

**A POLITICAL ECOLOGY APPROACH TO GREEN MICROFINANCE – DEVELOPMENT  
PATHWAYS AND AVENUES FOR TRANSFORMATIVE MICROFINANCE FOR RURAL  
DEVELOPMENT**

**GROENE MICROFINANCIERING BENADERD VANUIT POLITIEKE ECOLOGIE –  
ONTWIKKELINGSPADEN EN MOGELIJKHEDEN VOOR TRANSFORMATIEVE  
MICROFINANCIERING VOOR RURALE ONTWIKKELING**

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To Kaat and our two mini-miracles, Leon and Alice



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## LIST OF ABBREVIATIONS

CAMBio	Central-American Markets for Biodiversity
BI	Biodiversity Index
CEN	<i>Centro de Entendimiento con la Naturaleza</i> (Center for an understanding with nature)
CABEI	Central-American Bank for Economic Integration
e-mfp	European Microfinance Programme
ES	Ecosystem Services
FDL	<i>Fondo de Desarrollo Local</i> (Local Development Fund)
GEF	Global Environment Facility
IFI	Intermediary Financial Institution
MARENA	Ministerio del Ambiente y los Recursos Naturales (Ministry of the Environment and Natural Resources, Nicaragua)
MEPI	Microfinance Environmental Performance Index
MFI	Microfinance Institution
MWW	Mann-Whitney-Wilcoxon
NGO	Non-Governmental Organisation
PC	Proyecto CAMBio
PES	Payments for Ecosystem Services
RISEMP	Regional Integrated Silvopastoral Ecosystem Management Project
SES	Social-ecological system
SPI	Social Performance Index
TA	Technical Assistance
TNC	The Nature Conservation
UCA	<i>Universidad Centroamericana de Managua</i> (Central-American University of Managua)
UNDP	United Nations Development Programme
USD	United States Dollar

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## ABSTRACT

A recent trend of *green* microfinance aims for the inclusion of environmental objectives in addition to microfinance's traditional financial and social goals. This PhD dissertation contributes to the further exploration and understanding of this incipient practice. It elaborates conceptually and empirically on the political and socio-institutional role of green microfinance as a particular intervention in local natural resource governance, thereby drawing on critical research regarding (rural) sustainable development.

To better understand and describe the emerging practice of green microfinance, the dissertation starts by exploring different linkages between microfinance and the environment. A discussion of different types of green microfinance leads to a categorisation of green microfinance policies and instruments, as well as a proposition of an over-arching definition which takes into account the variegated characteristics of these practices. Taking stock of the rise of green microfinance practice, it appears that little attention is currently being paid to the underlying assumptions of how these instruments function on the ground. It is especially in this realm that further scrutiny of green microfinance is necessary, investigating the ways in which such projects interact with the context in which they intervene. To this end, the dissertation adopts a political ecology approach to study green microfinance's role in environmental governance and rural development. Rural territories are thereby conceived as 'complex social-ecological systems' and the author adopts a 'development pathways' perspective to highlight the mutually constitutive relation between individual actors and emerging patterns of collective pathways.

The empirical part of the PhD presents a case study of a particular green microfinance project: Proyecto CAMBio. Proyecto CAMBio (which stands for Central-American Markets for Biodiversity) took place in Central-America and intended to encourage biodiversity-friendly land-use practices through

a combination of (micro)credits, conditional payments and technical assistance. This dissertation focuses more particularly on the project's implementation by the microfinance institution Fondo de Desarrollo Local in northern-central Nicaraguan.

On the basis of extensive fieldwork and through the use of interviews, participant observation and a household survey, the workings of Proyecto CAMBio are assessed through the lens of its interaction with the local development pathways. The analysis of the development pathways in the research region indicates a situation in which small-scale farmers face pressures from both an exclusionary entrepreneurial and input-intensive approach to coffee production and an increasingly strict approach to nature conservation. The analysis of Proyecto CAMBio in this context shows how –in the context of both a repayment crisis in microfinance and a sanitary crisis in coffee production– the project ended up being absorbed into the dominant development pathway of high-yielding coffee production. The study also illustrates how the meaning of what constitutes 'biodiversity-friendly' is malleable to context and interacts with existing rules-in-use and perceptions of environmental concerns. An intervention like green microfinance provides material and discursive support for a particular view on environment and development, which is to be situated in relation to broader guiding ideas and development pathways.

The financial, monetary and public support for particular practices is neither a neutral nor a merely technical matter. Through an individualised and primarily financial lens it risks further supporting rather than transforming dominant development pathways. As such, it might maintain or even intensify the relations and conditions that shape processes of social exclusion and environmental degradation. The potential of transformative microfinance to engage with alternative development pathways requires more active and socially-informed deliberation on who to support, what for, and how.

## **GENERAL INTRODUCTION**

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## THE RISE OF GREEN MICROFINANCE

Microfinance refers to the idea and practice of providing financial services to poor people that previously had no formal access to them (Ledgerwood et al., 2013). Traditionally, microfinance has focused on a double bottom line; i.e. the combination of financial and social objectives. A recent trend of *green* microfinance proposes an expansion towards a third bottom line by including environmental concerns (Allet and e-MFP, 2014, Huybrechts et al., 2015a). This combination of microfinance and environment can take several forms, including for instance the provision of environmentally earmarked microcredit and associated non-financial services for environmental risk mitigation.

The practice of linking microfinance and environmental concerns is unquestionably on the rise, with several pilot projects having taken place and the remarkable increase of the overall engagement of microfinance institutions (MFIs) with environmental issues (Forcella et al., 2017, Schuite and Forcella, 2015). Large multilateral microfinance organisations now have action groups on the topic, and there is a clear uptake of green practices in microfinance management tools and reporting (Allet and e-MFP, 2014, Agathou and Schuite, 2015, MIX and e-MFP, 2015). This interest has several origins and objectives, which include concerns about the environmental impact of an MFI through the activities of their clients (Anderson et al., 2003, Blackman, 2000, Wenner et al., 2004); the environmental risks to which microfinance clients (and hence MFIs) are exposed, including climate change (Rondón-Krummheuer et al., 2015, Fenton et al., 2015, Dowla, 2018, Fenton et al., 2017b); as well as avenues for new funding channels and business opportunities (Fenton et al., 2014, Mahbouli and Fortes, 2015, Groh and Taylor, 2015). Regardless of this increase in attention for green microfinance, it is still a relatively new and underexplored item on the microfinance research agenda (Garcia-Perez et al., 2017).

## **AIM AND RESEARCH QUESTIONS OF THE PHD**

The aim of this doctoral dissertation is to contribute to the further exploration and understanding of this incipient practice of green microfinance. I elaborate conceptually and empirically on the political and socio-institutional role of green microfinance as a particular intervention in local natural resource governance, thereby drawing on critical research regarding sustainable (rural) development. To analyse these interactions in the context of rural development, I conceive rural territories as 'complex social-ecological systems'. I use the heuristic of 'development pathways' to analyse different 'currents' in local development and to look at the past and present institutional/relational mechanisms which have opened or closed opportunities for different groups. In light hereof, the overarching and guiding research question becomes:

RQ How do green microfinance practices interact with broader development pathways in complex rural social-ecological contexts in their quest for the triple bottom line?

The main sub-questions which become applicable when analysing how green microfinance projects work out in practice –and which will be further specified for the analysis of the case study from chapter 3 onwards– are:

- a) Which practices do green microfinance projects support or sanction? Whose views and practices are thereby being supported or excluded?
- b) How are the environmental objectives defined and how does this interact with local processes of environmental governance?
- c) How are green microfinance practices reshaped locally in their encounter with the prevailing development pathways?

This PhD's main contribution is to propose and illustrate a novel theorisation of green microfinance as an intervention in a broader process of local environmental governance (thereby bringing together microfinance and environmental governance), which I argue is a more accurate and fruitful way to think about microfinance's third bottom line than the current and often de-contextualised approaches.

## OUTLINE OF THE PHD

The following manuscript consists of several chapters which –although they draw to a large extent on previously published material– have been specifically written and adapted in line with the overall research design, framework and narrative of this PhD. It should hence be seen as one logically structured document and not a paper-based dissertation. Each chapter contains a note which indicates the origin of the chapter and the papers from which the chapter draws its content. Several of these publications have benefited from collective work, yet I take full responsibility for the views expressed in this dissertation as well as any factual error or misinterpretation it may contain.

This PhD combines findings from the field with broader, conceptual contributions. I start by setting the stage with conceptual contributions to the practice of green microfinance in chapter one. This chapter is based on a review of the academic and grey literature and recurrent exchanges with practitioners in the field of (green) microfinance. I explore the links between microfinance and the environment and the ensuing variegated green microfinance strategies and policies. It appears that green microfinance is (often implicitly) based on the expectation that the mere consideration of environmental objectives through environmental performance management actually leads to the envisaged triple bottom line. More detailed analyses of on-the-ground experiences remain scarce, however, and reflections on intended and unintended consequences of green microfinance practices are far from being taken up in more general discussions on green microfinance. Inspired by debates on the ‘social bottom line’ in microfinance, I argue that it is necessary to scrutinise the underlying expectations of green microfinance and to better understand the ways in which it unfolds in practice.

Chapter two then theoretically explores processes of rural development and how green microfinance can be seen as an intervention of natural resource governance herein. The act of defining a particular rationality (such as the provision of financial services as a way to contribute to

environmentally-friendly practices) constitutes a specific way of framing the issues at hand. A particular idea or institution, however, cannot be fully externally imposed but depends upon the interaction with other actors and ideas in practice. To analyse these interactions in the context of rural development, I conceive of rural territories as 'complex social-ecological systems'; pointing to the unpredictable and 'emergent' character of development processes and human-nature interactions. The heuristic of 'development pathways' captures these ideas well, conceptualising rural development as the emergent outcome of the dynamic interaction of guiding ideas/motivations, patterns of collective organisation and associated rules of the game. These theoretical reflections point to the need for a political ecology approach which allows to more meaningfully engage with the opening and closing of opportunities for sustainable development through green microfinance interventions.

Chapter 3 introduces the empirical part of the PhD by presenting the case study project as a particular case of green microfinance'. Proyecto CAMBio (which stands for Central-American Markets for Biodiversity) was a project which intended to encourage biodiversity-friendly land-use practices through (micro)credits, conditional payments and technical assistance. The analysis in this dissertation focuses on the project's implementation by the MFI *Fondo de Desarrollo Local* in northern-central Nicaragua. After the characterisation of the case study project, chapter 3 states the research questions of the empirical chapters and introduces the reader to the research area –the Macizo de Peñas Blancas. It also presents the predominantly qualitative methodology and data collection methods, based on extensive fieldwork with interviews, participant observation and a household survey.

