the study. Mrs Kunyu’s group in South Bukusu was one of the groups that had not yet received payment. I asked what she expected the carbon payment to be.

[Author:] Do you have some idea what it’s [the payment] going to be?
[Mrs Kunyu:] If I imagine it’s maybe thirty thousand shillings for the group.
[Author:] For two years?
[Mrs Kunyu:] That’s too little for two years.
[Author:] So what would you think is enough for two years?
[Mrs Kunyu:] One hundred thousand maybe.
[Author:] And how big is the group.
[Mrs Kunyu:] We are twenty farmers.

(Dialogue with Mrs Kunyu during interview, April 24th 2014).

6.5 Carbon credit ownership rights and community empowerment

The term “verified emission reductions” is not used in the practical implementation of the project. Instead the term “carbon credit” may be used but the most common term is simply “bonus”. I would estimate that far from all farmers are familiar with the term carbon credits and that no one has ever heard the term “verified emission reduction” or “verified carbon unit”. Most farmers are instead familiar with the term “bonus” which is what is commonly talked about in the project. Farmers do not perceive carbon credits as commodities that are owned or sold. Farmers are not aware that they are trading with carbon credits. Only the most active and involved farmers are aware that the carbon payments are actually connected to a service or commodity being sold. Two of the CFs that I interviewed are aware of that the payments come from the high-income part of the world and that the purpose is to compensate for emissions by industries. A slightly larger share of the interviewed farmers had heard that the World Bank is involved in the project but most were not sure in what way. During the workshop with the CFs the carbon credits were brought up once and it was said that since the farmers are mitigating climate change they deserve some carbon credits, hence it was not portrayed as a buyer – seller situation. Farmers have no possibility to find out what their services are worth and cannot choose to sell or not as they are not aware that they are selling anything.

Mr Wachiye (personal communication, April 28th 2014) stated that the credits are owned by farmers. However, the contract between ViA and the farmer groups states that the contract “…serves to assign the VCU’s produced by the farmer group through the adoption of sustainable agricultural land management activities to Vi Agroforestry…” (Vi Agroforestry, 2010:2). Carbon credits are therefore never owned by the farmers but automatically assigned to the ViA upon creation. Farmers only provide the ecosystem services that generate the carbon credits and may choose the amount of services they provide. However, they are not aware of what their services are worth or when they will get paid. Instead the payments are perceived as a bonus of unknown size that may be given to them if they work hard. In the network of actors involved in the project farmers cannot be described as anything but
powerless. Paradoxically, it is stated in the contract that the second priority of the project is to empower small-scale holders (Vi Agroforestry, 2010).

6.6 Discourses and perceptions of climate change mitigation and adaptation

All of the interviewed farmers in the KACP expressed the view that their practices will influence and improve the climate. Climate change mitigation is primarily associated with tree planting in discourse among farmers and many farmers expressed that trees attract the rain and that it’s therefore good to plant them. “They [the trees] bring the rain” several farmers said (e.g. Munialo; Kunyu, personal communication, April 22nd and April 24th 2014). Climate change is perceived as a regional phenomenon by many and as a global phenomenon by some. Most farmers said that it is not good if there is too much carbon in the air but some didn’t seem sure about if there is too little or too much carbon in the air. Others said that trees control the climate and make it more stable.

During the workshop a film was shown portraying a post-apocalyptic future reality where deserts had spread massively, water was rationed to half a glass a day and solar radiation was very harmful. Generally, a notion of responsibility as well as a notion of the possibility to affect the climate development was communicated to the CFs during the workshop. The connection between the project and emissions elsewhere was not touched upon.

The adaptation aspect that is communicated in the project essentially consists of water conservation and prevention of soil erosion. Higher biomass content in soils leads to higher water retention capacity and soils stay moist for longer periods without rain. This knowledge is well established among participating farmers and is usually the first thing that comes to mind when farmers are asked about the carbon aspect of the project.

7 Results

In this section the results of the study are presented. There are several problems and theoretical compromises that invalidate the KACP as providing an integration of the economic externality of GHG emissions. Here, the applicability conditions as the link between the practical implementation and the theoretical framework are examined. The KACP is scrutinized through a lens of neoliberal theory. Discrepancies between the ES bought and the ES disservice that is supposedly neutralized is showed and lastly the importance of the carbon payments for the functioning of the project is scrutinized.