Chapter 4 provides then provides a first step in the analysis of the implementation of Proyecto CAMBio in Peñas Blancas, primarily based on an analysis of the survey results. The findings of the survey shine a light on the questionable definition of the environmental targets in terms of the novelty of the supported practices. They also point to a particular targeting of the credits towards larger producers and suggest an inquiry into the evolution of livelihood trajectories and their relation to broader

development pathways in order to better understand the (evolution of) environmental performance.

Related to this need to better understand the local development processes with which the project interacts, the aim of chapter 5 is to analyse the development pathways and guiding ideas on human-nature interactions around the Macizo de Peñas Blancas in the northern-central highlands of Nicaragua. Through a description of the historical emergence of today's development pathways and the analysis of different and contrasting 'environmentalisms', I emphasise the diversity and co-existence of different actors and perceptions. Overall, the analysis depicts a dominant development pathway of high-yielding coffee production and a context of increasingly 'conservationist' concerns over natural resources. It is in this context that I then further analyse the CAMBio green microfinance project.

Chapter 6 analyses Proyecto CAMBio in light of how the project worked out in interaction with the development pathways and the environmentalisms presented in chapter 5. The analysis points to the project's relation to the dominant development pathway in terms of its support to high-yielding coffee production. The project thereby further rewarded and support a 'modern' approach to coffee farming while implicitly and probably unintentionally denying support for an alternative, diversified production system. Furthermore, I illustrate how the meaning of what constitutes 'biodiversity-friendly' practices is malleable to the particular context, and is constructed through discursive interactions with existing rules-in-use and perceptions of environmental concerns. The financial, monetary and public support for certain practices –as was the case for this green microfinance programme- hence engages with contentious issues of local rural development.

The theoretical and empirical contributions of this PhD indicate how (green) microfinance inevitably interacts with complex and contentious processes of rural development and natural resource governance. The definition of an intervention's rationale and its environmental goal entails a value judgement, which translates into the rewarding or sanctioning of particular practices. Furthermore, new institutional arrangements locally

interact with other rules, practices and guiding ideas. These findings provide important entry-points for paying more specific attention to the intended and unintended effects of green microfinance practices. In doing so, they inform a more critical yet constructive engagement with microfinance's potential role in contributing to (rural) sustainable development.

## **CHAPTER 1**

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# **MICROFINANCE MEETS THE ENVIRONMENT – AN OVERVIEW OF GREEN MICROFINANCE**

Note: Parts of this chapter have been published previously in Huybrechs et al. (2015a) and Huybrechs et al. (2016). This chapter also benefited from feedback on a presentation during the 2013 Social Performance Task Force annual meeting (Huybrechs, 2013) and served as an introductory presentation to a panel on green microfinance at the 2015 European Microfinance Week



# 1. INTRODUCTION

In the last decade, microfinance practitioners and researchers have paid increasing –albeit still succinct– attention to the link between microfinance and the environment, and its potential role in sustainable development<sup>1</sup> more broadly. A range of large pilot programmes have taken place and the engagement of microfinance institutions (MFI) with green microfinance increases remarkably (MIX and e-MFP, 2015, Schuite and Forcella, 2015, Forcella et al., 2017). The interest for combining microfinance and environmental concerns has several origins and objectives. On the one hand there is a movement of ‘microfinance turning green’, which originates from within the microfinance sector and is strongly motivated by ethical considerations, financial risk management and the exploration of new business opportunities (Allet, 2014). On the other hand there are environmental organisations or conservation projects which turn to microfinance –i.e. ‘green turning microfinance’- as an innovative or additional incentive for environmental conservation and natural resource governance (Green Microfinance, 2007, Cranford and Mourato, 2014, Mandel et al., 2009). From either perspective, the interest in green microfinance strongly relates to its supposed potential to offer a win-win approach to tackling both social and environmental problems, preferably in a financially sustainable way.

In the present chapter, I deal with two key observations. Firstly, I show how the use of the terms ‘green microfinance’ or ‘triple bottom line approach’ (i.e. combined efforts to integrate economic, social and environmental goals) often comes with little conceptual clarity. There are multiple possible approaches and types of green microfinance interventions that hinge on different entry-points, motivations and objectives. These differences can influence the focus of the intervention and the (expected and actual) outcomes. Hence, it is useful to recognise

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<sup>1</sup> There are many definitions of ‘sustainable development’, and it is used for many different purposes and understandings (Waas et al., 2011). A common thread in interpretations of sustainable development is their reference to the importance of recognising three underlying social, ecological and economic pillars of development. This is also how it will be used throughout most of this chapter. Nevertheless, as will become apparent in the next chapters, the mere definition of what ‘sustainable development’ or ‘development’ entails, is a contentious process (Leach et al., 2010).

these differences more explicitly. Secondly, I warn for the often uncritical expectations held by green microfinance advocates (whether donors, researchers or practitioners) who often implicitly assume that the mere adoption or recognition of environmental considerations, in some way or another, leads to the envisaged environmental impact.

The observations regarding the variegated nature of green microfinance and the questions regarding the underlying expectations are partly based on a literature review on green microfinance. Although the number of publications on the topic has increased over the years, the discussions in academic and grey literature are rather dispersed and do not (yet) reflect the growing enthusiasm and dynamism which I observed over the years at several conferences and working groups on the subject. These conferences, working groups and other collaborative efforts with researchers and practitioners working on green microfinance have provided me with multiple opportunities to observe and engage with the rise of green microfinance in the past six years (e.g. MIX and e-MFP, 2015, Forcella et al., 2017). The conferences and workshops which I attended (or of which I accessed the conference materials) are listed in Annex I. I consulted or attended these events either because there was a concomitant meeting of the action group on 'Green Inclusive and Climate Smart Finance' of the European Microfinance Platform (e-mfp) or because the conference hosted a panel on this topic. The list is non-exclusive, yet contains some of the key events on this topic in the previous years. To some extent it might represent a higher exposure to green microfinance proponents instead of practitioners who might not consider it necessary to engage with environmental considerations. Nevertheless, it provided valuable insights on the state of the art of green microfinance. The conversations and encounters with different practitioners –at the levels of MFIs, supporting organisations, donors and financial institutions– were not based on a particular set of questions yet were related to the particular topics and discussions of the respective events or projects.

The current chapter –which builds on these different sources and shared experiences–, takes on a rather descriptive and strongly 'microfinance-

centred' perspective, in which the underlying assumptions of linking microfinance with the environment are typically not explicitly addressed. This discussion then paves the way for a more critical assessment of green microfinance as a contentious process of intervening in environmental governance and the pursuit of 'development'.

In the following section, I first briefly give an overview of microfinance itself. I discuss the traditional 'double bottom line' (the combination of social and economic returns) before providing a picture of the increasing attention to environmental issues and opportunities. Section 3 then schematically presents different possible links and entry-points to discuss interactions between microfinance and the environment. Section 4 and 5 explore the motivations which drive the increasing interest in green microfinance ('*why*') and different types of green microfinance ('*how*'). It thereby follows the build-up of the popular Green Index –which is a key resource in monitoring and promoting green microfinance– for which a proposition of expansion is also made. On the basis of this discussion I propose a definition of green microfinance ('*what*') which duly takes into account the variegated nature of the green microfinance scene. After this rather descriptive introduction to the landscape of green microfinance, I take a more critical look at the expectations of green microfinance academics and practitioners and argue that there is currently insufficient engagement with how green microfinance actually unfolds in practice. A closer scrutiny of these processes is necessary, in order to better understand the processes and mechanisms that they set in motion and with which they interact. The discussion thereby draws on past and present debates on the social bottom line of microfinance as well as a proposition to view green microfinance as an intervention in natural resource governance; which sets the scene for the remainder of the PhD.

## **2. A SHORT INTRODUCTION TO MICROFINANCE**

### **2.1 MICROFINANCE**

There is a myriad of microfinance definitions (Marconatto et al., 2016), but as a starting point I will refer to microfinance as being the idea and practice of providing formal financial services to poor people that previously had no access to them. Microfinance's most popular and best-known service are micro-credits, but it also includes other services such as savings and insurance (Armendariz and Morduch, 2010, Hulme and Arun, 2009, Ledgerwood et al., 2013).

The predominant idea behind microfinance is that the provision of microcredit and/or other financial services by MFIs or other financial intermediaries contributes to economic development and provides its clients with the means to escape poverty (Yunus and Jolis, 2007, Smith and Thurman, 2007, Ledgerwood et al., 2013). This approach hinges on a double bottom line of social and economic/financial returns.

The financial performance of microfinance tends to relate to the quest for financial sustainability and deals with concerns such as efficiency, productivity and profitability (Reichert, 2018). There are ongoing debates regarding the level to which this financial objective can or should be supported through donor support and subsidies (Dunford, 2000, Morduch, 2000). Social objectives, in turn, relate to the delivery (non-)financial services to (poor) people who were previously excluded from formal financial services; based on the idea that this can fulfil a need they have and improve their socio-economic situation. The social performance of an MFI is mainly monitored through "the poverty level of clients, the focus on women clients, the number of clients, the type of products delivered and the cost of microfinance services." (Reichert, 2018: 3).

Although there is a general tendency to combine these social and economic goals, the way in which they are balanced can be very different among different types of microfinance policy/institutions (Marconatto et

al., 2016). Also –in terms of the way in which the financial services are provided– they can be offered either in an isolated way, or in combination with other non-financial services such as technical assistance or education. The latter is known as ‘microfinance *plus*’ (Bastiaensen and Marchetti, 2011, Sievers and Vandenberg, 2007, Abed et al., 2011, Lensink et al., 2018).

The genesis of modern microfinance is often traced back to Muhammad Yunus’ work in Bangladesh in the ‘70s, in which he provided small loans to people who had no access to formal money lending services in order to set up their economic activities. Although micro-lending schemes (in particular credit and savings cooperatives) have existed long before Yunus’ experience and reports (Roodman, 2012), he is a key figure in the development of microfinance as we know it today. The promotion of the idea that small loans could make a big difference to those in poverty and that this contribution could be made in a financially rewarding way, was influential for the increasing use of (private) financial services as a key (profit-making) development and poverty reduction practice (Cull et al., 2009). With the strong impetus of this ‘win-win’ idea, the microfinance industry grew from a 27 USD loan to a group of 42 people in a village in Bangladesh (Yunus and Jolis, 2007), to a 60-100 billion USD industry serving 200 million clients with different kinds of financial services (World Bank, 2015). The financial inclusion movement currently sets sail to reach an estimated 2 billion people who –according to the World Bank’s global Findex Database- have no access to formal financial services (Demirgüç-Kunt et al., 2015).

A milestone of the microfinance boom was set in 2006, when the Nobel Peace Prize was awarded to Yunus in the eve of the 2005 UN Year of Microcredit. In his acceptance speech, he talked about the hope to see a world where “poverty is in the poverty museums”, and the vision that microcredit can “unleash [the] potential of poor people to reach out of poverty” (Yunus, 2006). In the last decade, however, enthusiasm regarding microfinance has somehow been tempered. First, the Initial Public Offering of Compartamos in 2007 (the largest Mexican MFI) –which

amounted to nearly half a billion USD at a time in which the Compartamos clients paid excruciating interest rates of 94% per year, of which a quarter went to the institution's profits (Cull et al., 2009) – raised strong concerns about the commercialisation and financialisation of microfinance (Aitken, 2013, Aitken, 2010, Sinclair, 2012, Lensink, 2011, Brière and Szafarz, 2015, Hudon and Ashta, 2013). Second, at the level of the actual workings of microfinance on the ground, a wide set of impact studies and critical analyses have presented meagre and questionable social and economic outcomes for microfinance clients (Banerjee et al., 2015, Ghosh, 2013, Adams and Raymond, 2008, Bateman, 2010, Duvendack et al., 2011). Partly as a result of the two previous issues, the microfinance sector has faced a number of payment and indebtedness crises in the previous years (Bastiaensen et al., 2013, Guérin et al., 2013).

These reality checks have however not led to an actual 'bust' after the boom of microfinance. The critiques and crises, which caused microfinance's pedestal to tremble, have led to a number of evolutions in this sector. One of the reactions to microfinance's failure to live up to the past promises and expectations has been to re-package the expectations to a certain extent. The focus now is no longer on the poorest of the poor, and the overt objective has become the provision of useful financial services to the previously excluded and a relatively more modest approach to goals of poverty reduction (Roodman, 2012). This evolution also comes with more emphasis on the financial sustainability of the provided services. It involves a more active engagement of commercial banks, and an increased focus on consumer credit (for income smoothing purposes) rather than productive investments (Mader, 2018). In recognition of the increasingly market-based approach and a focus on the financial services as an end rather than a means, the terminology of 'microfinance' has been rebranded as a strive for 'financial inclusion' (Ledgerwood and Gibson, 2013, Johnson, 2009, Ledgerwood et al., 2013).

The above-described rebranding of microfinance does not mean that the double bottom line is not on the table anymore and that the 'win-win' expectations of both economic and social returns have completely faded.

Even though microfinance or financial inclusion might not seem as high on the development agenda as it was about 10 year ago, and even though it has become a billion dollar business of its own, it still attracts a lot of attention from development agencies and policy makers (Weber, 2017). It prevails in the spirit that “a dynamic [Bottom of the Pyramid] finance sector fosters both equitable and sustainable development and the health of national financial systems and economies” (Di Leo and Lieberman, 2018). For instance, financial inclusion still receives significant donor support (Lahaye et al., 2015), and the access to financial services features prominently in the United Nations Sustainable Development Goals. The most explicit reference to microfinance and access to financial services in the Sustainable Development Goals is SDG 1.4 (as cited in Weber, 2017: 405)

By 2030, ensure that all men and women, in particular the poor and vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate technology and financial services, including microfinance

Additionally, access to financial services appears in at least 5 of the 17 SDGs through its role as a ‘key enabler’ for reaching these goals (Mader, 2018, Klapper et al., 2016).

In reaction to (or alongside with) the trend of microfinance focusing increasingly on mere financial sustainability, there are also different actors in the microfinance scene who explicitly want to keep focusing on social returns. The efforts to maintain the social bottom line have given rise to initiatives that more systematically seek to manage the social performance. Examples hereof are the establishment of different labels for social performance, such as the Universal Standards of Social Performance (by the Social Performance Task Force) and the reporting standards of MIX Market (which is the Microfinance Information eXchange platform which collects and shares information on the social and financial performance of MFIs). With variegated levels of balancing financial and social orientations (Marconatto et al., 2016), part of the microfinance sector keeps trying to reach out to the poor(est) and to remote rural areas. The recent trend of

including a third, 'environmental' bottom line could also be seen as a type of more ambitious microfinance project in terms of societal impact.

## 2.2 THE RISE OF GREEN MICROFINANCE

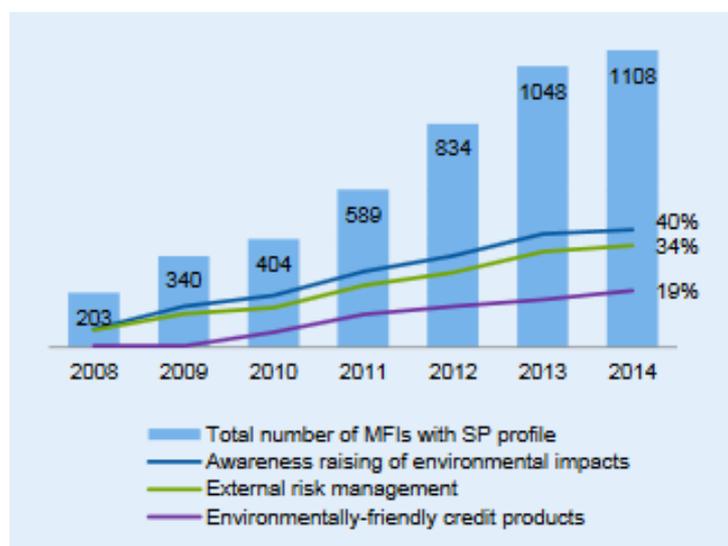
In microfinance circles, the word 'sustainability' most often refers to '*financial* sustainability' (Dunford, 2000, Rippey, 2012). Similarly, when the word 'environment' is mentioned, it tends to refer to 'enabling environment' (such as the economic and regulatory environment) (Ledgerwood et al., 2013, IFC, 2014). However, during the past decade, 'sustainability' has also entered the microfinance scene in its relation to 'sustainable development', broadly understood as trying to combine social, economic and environmental goals (although sometimes authors also mention 'sustainable development' without any account of environmental concerns (Lopatta et al., 2017)). Concomitantly the term 'environment' – as in the 'natural' environment– has steadily moved to the forefront. Indeed, in addition to microfinance's financial and social goals, a recent trend of 'green microfinance' aims to include environmental concerns and objectives. The addition of this third goal, has led to the 'triple bottom line' approach to microfinance.

One of the first records of green microfinance goes back to the late '90s, with the 'environmental sourcebook for micro-finance institutions' by Pallen (1997), which provided a set of guidelines and suggestions for MFIs on how to assess environmental problems related to micro-enterprises and how to develop microfinance policies accordingly. Yet it is only in the last couple of years that discussions on green microfinance have really become more prominent. Nowadays, both the European Microfinance Platform and the Social Performance Task Force have action groups dedicated to the topic. There is also an uptake of green practices in microfinance management tools and reporting, such as the Green Index in SPI4 (the Social Performance Indicator; a tool developed by CERISE to audit MFIs on their social performance) (Allet and e-MFP, 2014); the Green Performance Agenda by consultants of Enclude (Agathou and Schuite, 2015); and the reporting standards of MIX Market (MIX and e-MFP, 2015)). Green microfinance receives increasing attention at major microfinance events

and has been the focus point of international awards (such as the 5<sup>th</sup> European Microfinance Award -dedicated to Microfinance and Environment- and the United Nations Climate Solution Award which was awarded to Ecomicro -a project of the Inter-American Development Bank promoting microcredits and technical assistance for renewable energy and climate change adaptation in Latin America- in 2012). The increased attention reflects the growth of on-the-ground experiences and projects which increasingly link microfinance to environmental concerns.

Figure 1 serves as an illustration of the rise in green microfinance practices and reporting. It shows the steady increase in the number of MFIs that (self-)report to MIX market on green performance indicators. These indicators refer to the delivery of credits for environmentally-friendly activities; the management of the environmental risk of the MFIs portfolio (e.g. by applying an exclusion list to avoid funding polluting activities) and the organisation of awareness-raising activities for clients regarding environmental concerns. In the remainder of this chapter, I will further engage with this incipient practice of linking microfinance to environmental concerns. In the next section, I will start by exploring the possible relations between microfinance and the environment, from which current practices and expectations regarding green microfinance emanate.

**Figure 1: MFIs reporting on green performance indicators on MIX Market**



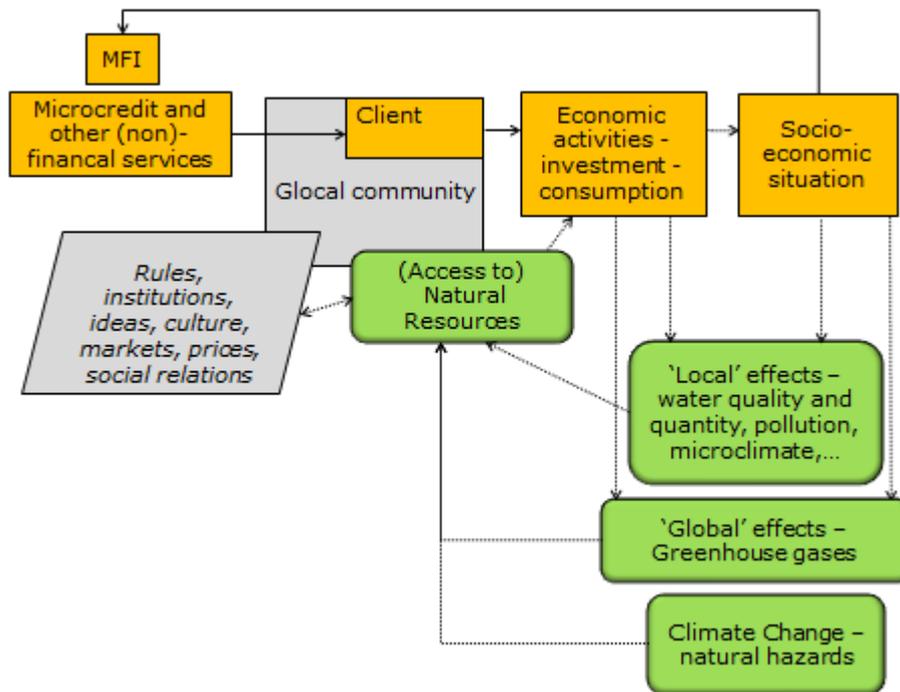
Source: MIX and e-MFP (2015)

### **3. LINKAGES BETWEEN MICROFINANCE AND THE ENVIRONMENT**

I start the exploration of the recent trend of green microfinance with an overview of different entry-points for discussing interactions between microfinance and the environment. I do this on the basis of the schematic representation in Figure 2. The representation summarises what I encountered in both grey and academic literature on how (green) microfinance is discursively linked to the natural environment; from the perspective of microfinance 'discovering' environmental concerns. It paves the way to the further discussion about the different types of 'green microfinance', and the variety of possible motivations, entry-points and approaches.