7.1 Applicability conditions for carbon accounting

The accounting of carbon credits is dependent on the project fulfilling its applicability conditions. Arguably the most important applicability condition is arguably that the land is degraded and will continue to be degraded or continue to degrade in absence of the project. This is fundamental as the emission reductions are dependent on causality between the project implementation and carbon sequestration. If the relationship is not causal then there can be no carbon credits. Given that such estimation is possible, however unlikely it may seem, ensuring this condition on each farm would be costly and time consuming as the number of farms in the project is immense compared to the number of field officers. Instead regional estimations were made. The two regions where the KACP is implemented have been classified as in a state of degradation (Wachiye, personal communication, April 28th 2014). However, this has only proven to be true for some of the analysed farms. A few farmers still practiced high input maize monoculture farming when the KACP was introduced but most farmers did not and
was instead using SALM practices before they joined the project, as described in the analysis. Therefore the most foundational applicability condition on which the project rests is inaccurate, likely causing false carbon credits.

Additionally, the condition, like some of the other conditions, is subject to temporal issues. Timescales are simply not stated providing no temporal frame of reference aside from the term “constant”. This leads to the assumption that the timescale of reference is the lifespan of the project. The treatment of temporal aspects in this project can be described as nonchalant. No attention is paid to relevant biospheric timescales showing a lack of understanding of the very issue that the project claims to amend.

7.2 The KACP and neoliberal theory

The project is dependent on funds from SIDA which consists of taxes paid by Swedes. The ViA as an organisation is also highly dependent on funds from SIDA (Johansson & Nylund, 2008) but also receives charity contributions. Aside from the continuous general funding of ViA, SIDA provided 38% (552,000 USD) of the funds for the KACP (Shames et al., 2012). The ViA provided 32% (466,550 USD) of the funding (largely originating from SIDA funds) and carbon credit revenue earned by farmers provided the rest (Shames et al., 2012). Only 30% of the funds for the project came from the market (i.e. the World Bank and its biocarbon fund investors) and 70% came from state and charity organizations. Therefore, the market have not created and sustained the project but only providing a framework that enables reaping its fruit, so to speak, by buying its generated carbon credits.

Moreover, farmers have no idea of what their services are worth and therefore cannot possibly make rational choices regarding the services provided in relation to payments. The low price on credits in the project in turn gives low carbon payments. The realisation that the carbon payments will not be adequate incentives to sustain the implementation of the project and the fear that farmers will be disappointed have caused the World Bank to successively downplay the role of carbon payments in discourse. Carbon payments are therefore not often referred to and when they are, they are referred to as a bonus in the communication with farmers. Still, the payments were so low that all of the interviewed farmers that had received them were disappointed as the payments were less than they expected.

Instead, better soil fertility and drought resilience as well as climate change mitigation responsibility is communicated to farmers. Discourse on the farm level therefore appeals to both homo economicus and homo reciprocans. Choosing actions that are thought to improve soil fertility and drought resilience can, despite not possessing complete information, arguably be perceived as rational choices. However, altruistic actions to mitigate climate change in a future world falls within the concept of homo reciprocans. Moreover, conceptualizing carbon payments as a bonus of unknown value that will be issued at an unknown time only vaguely and indirectly connect farmers’ actions to the concept of climate change as an economic externality.

Additionally, there is a problem of ownership. The KACP farmers never own what they are selling. In the contract that farmers sign when they join the project it is stated that emission reductions are assigned to the ViA upon creation. Moreover, credits are bought collectively and payments are issued collectively. Therefore, a farmer that sequesters a lot of carbon will get the same bonus as a farmer that does not sequester any carbon at all if they are in the same group. Farmers do not know how much services are worth and even if they did the amount paid would only correspond to the services rendered if all the farmers in the group did the exact same things on the same size land. Hence, even though farmers own the choice of what
SALM practices to practice and the extent of implementation they have very little power to individually affect the amount of carbon payments.