The core of the schematic representation (the orange boxes) focuses on the common, simplified narrative of microcredit. The common story of the orange boxes goes as follows: the microcredit is provided to a client (which is possibly provided in combination with other, non-financial services such as technical assistance). This access to finance allows the credit recipient to undertake certain economic activities, which influences his socio-economic situation. The financial loop is closed through the repayment of the loan, which is represented by the arrow going back to the MFI. The focus of this schematic representation is on microcredit, as it still remains a key financial service and much of the green microfinance literature builds the narrative of microfinance-nature linkages on the chain of impact stemming from microcredit aimed at supporting entrepreneurial activities. In part, this might be related to the above discussion on the ambitious and remaining engagement with (rural) and productive microcredit.

**Figure 2: Schematic representation of the links between microfinance and the environment**



Legend:

- Orange boxes reflect the common story about the provision of microfinancial services (with a focus on credit)
- Green boxes are linked to environmental concerns
- Grey boxes symbolise the broader local and global community.
- Full arrows show money flows
- Dotted arrows show both discursive and material interactions

Source: own elaboration on the basis of my understanding of the different possible relations between microfinance and the environment

A key linkage between microfinance and the environment, as proposed in green microfinance circles, relates to the impact that the MFI has on the environment *through* the activities of their clients; and how this might contribute to environmental degradation or restoration at different levels (green boxes) (Anderson et al., 2003, Green Microfinance, 2007, Blackman, 2000, Angelsen and Kaimowitz, 1999, Archer, 2009). At the level of the direct living and working environment of the credit recipient, for instance, a possible negative impact can be the exhaustion of the fertility of a farmer's land, due to the implemented/supported agricultural practices (Wenner et al., 2004, Ramprasad, 2018). A person's working and living environment can also have a negative impact on personal health, as

can be the case with indoor air pollution or the use of (agro-)chemicals (Blackman, 2000, Rouf, 2012).

Environmental impacts also stretch beyond the individual level. Deforestation and different types of pollution – air, water, waste – usually also affect other inhabitants at the local level and influence the state of the local natural resources/ecosystems. Similarly, there can be an impact on the more ‘global’ ecosystem, namely through the emission of greenhouse gases (Shahidullah and Haque, 2015, Rippey, 2012), or via influences on biodiversity (Bastiaensen et al., 2015a, Huybrechs et al., 2016).

The linkages I discussed so far are all related to the assumed effect of the micro-entrepreneur’s activity on the environment. There are however also ways in which the evolution of the natural environment in turn can have an impact on the microfinance client and his activity. For instance, there is growing awareness of the negative consequences of climate change, which is generally held to be more poignant in developing countries and in particular for its most vulnerable and natural resource dependent inhabitants (Rippey, 2012, Rondón-Krummheuer et al., 2015, Fenton et al., 2015, Marconatto et al., 2016). Additionally, the environment and the availability of natural resources to the clients also influence the economic activities that they can undertake. These different types of environmental stresses and shocks (whether sanitary crises; climate change; natural disasters) can of course have an impact on a client’s repayment capacity and thereby increase the risk of default for the MFIs (Fenton et al., 2017b).

The guiding principle in the above representation is thus the provision of microfinance and how it relates to the environment, mainly through the relationship with the clients’ activities and livelihoods. It reflects an approach which strongly conceptualises the social-environmental relations from a mainly individual perspective; which is also how the prevailing narratives around green microfinance are framed. Nevertheless, as I will further discuss in the next chapter, it is important to understand that this

is already a particular framing of human-nature relations and the supposed role that microfinance can play herein (Leach et al., 2010). MFIs and their clients cannot be seen as separate from their broader social-ecological-context (for which I include the grey boxes as well as the 'access to natural resources' box), but need to be recognised as part of a global and local community. This involves interactions with instituted rules of behaviour, particular values and cognitive frameworks (Bastiaensen et al., 2015b). So too is the access to natural resources mediated and influenced unequal power relations and institutional arrangements (Cleaver, 2012). Access to finance is hence (but) one of the different personal and structural elements that influence an actor's livelihood strategies. Although at this point I do not fully engage with these considerations, by adding the element of 'access' to natural resources and the embeddedness of the microfinance-client relations in a broader system, the schematic representation already hints at how particular framings of the microfinance-environment interactions are only a part of a bigger puzzle. Yet these framings are the ones with which I will continue the exploration of the rising interest in green microfinance.

#### **4. MOTIVATIONS AND OBJECTIVES**

The perceived links between microfinance and the environment provide several motivations for MFIs to engage with environmental issues. It is important to explore these, as they have an impact on the choice of 'tools' and the particular rationale underlying green microfinance practices.

When microfinance practitioners are surveyed about their reasons to engage with environmental concerns, 'social responsibility' tends to be the most often cited motivation (Forcella and Hudon, 2014, Allet, 2014, Forcella et al., 2017). The underlying idea is that a focus on the social bottom line also requires an engagement with environmental risks and opportunities, in order to address the vulnerability of microfinance clients as well as their impact on their environment (Schuite and Pater, 2008). Such motivations can be considered the more 'ethical' line of motivations (Allet, 2014). A strong focus on corporate social and environmental

responsibility is not surprising in light of the increasing scepticism regarding microfinance's relevance as a key development tool (Steele et al., 2015, Soederberg, 2013). As environmental issues are increasingly important on the international development agenda, it also shapes the demands and expectations of donors and impact investors who increasingly ask for the incorporation of environmental issues (Mahboubi and Fortes, 2015, Schuite and Forcella, 2015). Related to these increasing environmental expectations and regulations, there is also a more 'prudential' motivation, as MFIs engage more pro-actively with these matters in response to an expected further increase of external regulations or expectations (Wenner et al., 2004, Archer and Jones-Christensen, 2011, Allet, 2014).

In addition to the 'ethical' and 'prudential' line of motivations, there are also more overtly instrumental motivations, either for reasons of financial returns or because of a belief in microfinance as an efficient and effective tool to channel conservation funding. For instance, a clear financial incentive to engage with environmental concerns is the fact that environmental shocks have an impact on the clients' repayment capacity (Castellani et al., 2014, Calis et al., 2017). Hence the clients' vulnerability to, say, extreme weather events poses a particular financial risk to MFIs (Klomp, 2018). Additionally, green microfinance projects can be inspired by a possibility to access new (subsidised) funding opportunities by interested impact investors or donors –including the possibility to channel REDD+ funds or funds for climate adaptation and mitigation (Devonshire, 2012, Fenton et al., 2014, Mahboubi and Fortes, 2015, Dowla, 2009, Steele et al., 2015)– or through the desire to avail new business opportunities, such as markets for renewable energy (Groh and Taylor, 2015). In both scenarios, it expands the investment frontier (Sullivan, 2013). In this sense, the green 'niche' can also be a way to deal with the increasing competition in the microfinance sector through a niche strategy based upon product differentiation and branding (Green Microfinance, 2007, Allet, 2014). Marketing and window dressing through this type of 'corporate social responsibility' can also be part of such 'business case' motivations.

The niche of microfinance for renewable energy deserves a particular mention, as it is currently the most visible 'sector' within green microfinance. There is a diverse set of possible motivations for engaging with green energy. They include i) the promotion of access to energy for remote rural areas and poor households in and of itself; ii) the betterment of in-house health environment (by substituting for polluting cook stoves and oil lamps); and iii) the idea that clean energy also mitigates the emission of greenhouse gases (Morris et al., 2007, Groh and Taylor, 2015, Mahbouli and Fortes, 2015). The popularity of green energy-related microfinance also resonates with the above-mentioned financial motivations. Indeed, these projects offer particular opportunities for engaging with environmental concerns in a way that is potentially economically rewarding, and which can open doors to an expanded set of funding opportunities (related to the mitigation of greenhouse gasses).

As mentioned in the introduction, green microfinance does not only emanate from 'microfinance turning green', but it can also have its cradle in environmental organisations. Conservation NGO's might for instance start working with revolving funds through credit provision to go beyond donor dependency or to attract more private funds to conservation (Anderson et al., 2003, Starobin, 2008, Millard, 2002). We will see below – and more extensively in the next chapter– that green microfinance indeed fits in a recent turn of environmental management policies towards the use of financial and economic incentives. In this context, some consider green microfinance as a potentially efficient tool to channel conservation resources to the poor in order to reach environmental objectives (Parker et al., 2012, Muñoz Araya and Christen, 2004, Steele et al., 2015).

While it might seem somewhat artificial to disentangle the different motivations –as they are not necessarily all mutually exclusive or contradictory–, it may help understanding and analysing what green microfinance is and what it tries to achieve. Indeed, there may be a link between the type of motivation and the degree to which it can be expected to have a strong and ambitious focus on the inclusion of environmental

objectives. Motivations which lay closer to a corporate social responsibility and 'prudential' approach would likely have a stronger focus on 'do no harm' principles; whereas green microfinance approaches which aim to channel conservation funding or who use green microfinance as an incentive for nature conservation would tend to have a stronger environmental objective. For the instrumental motivation of financial returns, the objective could depend on the business case. An instrumental financial motivation could for instance also link to clear environmental conservation objectives in light of accessing external funds. Furthermore, it could pursue particular, active engagements with clients' environmental practices in light of diminishing the financial risks related to the environmental degradation and the clients' (and portfolio's) vulnerability to environmental shocks. There is hence a likely interaction between the particular motivations underlying an engagement with green microfinance and the setting of particular environmental objectives.

## **5. GREEN MICROFINANCE INTERVENTIONS**

The increasing recognition of different links between microfinance and the environment, and the above-mentioned motivations to engage herewith, have led to a number of green microfinance strategies or interventions which MFIs can adopt. For the discussion of different policies, I start from the work of Marion Allet (2012a) who describes five dimensions through which MFIs can engage with environmental concerns, namely by:

- i) adopting environmental policies;
- ii) reducing the MFI's internal ecological footprint;
- iii) managing the environmental risk of the portfolio;
- iv) providing green microcredit;
- v) providing environmental non-financial services (such as awareness-raising and technical assistance).

The different dimensions reflect the fact that action can be taken at different levels –either at the internal or external level of the institution– and with multiple policies. The 'internal level' thereby refers to policies or actions undertaken by the MFI which mostly concerns their internal

operations or resource consumption, whereas the 'external level' is more geared at the relationship between the MFI and the clients. Together, the different dimensions provide the basis for a tool to measure the environmental performance of MFIs -the Microfinance Environmental Performance Index (MEPI). This set of strategies has become the main reference within the green microfinance sector, inspiring recent endeavours to further assess MFIs environmental performance. Indeed, the MEPI has evolved into the Green Index, developed by the European Microfinance Platform Action Group on Microfinance and the Environment (MIX and e-MFP, 2015, Allet and e-MFP, 2014). The Universal Standards for Social Performance Management have now also recognised the Green Index as "a complete set of internationally accepted measures related to environmental performance" (Wardle, 2017: 74). The use of these indicators and the focus on 'environmental performance management' is currently one of the main instruments for promoting and measuring MFIs engagement with green microfinance practices.