7.3 Trading the ecosystem service for the ecosystem disservice

In economic theory goods and services are exchanged. The same goes for ecosystem services. One actor emits CO\(_2\) and in order to neutralize the impact of the actor’s emission the actor pays another actor to sequester the same amount of CO\(_2\). The model might work if it was restricted to forced exchanges within the same pool of CO\(_2\) (e.g. if one actor cuts down a forest the actor has to pay another actor to plant and sustain the same amount of forest). However, the KACP encompasses all pools of CO\(_2\) and as around 80% of the energy used in the world comes from fossil fuels it is likely that emissions that will be offset by the KACP are generated by fossil fuel. There is currently no technology that can recreate fossil fuel and we are therefore stuck with whatever fossil CO\(_2\) we emit into the biosphere as the timescale of the recreation of fossil fuel is irrelevant to humanity.

CO\(_2\) can stay in the atmosphere for centuries (Archer et al., 2009) and can have effects on a millennial scale (Inman, 2008). The KACP runs for thirty years. There are no economic incentives to keep CO\(_2\) from being reemitted and there will be no payments once the carbon pools are saturated. There is currently no buyer of carbon credits after 2017 and the ViA funding from SIDA will be revised 2016 (Wachiye, personal communication, April 28th 2014). Should SIDA decide not to fund ViA after 2016 the ViA would no longer continue its projects. Hence, it is fairly certain that emitted CO\(_2\) will affect the biosphere for generations to come but whether or not the carbon sequestered through the KACP will still be sequestered for the corresponding amount of time is very uncertain, not to say completely unknown. The storage of the sequestered carbon becomes particularly problematic if Kenyan agriculture becomes industrialized, or “developed” in MSD discourse, a topic that is elaborated in the discussion section of this thesis.

The discounting buffer for sequestered carbon due to risk of reemission was originally set to 60% but was subsequently lowered to 10% during the validation of the project prior to the first payments. The validation of the project included data that covered three years and was completed 2012 (Vi Agroforestry, 2013). The discounting covers the risk of reemission for the period of the project. Hence, estimations made from the implementation of the project during the first three years provide the basis for the evaluation of the risk of reemission for the following eighteen years, arguably a quite bold assessment. The risk of reemission after the project has ended is not included in the assessment. This indicates that the project only aims to offset emissions for the duration of the project and not after it has ended meaning that the project only aims to ensure the neutralization of impacts of emissions during a small fraction of the time that the emission are likely to cause impacts.

Moreover, the land that is now classified as degraded was, by definition, previously not degraded. Re-sequestration of soil carbon, in light of that, only represents a return to the previous equilibrium state represented by the default state as opposed to the degraded state, not including additional carbon emissions. Hence, temporal discrepancies are not only evident in the future but also in the past. If there is an assumed equilibrium state, the restoration of which is the goal, the cause of deviation from that state arguably needs to be accounted for in order to achieve theoretical consistency. The World Bank e-course on soil carbon monitoring describes the degradation of the land as a result of population increase and intensive, unsustainable practices without providing further detail. In Kenya it is fairly evident that the Green Revolution has led to unsustainable land use practices. Monocultures of maize and high input of fertilizers and pesticides made the practices now labelled SALMs redundant for a few
decades until land became degraded. The restoration of degraded land is arguably only an attempt to return to the previous equilibrium state prior to foreign development interventions.

7.4 The carbon credits as incentives for participants in the KACP

Several indicators show that the KACP would work just as well without carbon credits. The SALM practices are the same in all ViA projects and all ViA projects therefore promotes carbon sequestration and avoided emissions even though no carbon payments are issued. Farmers in other ViA projects have expressed their discontent over not receiving payments for doing the same thing, something that has caused some trouble for the ViA. The SALMs were previously called best practices and most of them are promoted by other actors as well. Moreover, all interviewed farmers expected the payments to be higher than they were, most were disappointed or indifferent to the payments and many were hoping for higher payments in the future. Some interviewed farmers were not even aware of the carbon payments. Hence, despite the 50% increase in payments due to the lowering of the estimated risk of reemission, as an incentive for farmers’ participation and implementation of SALMs, the carbon credits makes little difference. However it has raised hopes for some only to provide disappointment.

8 Discussion

The KACP is like a puzzle picking and choosing pieces from different and contradicting ideologies, theories and practical wholes, such as the carbon cycle and the market rationality framework, without accounting for their full spectrum. The pieces have been put together into a new structure that does not take into account the implications of the structure as a whole but only conceives it as the sum of its parts. The project is based on neoliberalism while implementation is done collectively to a large extent. Recruitment is done collectively, issuing payments is done collectively and without regard to the individual efforts, and the project is discursively promoted towards farmers as an altruistic responsibility to mitigate global climate change. The project mixes timescales of years with timescales of centuries and does not provide a temporal framework other than the length of the project and the implementation of the rollout plan. Thereby the project is missing a fundamental link between the economy and the biosphere. The project aims to empower but the agency of farmers in the network of actors in the project is virtually non-existent. The PES in the KACP is built on ownership rights but only provides such to the intermediary and the buyer and treats the sellers as an ignorant proletariat.

Some of these arguments can probably be made regarding a range of similar development cooperation projects and on the other hand neoliberalism is hegemonic, some would say paradigmatic, in the global economy. As the economic system is largely disconnected from the physical world, it could be argued that it is better to try to connect the market to the physical world through schemes such as the KACP than to do nothing. Moreover, if the assumption is, as in MSD, that there is no feasible alternative to neoliberalism then the problems with the KACP described in this thesis becomes technical which in turn means that they can be fixed by engineering the structure. However, it may seem incompatible to employ the concept of *homo economicus* in order to resolve issues that spans several generation and essentially the entire living-space of the planet.

The SALM practices introduced through the KACP does benefit farmers however. And even though the SALM is old wine in new bottles, it could be argued that the important thing is the content and not the packaging and it is nevertheless very good wine for the most part. No farmer will be negatively impacted production-wise by the knowledge of SALM. Knowing these practices will likely benefit farmers. No farmer is forced to implement SALM, at least
not formally (cultural norms and group dynamics excluded). For some the SALM practices have brought significant improvement to their livelihoods, even though the significance of the carbon payments is low. Instead the practices introduced have contributed to higher yields and an increase of organic matter in soils which improves the water retention capacity and therefore also the resilience to drought. The ViA are arguably successful in their endeavour to utilize the local organizational structures as well as in their promotion of SALM.

However, most SALM practices are promoted by the government extensions (e.g. Khisa, personal communication, April 25th 2014), other NGOs (e.g. Nakhungu; Simiyu, personal communication, April 22nd–May 1st 2014), other World Bank projects (e.g. Ndiwa; Maina; Wandabwa, personal communication, April 21st–22nd 2014) as well as in all other ViA projects (Kapuhka, personal communication, April 7th 2014) as well. Hence, the attempted integration of GHG emissions into the economic system is just another layer put on top of an already existing agricultural development trend and not an initiator of this development.

On the other hand, as Mr Wachiye stated, including carbon finance in the project allows the ViA to reach additional farmers because the carbon credits add funds to the project (personal communication, April 28th 2014.). The 600,000 USD worth of credits that the World Bank committed to buying generates an extra 180,000 USD to the ViA operations as 30% of carbon credit profits go to the ViA field offices. Nota bene the project also requires more work in order to account for the carbon credits compared to projects that do not involve carbon credits. However, this argument also corresponds to the idea of additionality. In a scenario where were the baseline is a regular SALM project lacking carbon credit payments, like other ViA projects, the total benefit of the additional farmers reached as a result of the extra funds generated by the carbon payments becomes weighed against the impacts of the justification of the emission by the carbon credit buyers. How many more farmers were reached as a result of the carbon payments, how did they benefit and what is that worth? The answer to those questions would be weighed against the answer to the question of what the implications are of companies claiming to have offset their emissions and what that is worth. Of course neither of these two factors are known or could be valued. But the idea illustrates the loose and farfetched connections in the type of “what if” lines of reasoning that the project draws on.

The KACP is dependent on a global context of inequality were global market actors may purchase a letter of indulgence at a rate of 4 USD per metric ton of emitted carbon. In, for instance, the EU agricultural context, despite the large tracts of land per farmer, such a payment would be completely insignificant to farmers (compare with current EU common agricultural policy (CAP) subsidies), illustrating that the system could not work without these enormous economic inequalities. Even to the subsistence farmers in the KACP the payments hardly have any ameliorating effect on their livelihood. The KACP, like many other PES systems, depend on poverty and without poverty it could not exist. In pure development cooperation projects that may usually be the case. However, the KACP is also a climate change mitigation project that requires long term implementation and therefore also a maintained operational structure. In the project the participants are organized in a system of groups and subgroups that have been created as a result of poverty, collectively trying to improve livelihoods and living standards. Due to the large number of participants the project is completely dependent on this organizational structure. Hence, people need to stay poor and organized in self-help groups and community based organizations if the structure and mechanisms of the project are to work.