The first dimension of the MEPI / Green Index refers to the adoption of environmental policies by the MFI; such as the inclusion of environmental concerns in the mission statement, or the appointment of a staff member responsible for environmental management (Allet, 2012a). Although this is sometimes considered to be a logical first step for MFIs who wish to engage with environmental concerns, a survey by MIX and e-MFP (2015) shows that including environmental goals in the MFIs mission is not necessarily, nor automatically correlated to the amount of green microfinance strategies that an MFI adopts in its actual practices.

The second dimension is also situated at the level of internal workings of the MFI itself and discusses the reduction of the MFI's internal ecological footprint; or as the Green Index calls it, the 'internal environmental risk'. This encompasses the link between the MFI and the environment through the use of resources by the institution itself. Addressing this internal ecological footprint can include a reduction of the MFIs use of water, paper, electricity... This is of course only a fraction of the environmental

'impact' of microfinance, when compared to the 'indirect impact' that is related to the MFI's role as a financier of particular activities (Allet, 2012a)

Whereas the previous two dimensions related to policies and practices which are very much confined to the internal domain/workings of the MFI, the following dimensions are more outward looking, focusing on the interaction with the clients. The third dimension deals with how an MFI might take action to manage the 'external' environmental risk of its portfolio; i.e. to monitor or reduce the extent to which it finances and supports activities which are supposedly harmful to the environment. To this end, an MFI can set up an exclusion list which excludes directly a set of practices or economic activities. Once a client receives a credit, the institution can also follow-up on the potential environmental impact of this credit through the activities of the client. MFIs who participated in a MIX and e-MFP (2015) survey on indicators for green microfinance indicated that this environmental risk assessment was the most challenging endeavour, as it required particular tools, knowledge and management processes. Note that the focus here lies on the environmental risk in the sense of pollution or negative environmental outcomes and does not entail the *financial* risk to which the portfolio is exposed in relation to environmental shocks.

As MFI practitioners, donors and impact investors take stock of the potential to link microfinance services to environmental concerns, a suit of possible 'green financial products' ensues. Especially in line with an instrumental use of green microfinance, a supposed way to incentivise a change in behaviour and economic activities is the targeting of specific environmentally-friendly activities and the offer of economic incentives through tailored financial services. The Green Index thereby refers to financial products for renewable energy and energy efficiency; financial products for sustainable or climate-smart agriculture; and a category for 'other' green financial and (non-)financial products promoting environmentally-friendly practices (Allet and e-MFP, 2014). The non-financial services –the fifth dimension of Allet (2012a)- refer to activities

such as awareness-raising, technical assistance and a type of environmental contract or engagement to be signed by the client.

The MEPI and the ensuing Green Index provide a good overview of the different dimensions of action which have emerged from the microfinance sector's engagement with environmental concerns. On the basis of the microfinance-environment links and motivations discussed in the previous sections, I further add a number of perspectives to this classification. These suggestions include the clarification of possible objectives of (non-)financial services and a reference to the underlying incentive structure.

Firstly, I suggest a further expansion of possible entry-points for the 'green financial services' (including climate change adaptation, renewable energy, mitigation of environmental damage) and a more explicit attention to the management of financial risk related to environmental concerns. The 'green credits' or 'green financial services' can indeed be targeted at different environmental objectives or opportunities. The Green Index already explicitly mentions financial services for renewable energy (Groh and Taylor, 2015, Morris et al., 2007), and refers to 'sustainable' or 'climate-smart agriculture' and the promotion of environmentally-friendly practices. Although it can also be included as part of 'climate-smart agriculture', a more explicit reference could be made to the element of climate change adaptation. An increasing number of practitioners and academics see a role for microfinance as a facilitator of climate change adaptation (e.g. through incentives to adopt adaptation measures) (Hammill et al., 2008, Agrawala and Carraro, 2010, Moser et al., 2015, Forcella, 2013, Sanneh et al., 2014, Fenton et al., 2015, Dowla, 2009, Scheyvens, 2015, Rondón-Krummheuer et al., 2015, Below et al., 2012). Others propose to provide micro-insurance or savings to cope with these shocks (Castellani et al., 2014); or emphasise the role microfinance can play pre- and post-disaster management, considering financial resources as a key element of resilience (Marincioni et al., 2013, Calis et al., 2017).

Whether or not they are related to climate change, local environmental fluctuations (drought, unusual rainfall, diseases...) more generally can

have serious impacts on the client's livelihood. Some credits, savings and insurance schemes focus explicitly on the ability of the client to become less vulnerable to environmental shocks. These financial services are then used to either change or diversify the client's activities, or provide *ex post* assets in case of problems which altered the situation of the household due to changes in environmental conditions. This can provide opportunities to pay more attention to a more financial-risk centred approach (Moser et al., 2015, Fenton et al., 2017b), which is currently lacking in the green index.

Secondly, in terms of classifying particular approaches to green microfinance, more attention should be given to the specific underlying incentive-structures. For this, the classification of Cranford and Mourato (2014) provide inspiration, as they classified different approaches on the basis of the level of conditionality and economic incentives. These can take the form of subsidised/reduced interest rates or other loan conditions when agreeing to adopting specific environmental practices; or by making the provision of loans conditional upon the conservation of some natural area (an 'environmental mortgage' (Mandel et al., 2009)).

The suggested expansions of the Green Index are summarised in Figure 3. I argue these expansions are useful in the sense that they might further inform discussions on the particular objectives of green microfinance and the underlying expectations. Of course, it is reductionist to suppose or expect that green microfinance projects squarely fit a single box. Yet the discussion of underlying objectives and expectations could further spur critical engagement with the actual workings of the projects on the ground and could point to particular trade-offs or priorities.

**Figure 3: Suggested expansion of the Green Index**

Internal – Level of MFI	<b>Adoption of environmental policies</b>			
	<b>Internal ecological footprint</b>			
External – MFI-client relationship	<b>Management of portfolio environmental risk</b>			
	<b>Green financial services</b>	<i>Mitigation of environmental damage</i>	<i>Renewable energy</i>	<i>Client vulnerability (climate change adaptation - disaster risk reduction)</i>
	- With (subsidised and/or conditional) economic incentives			
	- Without extra economic incentives			
	<b>Environmental non-financial services</b>			

Source: own elaboration, based on the Green Index (Allet and e-MFP, 2014)

## 6. DEFINING GREEN MICROFINANCE

On the basis of the above exploration of green microfinance, I further characterise green microfinance through an overarching ‘definition’, which is also how I will use ‘green microfinance’ in the remaining of the PhD. ‘Green microfinance’ is not the only terminology used in relation to the integration of environmental concerns in microfinance. Some also refer to a ‘triple bottom line’ approach (Schuite and Pater, 2008) -which puts the emphasis on the combination of people, planet and profit. Another recurring term is ‘environmental performance management’ (Agathou and Schuite, 2015, Allet, 2012a), which refers to the practice of the MFI in terms of measuring and monitoring what it does in terms of environmental microfinance.

The term Microfinance for Ecosystem Services (Cranford, 2011, Bastiaensen et al., 2015a), in turn, makes a reference to the natural resource management policy of Payments for Ecosystem Services (Wunder, 2015). It refers more to the kind of policy where microcredit access, interest rebates and/or additional premiums might be conditional on reaching some agreed and verified environmental goal. Lastly, it is

noteworthy that the action group of the European Microfinance Platform recently changed its name from 'Microfinance and Environment Action Group' to 'Green Inclusive and Climate Smart Action Group', which reflects both the trend to expand from microfinance to financial inclusion as well as the increasing use of 'climate smart' to brand activities that answer to concerns of both climate change mitigation and adaptation.

Some of the mentioned terminologies refer to a more 'specialised' type of linkage between microfinance and environmental concerns. This has the advantage of clarity when discussing a certain subtype of the broader set of green microfinance approaches. Yet as an overarching term, 'green microfinance' is still the most often-used terminology today to refer to the inclusion of environmental concerns in the microfinance practice, as well as the use of microfinance to reach environmental objectives.

In light of the above exploration of the variegated reality of 'green microfinance' –which responds in different ways to multiple challenges and opportunities– I suggest a set of key characteristics of green microfinance. To do so, I start from a list of existing Green Microfinance definitions, which are listed in the box below.

**Definitions of Green Microfinance** (emphases added)

"Green financing is any type of financing *producing a positive impact* on the environment, including recycling, organic agriculture, and clean and renewable energy ventures" (Foromic 2012, session 5A)

"Affordable loans of below \$35,000, *coupled with technical assistance*, that *have benefits* for both the environment and the borrower" (Posner, 2009: 7).

"a credit that is used for an investment that results in *positive environmental impacts*" (Mahbouli and Fortes, 2015: 223)

"microfinance that integrates the principles of environmental sustainability *in all its operations* and promotes environmentally-sound practices" (Allet 2010).

on microfinancehub.com (and adopted by Wikipedia): Green microfinance is a *financial service* which tries to improve the environmental conditions by creating incentives for the poor. It provides the poor with microfinance that encourages them to use more sustainable environmental-friendly practices

The first three definitions -the Foromic definition and the Posner definition- make a particular reference to the 'positive impact' and 'benefits' ensuing from green microfinance. As I will discuss in the following section, these

outcomes are still very much uncertain, hence putting these outcomes in the definition as a key characteristic of green microfinance or as a self-evident outcome is problematic. Overall, the definitions also narrow the scope of green microfinance down in various ways; either by linking it specifically to technical assistance (Posner, 2009); requiring the practice/environmental focus to be present in *all operations* (Allet, 2010b) or focusing only on financial services (microfinancehub.com).

To avoid being too normative and to allow for the inclusion of the wide panorama of possible entry-points and motivations, a convenient umbrella-term might simply be 'all microfinance which takes into account environmental considerations'. Building on the above review of the current state-of-the-art, pointing out the variegated motivations and realities for MF organisations to engage with environmental topics, I further specify and limit the emergent 'green microfinance' to those financial services that:

- aim to induce changes in decision-making and behaviour of microfinance clients either passively (refusing to finance harmful activities), or actively (providing environmentally conditioned and possibly subsidised micro-financial and non-financial services),
- in order to reduce clients' vulnerability to environmental stresses and/or to mitigate the impact of their practices on the environment,
- for reasons of financial risk reduction, livelihood improvement and/or conservation and restoration of natural resources

(adapted from Huybrechs et al. (2015a: 212))

This description focuses on the influence of green microfinance on and through clients, and emphasises the intentional character rather than suggesting that there are actually beneficial outcomes. It also captures the variety of possible objectives, motivations and approaches and makes these more explicit. At the same time, it is narrower than the umbrella definition, as it excludes the green microfinance aspects that occur purely at the level of the MFI (footprint and internal policy setting). For the diverse ethical, instrumental and prudential motivations and for the combination of economic, social and ecological objectives, the workings of

green microfinance are arguably most relevant at the MFI-client interface level.