Additionally, the KACP is founded on the notion that the format of agriculture in Kenya will essentially stay the same. The SALM practices are smallholder manual labour practices not adapted to industrial agriculture. Hence, a requirement for the sustainability of the KACP is that agriculture in Kenya does not industrialize. The mainstream idea of development draws
strongly on industrialization and it is therefore a bit paradoxical to frame the KACP as a development cooperation project. Essentially it is an agricultural development project that assumes that there will be no development in the agricultural sector, at least not in the form of industrialization. It improves the current form of agriculture but also solidifies the format and assumes that there will be no change.

Kenya can be described as a laboratory of foreign interventions. The state lacks legitimacy for any number of reasons, many of which are derived from foreign interventions. In the agricultural sector alone there are 901 NGOs registered by the NGO co-ordination board of Kenya (Kenya NGO Beureau, n.d.). Many of the respondent KACP farmers are hoping for more projects and perceive development projects as the one way to develop. The state and government extensions were rarely considered as possible support. Moreover the ViA hires government extension officers to participate in KACP training (Wachiye, personal communication, April 28th 2014). Hence, government staff becomes subordinate to a foreign NGO. In light of that the KACP directly contributes to the undermining of the legitimacy of the state.

Additionally, before the days of the Green Revolution people were pastoralists in many areas and Green Revolution represented a complete change of land use. For instance in Lwandany, Sirisia, in the northern part of the Bungoma region people used to be pastoralists and farming started in the late 1950s. “Come the seventies, now people were very serious, and the same crop [was grown] and it was only maize” (Ndiwa, personal communication, April 21st 2014). By then the price of maize was low and it was only grown for food security. Household income still came from dairy farming (Ndiwa, personal communication, April 21st 2014). The following dialogue was in English and the participants were Mr Ndiwa, myself and the interpreter who also lives in the Bungoma region. I asked Mr Ndiwa about the previous maize production from the 1950s and onwards.

[Ndiwa:] A bag of maize could be sold at 80 – 100 shillings [(6 - 7 SEK) in the 1980s].
[Interpreter:] Even at that time they were not selling maize.
[Author:] So even in the early fifties when they started with maize?
[Ndiwa:] they were not selling maize.
[Interpreter:] they were not selling maize, in fact, in case if you wanted maize as a neighbour they will just give you.
[Ndiwa:] Free.
[Interpreter:] This selling has just come in the eighties
[Ndiwa:] That is when people knew money.
(Dialogue during interview with Mr Ndiwa, April 21st 2014)

The price of maize was low when the green revolution was introduced in the late 1950s. In the seventies when people had become very serious with their farming yields stared to decline. In the eighties maize started to have some market value as yields kept on declining. In the nineties the price of maize increased further and people started selling maize (Ndiwa, personal communication, April 21st 2014).

In a sense the World Bank is through the century old farming practices, promoted as SALM in the KACP, ameliorating the impacts of practices introduces by the World Bank through the Green Revolution, capitalizing on the degradation it previously contributed to. In the process farmers are told that they should compose a healthier diet for their, at most, handful of cows.
in order to decrease the amount of methane released and that they should keep fewer cows, as a climate change mitigation measure.

Carbon offsetting projects now range from improving the energy efficiency of cooking burners to wind power parks and extracting methane from industrial waste. A common denominator for these projects is the assumption that the decrease in GHG emissions that the projects are estimated to give raise to would not have happened without the project. The illusory aspect in all such projects is time. In our highly volatile era, that is commonly referred to as the Great Acceleration (e.g. Steffen, 2007), the carbon offsetting projects assumes a constant state of non-development in absence if the interventions. The assumption allows for emissions of fossil CO₂, which will probably stay in the atmosphere for centuries, to be conceptually offset. In the KACP this problem becomes particularly evident as agricultural soils are particularly dynamic and there is no obvious indicator of whether or not the offsetting is sustained. In offsetting projects where infrastructure is provided such as waste management or green energy the equation is more straight forward and measurable. It is possible to calculate electricity production and if a windmill breaks it is easily observable. If thousands of hectare-sized agricultural plots scattered in the landscape emit or sequester carbon is far less obvious.