By focusing on the aim of inducing changes in decision-making and behaviour, and by highlighting the multiplicity of motivations to do so, I made it more explicit that these engagements have some underlying 'chain of impact'. The relevant ensuing question is then: how do the green microfinance practices actually work out in the field? What are the expected results and how are they supposed to be achieved? These are the issues with which I wish to further engage and which –as I will note in the following section- are currently often absent from the debate on (green) microfinance.

## **7. 'ENVIRONMENTAL PERFORMANCE' AND WIN-WIN: A DÉJÀ VU**

The practice of linking microfinance and environmental concerns is unquestionably on the rise. However, it is still a relatively new item on the microfinance agenda, both at the level of practice and research (Garcia-Perez et al., 2017). In the above description of the rationale to engage with environmental concerns, I provided an overview of the discourse of green microfinance proponents. This includes references to business opportunities, financial risk management, ethical considerations and microfinance's proximity to people who are highly vulnerable to environmental shocks.

When these ideas are presented and promoted at microfinance conferences, the most frequent reactions and concerns from the audience relate to questions about additional burdens and costs for MFIs and their clients. It is indeed still a debateable issue in microfinance circles whether microfinance should actually engage with environmental concerns, as

many practitioners argue that environmental protection is not a priority for microfinance clients, that it would only constitute an additional constraint and cost for MFIs and their clients, or that microfinance is not in a position to solve all problems" (Allet, 2010b: 10).

The underlying business case is a matter of discussion, as well as the question of whether microfinance should be burdened with this additional responsibility. An issue which is less often dealt with, though, is what the actual outcomes of green microfinance interventions or policies could be if and when green microfinance practices are adopted; how green microfinance practices translate in practice; and whether they can actually contribute to the stated objectives (Sica and Testa, 2009, Allet, 2010b). In empirical analyses regarding the implementation and outcomes of green microfinance—which are still scarce due in part to the incipient nature of this practice—results are rather mixed. Some reports –especially the ones commissioned by project funders– remain relatively uncritical about the processes and outcomes of the green microfinance projects (Morris et al., 2007, Guerrero, 2012, Proyecto CAMBio, 2013a, UNEP, 2013, Shahidullah and Haque, 2015, Rondón-Krummheuer et al., 2015). Some other studies reflect more profoundly on the variegated ways in which the programmes play out in the field, interacting with local social and economic dynamics (Allet, 2012b, Forcella, 2012, Huybrechs, 2014, Lucheschi, 2014, Taylor, 2013b). The latter reflections – which include a call for “caution [regarding] the role that MFIs can play in relation to inducing change to the environmentally harmful practices of micro-entrepreneurs” (Allet, 2017: 57)– however, are far from being centre stage in more general discussions on green microfinance, either in policy or academia.

Important, in this respect, is that for the measurement and reporting of ‘environmental performance management’, indices are based on process indicators rather than on their outcomes (Allet and e-MFP, 2014, Allet, 2012a, Forcella and Hudon, 2014). As is recognised by Allet (2011: 8), these indicators are limited in the sense that “they only assess the efforts made by an organisation, without showing whether these efforts actually translate into positive change in terms of environmental impact.” Regardless of this ‘blind spot’ and the absence of widespread inquiry into the link between the adoption of green microfinance policies and ensuing results, the use of these indicators and the focus on ‘environmental performance management’ is currently the backbone of the promotion and monitoring of microfinance’s relation to environmental concerns.

The interest for indices and their quantification can be related to goals of awareness raising and visibility towards possible funders (Aitken, 2013). It is also understandable that the focus on management practices is partly due to difficulties to measure and attribute outcomes –as is the case for social impact (Green Microfinance, 2007, Allet, 2012a, Morduch, 2000, Allet and Hudon, 2015, Bédécarrats et al., 2015). Yet it is important to emphasise that the current measurement and analysis of green microfinance generally lacks reflection on the link between problem statement, processes and outcomes. This could possibly lead to a disconnection between pragmatic policy indicators and ultimate outcomes. It seemingly mirrors an assumption of a linear cause-and-effect relationship (Mosse et al., 1998); i.e. that the mere incorporation of environmental concerns can bring about the expected positive change, providing a win-win-win at the level of social, economic and ecological benefits. But how is the (environmental) problem defined or conceptualised? How is green microfinance supposed to obtain/incentivise these positive changes? These are questions which are reminiscent of discussions on the social bottom line in microfinance, which can hence offer leads for discussing the topic of green microfinance.

## **7.1 THE WIN-WIN IDEA AND THE SOCIAL BOTTOM LINE**

Based on a *déjà vu* feeling of discussing ‘win-win’ expectations, I first turn to these more critical reflections on the underlying theory and expectations of microfinance regarding its social bottom line, in order to better understand the possible underlying expectations of the environmental bottom line. As mentioned above, the general idea underlying microfinance is that it contributes to economic development, lends a hand to poor people to reach out of poverty and provides financial services in a (nearly) financially sustainable way. It hence builds on the premise that poverty and social exclusion can be addressed through the provision of these financial services (Mader, 2018, Johnson, 2012). Yet this theory regarding the social bottom line in microfinance is not uncontested. One of the ongoing debates regarding social performance is related to the idea of ‘mission drift’ (Mersland and Strom, 2010, Reichert,

2018), which refers to shifts in priorities and situations where the financial bottom line outweighs the attention for the social objectives (Bedecarrats et al., 2012, Mersland and Strom, 2010, Reichert, 2018). This also relates to the issue of whether or not the obtainment of social goals can be measured, and if there is a trade-off between the social and financial bottom line (Dunford, 2000, Copestake, 2007, Gutierrez-Nieto et al., 2009, Conning and Morduch, 2011, Bos and Millone, 2015, Cull et al., 2009). These critiques do not inherently question the link between the provision of financial services and the possible achievement of the social bottom line, but rather warn for possible trade-offs (Morduch, 2000).

More fundamentally, Johnson (2012) looks at the approach to poverty and social exclusion which underlies microfinance and questions whether it takes due account of the complexity of poverty and development processes. According to her, the idea of 'financial inclusion' rests on a "residual" approach to poverty. Indeed, this approach focuses strongly on the individual and does so in an a-political, technical fashion, reducing poverty to a "financial problem" (Schwittay, 2014). In doing so, it strips poverty from the broader relations and mechanisms that cause it in the first place. Especially as large international development institutions became the main 'gatekeepers' of good practice in microfinance and financial inclusion, a "Washington consensus on poverty" emerged, promoting the idea of "eradicat[ing] poverty through profits" (Roy, 2010: 5).

This residual approach can be illustrated through the idea of micro-entrepreneurship, which is central to microfinance (Roy, 2010, Venot, 2016). This concept, which according to Aitken (2013: 479) is 'central to the symbolic language of neoliberalism', often fails to take into account how entrepreneurs get to thrive, or not, in relation to their social-economic context or to question whether people want to be entrepreneurs altogether (Radhakrishnan, 2015, Aitken, 2013). This is in contrast to a more 'relational' and political approach to poverty, which recognises the social and political interactions between different members of a (local or global) society, structuring differentiated limitations and opportunities

which interact with and shape the position of different members of society (Johnson, 2012, Rankin, 2002, Radhakrishnan, 2015, Elwood et al., 2017). In this sense, inequalities and (local) processes of impoverishment and empowerment are issues which cannot be subdued with mere financial assistance to the marginalised.

Some critics even go a step further. They consider that the provision of financial services not only fails to address the underlying processes which lead to poverty and social exclusion, but also exacerbates them (Bateman, 2010, Roy, 2010, Mader, 2015). Either way, when taking these relational and contextual factors into account, the idea that the inclusion of poor people in the financial system –in itself- provides a sufficiently enabling environment to reach out of poverty becomes less self-evident. It points to questions of what/who is valued or supported through the particular lenses adopted by the intervention, making it more political and questioning win-win-suppositions in a more substantial way.

## **7.2 (IMPLICIT) EXPECTATIONS AND ASSUMPTIONS IN GREEN MICROFINANCE**

The expectations of the social bottom line of microfinance were built on a widely accepted and promoted notion that providing people with financial services allows them to strive in their economic endeavours, helping them reach out of poverty. For green microfinance, it is somehow less clear what the adopted ‘theory of change’<sup>2</sup> is regarding the obtainment of the third bottom line. In what follows, I zoom in on illustrations of cases of financial and non-financial services for climate change adaptation and biodiversity conservation to unveil some of the underlying expectations and assumptions.

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<sup>2</sup> I use this concept here to refer both to “a theory of how and why an initiative works” (Weiss (1995) in Valters (2014)) as well as the process of reflecting on and explicating such a theory; hence not (only) as a new version of the ‘logical framework’ (Eyben, 2013, Valters, 2014).

The link between microfinance and climate change adaptation resides in part with the idea of overlapping ‘target groups’; i.e. that the poor and vulnerable (potential) clients of microfinance in developing countries are also those who tend to be most vulnerable to the effects of climate change (Hammill et al., 2008, Fenton et al., 2015). Microfinance is then seen as “one key way of mobilising private finance (and channeling public finance) for autonomous household adaptation” (Fenton et al., 2017a: 192). Thereby ‘autonomous’ adaptation refers to adaptation at the level of households and enterprises, contrasting with ‘planned’ adaptation which refers more to the public level. The underlying assumption is then that the provision of financial services contributes to adaptation by acting upon the “adaptation deficit”, being “the shortage of adaptive capacity that a household has because of its lack of capital in its various forms” (Scheyvens, 2015). Credit and other financial products are thus expected to strengthen the autonomous adaptation capacity of (poorer) households and enterprises, by lifting financial constraints and enabling them to invest in adjusted livelihood activities and enhancing resilience in the face of vulnerability to climate change (Agrawala and Carraro, 2010). Some projects turn it into ‘microfinance plus’ projects. They add non-financial elements of technical assistance or awareness raising in order to simultaneously address other cognitive-motivational barriers to the adoption of the envisaged adaptation strategies (Rondón-Krummheuer et al., 2015). Such ‘Microfinance Plus’ configurations are set up to nudge households and enterprises in the ‘right’ direction, contributing to their motivations, perceptions and knowledge through particular incentives.

In a similar vein, several projects and practices of microfinance seek to incentivise enterprises and households to adopt environmentally-friendly activities for the conservation of biodiversity or the provision of ‘ecosystem services’. In this regard, Cranford and Mourato (2014) refer to the concept of ‘credit-based payments for ecosystem services’, whereby they build on the idea of ‘Payments for ecosystem services’ (PES). PES is defined by Wunder (2015) as *‘voluntary transactions, between service users and service providers, that are conditional on agreed rules of natural resource management for generating offsite services’* (Wunder, 2015: 241). The

referred-to Ecosystem Services (ES) are services which are provided by nature and valuable to humans, yet which are usually not being valued in markets and therefore supposedly not taken into account in economic decision-making.

PES emanate from the idea that by putting a value on these services – connecting ‘buyers’ and ‘suppliers’, or users and providers– their provision can be secured through a conditional payment system (Wunder, 2015, Ferraro and Simpson, 2002, Engel et al., 2008). Cranford and Mourato (2014) suggest that the provision of such payments or monetary environmental incentives could be done in relation to credits, by making part of the credit rates and terms conditional on the conservation of natural resources. Engel and Muller (2016: 177) concur, seeing “conditional microcredit” as a potential approach to support ‘climate-smart agriculture’ when “poverty and lack of access to credit ... hamper[] the adoption of privately profitable [climate-smart agriculture] practices”. Again, the lifting of financial constraints and the provision of economic incentives are seen to be a key enabler of the adoption of environmentally-friendly practices.

The project that I will analyse in the empirical part of this PhD intends to do exactly that, namely to support the adoption of environmentally-friendly practices through conditional microcredit and PES. The project, called CAMBio (Central-American Markets for Biodiversity) offered loans at lower interest rates for particular land-uses. It simultaneously offered technical assistance and ‘biopremiums’ or financial rewards conditional upon the adoption of particular environmental practices. An interesting element of this project and of Cranford and Mourato’s (2014) explicit reference to the PES literature is their clarity about the aim to incentivise particular behavioural changes through financial incentives (sometimes in combination with non-financial services such as technical assistance).

The underlying expectations of this version of green microfinance appear to be based on a rather apolitical and individual approach to the motivations and decision-making related to the adoption of

environmentally-friendly practices or adaptation activities. Yet, in a similar way as what I discussed earlier, regarding the approach to poverty alleviation: how appropriate is such an economic and individualistic view on problems of environmental degradation and vulnerability? The issues at hand surely do not become less relational and contextual when entering into the realm of human-nature interactions. Indeed, dynamic and political processes shape vulnerabilities and responsibilities regarding environmental problems (Taylor, 2013a, Ravnborg, 2003, Van Hecken and Bastiaensen, 2010, Blaikie, 2006, Brockington, 2002). This becomes apparent in an example provided by Taylor (2013b), where he describes the dynamic dimensions of vulnerability by examining a credit-related support programme for water pumps. This project aimed to support climate change adaptation strategies by making water pumps available on the basis of credit provision and subsidies for electricity use. However, by further enabling the already problematic overexploitation of water resources, it exacerbated the vulnerability of those who had no access to these pumps. People without access to the pumps suffered from the decrease in groundwater reservoirs; while the private access to pumps made collective solutions to water problems in that region less attractive. This case is illustrative for how a project can entail different, unintended results at the collective level because of the dynamic and relational processes in this social-ecological system.

### **7.3 GREEN MICROFINANCE AS A PANACEA?**

From the above, it becomes apparent that the idea of financial inclusion as a prescription for both poverty reduction and for solving (different types of) environmental concerns requires a more critical assessment. In their analysis of different natural resource management policies, Ostrom and Cox (2010) call the tendency to formulate such prescription or blue-print the 'panacea-problem', which occurs "whenever a single presumed solution is applied to a wide range of problems" (Ostrom and Cox, 2010: 452). It refers to a failure to take due account of the policy's potential inappropriateness within a specific local context and a lack of engagement with the relational and contested nature of the problem in itself.

Arguably, green microfinance is rarely presented as having the ambition of being a full-blown environmental policy. Nevertheless, if the social and environmental problems that green microfinance aims to tackle are indeed power-laden relational problems, interactions with broader incentive structures are inevitable. As it interacts with the sanctioning and rewarding of specific behaviour, it enters into the sphere of environmental governance. This begs for questions at both the level of the theory underlying green microfinance as well as the particular ways in which such policies unfold in practice –through their interaction with the local context. Questioning win-win solutions also requires an assessment of the distribution of costs and benefits and how these interventions play out in the field. These issues are what I consider to be key research gaps in microfinance research and will be the focus of the remainder of this dissertation. More particularly, to say it with the more specific terminology that will be introduced in the following chapter: *“How does Green Microfinance interact with broader development pathways in complex rural social-ecological contexts in their quest for the triple bottom line?”*

## 8. CONCLUSION

From this overview of green microfinance, it appears that ‘green’ can mean different things in microfinance. There is an undeniable rise in interest for linking environmental concerns and opportunities to the practice of microfinance, which stems from different motivations. The analysis of different motivations, objectives and types of policies shows that there is no straightforward answer to *why* (for ethical, prudential or instrumental reasons) or *how* (with which strategies) to go green. These are arguably the main aspect of today’s debates about the environmental performance management of MFIs. This topic of environmental performance management is currently mainly informed, promoted and monitored through the Green Index.

The main expectation underlying green microfinance today is arguably that microfinance can lead to a ‘win-win-win’ scenario of social, economic and environmental gains; with benefits for the MFI, the clients and the (local

and global) community. This is reminiscent of ongoing debates regarding the social bottom line in microfinance. The parallel with the contested social bottom line indicates that it is important to reflect more about the underlying expectations, and to further analyse the on-the-ground workings of green microfinance projects.

This first chapter has set the scene for the following chapters which engage more critically and in-depth with the limitations and potential of green microfinance in the context of 'sustainable rural development'. In previous research regarding green microfinance, a lot of focus has been given to the question of 'the relevance of the environmental bottom line in microfinance'. This dissertation is more about 'the relevance of microfinance in the (socio-)environmental bottom line of rural development'. The following chapter provides the next step by further emphasising the political role of microfinance in rural development processes –which are conceived as complex social-ecological systems. It thereby provides the lenses with which I will try to identify and analyse the relevant processes with which green microfinance interacts.

## ANNEX I. LIST OF ATTENDED/CONSULTED CONFERENCES AND EVENTS RELATED TO GREEN MICROFINANCE

Name of conference	Date and Place	Participated
Social Performance Task Force 2012	8-4 June 2012 Panama City, Panama	Yes
Foromic 2012 – with a session on Green finance in Latin America and the Caribbean	1-3 October 2012 Bridgetown, Barbados	No (watched video of session)
III Foro Costarricense de Microfinanzas – Microfinanzas Verdes: tendencias, retos y sostenibilidad	18-19 July 2013 Heredia, Costa Rica	No (accessed conference materials)
European Microfinance Week 2013	12–14 November 2013 Luxemburg	Yes
University Meets Microfinance Workshop 2014 - Value Chains in Agricultural and Green Microfinance	3-4 July 2014 Frankfurt, Germany	Yes
European Microfinance Week 2014	12-14 November 2014 Luxemburg	Yes
University Meets Microfinance Workshop 2015 - Enhancing food security & resilience to climate change	11-12 June 2015 Bergamo, Italy	No (accessed conference materials)
Social Performance Task Force 2015	8-12 June 2015 Siem Reap, Cambodia	No (accessed conference materials)
“Green Inclusive Finance – Status, Trends, Opportunities” – organized by NpM	22 September 2015 The Hague, The Netherlands	Yes
Foromic 2015; with a session about Green Microfinance in Latin America	26-28 October 2015 Santiago, Chile	No (followed live-stream of session)
European Microfinance Week 2015	18-20 November 2015	Yes
European Microfinance Week 2017	29 November – 1 <sup>st</sup> December 2017	Yes

## CHAPTER 2

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# **A CONCEPTUAL FRAMEWORK BUILDING ON COMPLEX SOCIAL-ECOLOGICAL SYSTEMS AND DEVELOPMENT PATHWAYS**

Note: Some elements of this chapter are based on Huybrechs (2012) and Merlet and Huybrechs (2014). The ideas in this chapter benefited from feedback during a course on epistemology at the ISS, a lunch seminar at IOB and a course on Political Ecology at the University of Copenhagen. The concept and application of development pathways is also strongly inspired by the collaborative effort for a discussion paper on this topic (Bastiaensen et al., 2015b). Special thanks to Johan Bastiaensen, Gert Van Hecken, John Cameron, Pierre Merlet, Anja Nyrgen and Marijke Verpoorten for commenting on earlier versions.



## 1. INTRODUCTION

“As investigators, we establish frames of inquiry through which we understand the world. This framing establishes, and is established through, the language we employ to speak about our concerns.” (Lund, 2014: 226)

“Our beliefs about knowing preordain our beliefs about doing.”  
(Bromley, 2012: 2)

In microfinance, there is a recent and upcoming trend of incorporating environmental concerns into the goals of microfinance products and practices. In the previous chapter, I noted that this ‘green microfinance’ practice is largely built on the expectation/assumption that taking these environmental concerns into account in microfinance practices can lead to the realisation of the envisaged goals in practice. However, so far there has been only limited engagement with how a triple bottom line approach translates into (effective) change in the field. I argued that green microfinance is prone to falling into the trap of panacea-thinking; i.e. the tendency to perceive a limited set of policy tools as a universal solution to a predefined problem.

In this chapter, I dig deeper into this issue of simplification and the definition of supposed apolitical interventions. I thereby further position the act of defining and providing green microfinance as an inevitably political process in relation to natural resource governance. Indeed, the definition of a particular rationality is not only a reduction of the complex and relational nature of social change and environmental degradation by itself. By taking a particular stance, such an intervention also enters into broader arenas of conflict and alliance regarding the definition of socio-environmental problems and how to tackle them. This eventually leads to variegated outcomes in different settings as such an intervention interacts with other institutions, practices, guiding ideas, material contexts

To provide analytical lenses to analyse such processes, I discuss my ontological and epistemological position, which is largely inspired by complexity theory and critical realism. I then draw on the interaction between livelihood trajectories and emerging patterns of collective

pathways; the 'development pathways' approach. This understanding of the historical, power-laden and socio-institutional processes of development poses a challenge to the idea of 'crafting' or 'constructing' institutions; which is captured through the idea of 'critical institutionalism'. The tools provided in this chapter enable the analysis of the case studies in the following chapters, and lead the way to more critical and constructive engagements with green microfinance interventions/environmental governance more broadly.