It can be argued that theories generally fail to encompass the full complexity of reality even if their framework is solid and consistent. A framework that is not consistent but rather a mishmash of pick and choose pieces of different theories and concepts is therefore arguably very unlikely to account for the full complexity of reality, particularly if it is multi-scalar both regarding time, space and policy. The effects of such a framework must be difficult to predict.

9 Conclusion

The PES in the KACP does not integrate the economic externalities of GHG emissions. The implementation of the KACP is only consistent with neoliberal theory in the stages between the ViA, the World Bank and the investors in the third tranche of the Biocarbon Fund. The ViA is essentially the seller of carbon credits and not the farmers who never own the carbon credits, are not paid accordingly to the services they provide individually and do not know how much they will be paid. Neither are they aware of that they are involved in a trade that allows the purchaser to claim to offset their emission. In fact few have any idea of being involved in a trade at all. The carbon credits are relatively unimportant for the implementation of the project on the farm level as their incentivizing capacity is very low.

The project does not live up to its applicability conditions which are essential to the accounting of carbon credits with probable false credits as a result. SALM practices were used prior to the project enrolment by many participating farmers. The trend and promotion of SALM has been active for decades. Hence, the required assumption that such practices would not have been implemented in absence of the project is likely to be inaccurate, regarding those for whom it has not already been observed to be inaccurate.

There are significant discrepancies in the trade between the ES provided by farmers and the ES disservice it is supposed to offset, particularly regarding the timescale of the project and the timescale of atmospheric carbon, not to mention fossil emissions as opposed to emission due to land use change and the assumed unproblematic trade between different carbon pools.

Moreover the SALM methodology has a nonchalant approach to the temporal framework of emission offsetting, simply not providing any framework at all and assuming that no change will occur if the project is not implemented. This has severe implications for either the applicability of the project or the perception of smallholder farmers. Therefore the project
validation is a sad testimony to the project promoters’ perception of smallholder farmers as an ignorant proletariat, incapable of deductive capacity and innovation. In reality it is rather the opposite and it is instead farmers who do not fully trust the advice given in the KACP to be the best practices but instead experiments on their own farms to maximize productivity.

This thesis concludes that the inconsistencies in the KACP regarding the PES as a neoliberal technology and the specificity of the condition for implementation required not only invalidates the carbon credits system as an economic integration of GHG emissions but also results in false carbon credits and “locks in” practices that are dependent on a path of non-industrialization.

10 Further research

The VCS is the most widely used voluntary carbon standard and the VCS alone has 1210 ongoing project mainly spread out in the global south. However there are many other standards that are also currently in use.


Beyond the veil of simplicity offsetting projects are diverse and intricate structures seemingly operating in theoretical grey areas. In order to keep the debate on carbon offsetting informed more case studies of offsetting projects are needed.
11 References


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Vi Agroforestry, (2010). *Contract agreement between The Foundation Vi Planterar träd (hereafter called Vi Agroforestry) and [name of farmer group].* Contract for participation in the Kenya Agricultural Carbon Project, Vi Agroforestry.


12 Appendix 1

Respondents: interviews

KACP Farmers

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<th>Respondent</th>
<th>Area</th>
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<tr>
<td>Maina, Alice</td>
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KACP Farmers, Community Facilitators

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Non-KACP Farmers

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<td>Wandabwa, Cathrine</td>
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Non-KACP but previously ViA Farmers

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ViA staff

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Respondents: informal interactions

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<td>Wekesa Amos</td>
<td>Chwele</td>
<td>Bungoma</td>
<td>2014-04-07</td>
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<tr>
<td>Environment and Climate Change Adviser</td>
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<tr>
<td>Mukoya, Lonah</td>
<td>Kitale Town</td>
<td>Kitale</td>
<td>2014-04-14</td>
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<tr>
<td>Intern and student officer</td>
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<tr>
<td>Krausa, Kathrin</td>
<td>Kakamega</td>
<td>Kisumu</td>
<td>2014-05-05</td>
</tr>
<tr>
<td>Phd Student at Ruhr University Bochum</td>
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<tr>
<td>Faculty for Biology and Biotehnology</td>
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