## **2. GREEN MICROFINANCE AND ENVIRONMENTAL GOVERNANCE**

Green microfinance incorporates environmental concerns in addition to the traditional bottom lines of microfinance, which are financial sustainability and the improvement of the recipients' socio-economic situation (Hall et al., 2008, Muñoz Araya and Christen, 2004, Allet, 2010a). The multiple engagements of microfinance with the environment range from a mere reduction of the financial institutions' ecological footprint to the provision of incentives or specific financial products to decrease borrowers' environmental impact or climate vulnerability (Allet and e-MFP, 2014).

In order to influence clients' behaviour towards environmentally-friendly activities and behaviour, MFIs can use an array of green microfinance strategies and incentives. Central hereto is the provision of financial services –sometimes in combination with other, non-financial services or (conditional) economic incentives. In the previous chapter, I emphasised the need to engage more critically with some of the main assumptions underlying green microfinance. I referred to debates regarding the social bottom line and the critical engagement with the underlying definition and analysis of poverty.

When taking relational and contextual factors into account, the idea that including poor people in the financial system in itself provides a sufficiently enabling environment to reach out of poverty becomes less self-evident (Johnson, 2012, Rankin, 2008). Similar factors come into play when

dealing with human-nature interactions. So far, however, green microfinance research and practice has insufficiently paid attention to what this may entail in terms of how green microfinance interventions play out in the field. A possible pitfall for green microfinance is to enter into an over-simplification and reduction of what are inherently more complex and political processes; and to see itself as a blueprint approach, leading to unpredictable (social and ecological) outcomes of its allegedly green financial products and strategies.

It has become commonplace now in microfinance to recognise it is not the only game in town; that it should not be considered a stand-alone policy. Nevertheless, there is still a strong tendency within the microfinance sector towards 'microfinance narcissism', i.e. to maintain a very microfinance-centred view of the world and to maintain considerable optimism for the potential of financial services *per se* for (sustainable) development (Bastiaensen et al., 2013). Engaging with the complex and relational processes of poverty, or at least to understand how this co-constitutes the workings and outcomes of microfinance interventions, requires a more active engagement with microfinance's interaction with these processes and the inherently political status of an intervention like microfinance (Rankin, 2008). I therefore now first engage with how green microfinance becomes part of processes of environmental governance, which further shows how and why this issue of simplification matters.

### **3. ENVIRONMENTAL GOVERNANCE AND POLITICAL ECOLOGY**

By building on a particular definition or interpretation of the environmental problem/solution and the provision of certain incentives, green microfinance enters into the realm of environmental governance, defined by Paavola (2007: 94) as "the establishment, reaffirmation or change of institutions to resolve conflicts over environmental resources." The way in which an actor/institution engages in environmental governance by defining the environmental problem in a certain way, crafting particular incentives and environmental subjects, is what Agrawal (2005) has called 'environmentality' (relating to Foucault's idea of governmentality, or 'the

conduct of conduct'). An analysis through the lens of environmentality "orients attention toward the concrete strategies to shape conduct that are adopted by a wide range of social actors, and how these different actors collaborate or are in conflict in the pursuit of particular goals" (Agrawal, 2005: 223).

Green microfinance programmes/practices might differ in their combination of types of actors and incentives, yet the underlying rationale eventually rests on a market-based type of governance; or a 'neoliberal governmentality' (Fletcher, 2017). Indeed, the idea is that a credit/financial service provider engages with a (creditworthy) client in a mutually voluntary relation to support practices which are valued for their intrinsic economic benefit and/or for the (economically valued) environmental services or adaptation benefits. Katherine Rankin has previously also looked at microfinance as a form of governmentality, and more specifically as a "governmental strategy" that supports a market-based approach to development (2001: 10). In practice, such a strategy enters into an 'assemblage' process which eventually leads to variegated outcomes in different settings as it interacts –in a process of conflict and alliance- with other institutions, practices, guiding ideas, material contexts... (Rankin, 2008). Such a view provides me with two important leads for the further analysis, namely regarding the 'reductionist' aspect of pinning down a particular strategy and the idea that an intervention will eventually interact with other institutions in both conflicting and reinforcing ways.

Indeed, a particular rationality (such as the provision of financial services as a way to contribute to environmentally-friendly practices) constitutes a specific way of framing the issue. When an intervention logic is defined, "the relevant ensemble of population must be bounded, linked to a defined problem, and that problem linked again to an account of the techniques and mechanisms through which the problem can be addressed" (Li, 2007b: 8). The financial and individual approach is strongly rooted in the paradigm and tradition of viewing people as rational economic actors and society as a loose aggregation of such actors. This tends to overlook the broader

complex institutional context –with institutions as the formal and informal ‘rules of the game’– from which such policy intervention and its effect on the behaviour of individual actors cannot be separated (Norgaard, 2010, Kosoy and Corbera, 2010, Muradian et al., 2010, Van Hecken, 2011).

A key question then is: what is being obscured through this ‘rendering technical’ (Li, 2007b, Sullivan, 2017b)? A technical-residual approach to a problem definition can “conceal ideological differences” (Bracking, 2015: 298) and de-politicise the problem as it “obscures debate or negotiation over the definition of problems or what might constitute appropriate responses in the first place” (Fredericksen et al., 2014: 14). In doing so, it enters into an arena of conflict and alliance regarding the definition of the socio-environmental problem and how to tackle it. Multiple governmentalities will thus interact in both conflicting and reinforcing ways. This means that particular ideas or institutions cannot be unilaterally imposed but depend upon the interaction with other actors and ideas, which makes its outcomes and results highly unpredictable (Rankin, 2008, Elwood et al., 2017, Mosse et al., 1998). Or to say it with Li (2007b: 10):

[The results] emerg[e] from the layering up of uncoordinated programs and practices in a particular time and place, and their awkward intersections with the processes and relations they may attempt to govern, but do not dictate.

The interactions between the different actors and institutions hence lead to “the actual conservation practices operating on the ground” (Fletcher (2010: 180) in Fletcher (2017)). It is thus not a priori guaranteed that the ‘neoliberal governmentality’ which underlies green microfinance actually succeeds to ‘perform’ its market-based arrangements in practice (Van Hecken et al., 2018, Venot, 2016). It therefore becomes essential to focus on how (green) microfinance services are rolled-out and actually performed –in complex ways- in real world contexts.

It has become more commonplace to question technical approaches to development by pointing to their neglect of the complexity of reality (Ostrom and Cox, 2010, Leach et al., 2010, Ramalingam, 2013). However, the realisation that reality is complex is only one part of the coin. The

question is also how you engage with that complexity. Leach et al. (2010: 2) eloquently describe this prevailing challenge and contradiction:

[A] major contradiction is emerging in contemporary responses to environment and development challenges. On the one hand, there is now a wide recognition of growing complexity and dynamism – evident across high science, popular media and the experiences of daily life. On the other hand, there appears to be an ever-more urgent search for big, technically driven managerial solutions... When such responses falter in the face of local dynamics and uncertainties, the response tends to be to implement with greater force or to blame locals or critics – rather than to question the underlying assumptions.

This is why I want to remain open to questioning these underlying assumptions and am wary of the reflex of win-win discourses and technical-managerial approaches.

By recognising how green microfinance entwines with processes of environmental governance, I adopt a political ecology approach. According to Peet and Watts (1996: 6), political ecology refers to “a confluence between ecologically rooted social science and the principles of political economy” (as cited in Robbins (2004)). Forsyth (2003: 2), in turn, provides a clear overarching definition of the type of debates this field of inquiry engages with, namely “debates refer[ing] to the social and political condition surrounding the causes, experiences and management of environmental problems”. A key focus thereby lies on analyses of power in (environmental) knowledge and valuation and the ensuing distribution of costs and benefits. An intervention –like green microfinance- will indeed play a role in defining, supporting and/or challenging these ‘social and political conditions’ regarding the environment and will thereby “tug on the strands of ... human-environment linkages [which] reverberate throughout the system as a whole” (Robbins, 2004: 5).

These questions are inherently linked to ontological and epistemological considerations. It is related to what we believe we see or measure (cf. environmental degradation, its drivers and consequences); and it is about change and continuity and how states of society can be altered or sustained (cf. policy instruments, processes and projects). It is to these discussions that I turn in the following sections, where I construct an

analytical framework to be used in the following chapters, exploring the workings of a green microfinance project ('Proyecto CAMBio') and how it interacts with the development pathways and guiding ideas regarding human-environment interactions in Peñas Blancas. This includes the identification of the actors involved, the history of the area and the evolution of human-nature interactions.

#### **4. COMPLEXITY, SOCIAL-ECOLOGICAL SYSTEMS AND CRITICAL REALISM**

What does it mean to conceptualise rural territories as complex social-ecological systems? And what are the consequences/opportunities of this ontological and epistemological perspective in terms of how to analyse development processes and in terms of the expectations of how 'interventions' function? In the first parts of this section I explain what the key characteristics of complex social-ecological systems are and how I position myself regarding the use of complexity thinking in social sciences. Then, I discuss my ontological-epistemological stance of critical realism to further clarify how the key concepts of complexity align with my worldview.

##### **4.1 COMPLEX SOCIAL-ECOLOGICAL SYSTEMS**

The concepts of 'social-ecological' systems (e.g. Ostrom, 2009) or 'coupled human-environment' systems (An, 2012) explicitly recognise the reciprocal relations and multiple interactions between the social and ecological components of our world. These systems are inherently complex; they are open, unpredictable and uncertain, they have no clear equilibrium and they are characterised by the emergence of outcomes, which are more than the sum of the parts of the system (Leloup, 2011, Ramalingam and Jones, 2008). As variables exert their influence in complex systems, they may change the structure or organisation of the system. Unlike in the more general approach to systems –with strong

equilibrium-thinking– these dynamics can bring the system to another state, of which the stability can vary; an idea captured in the concepts of ‘tipping points’ and ‘bifurcations’ (Ramalingam and Jones, 2008). A tipping point is a moment where a combination of influences has a sudden larger effect on the structure, and a bifurcation relates to how an event can switch or alter the sets of possibilities for future paths (Leach et al., 2010). An illustrative analogy hereof is origami (Leloup, 2011). From the moment some part is folded, it forecloses some outcomes but it still leaves open a number of other possibilities. Hence, the folding somehow conditions the outcome of the origami, without by itself determining it. These dynamic elements, where there is some kind of ‘evolution’ or changes in the system, show how dynamic systems are subject to path dependency (Ramalingam and Jones, 2008) and have a history which needs to be taken into account in their analysis (Cilliers et al., 2013). Furthermore, the ‘self-regulating’ character of the different dynamics – i.e. the idea that a system can reconfigure itself in light of the effects and interactions of the different components– make complex systems less predictable or controllable (Ramalingam and Jones, 2008: 5).

In this idea of self-regulation lies a key element of complexity, namely the aspect of holism and ‘emerging properties’ (Martin and Sunley, 2007, Ramalingam and Jones, 2008, Byrne, 2005, Ambrosio-Albalá and Bastiaensen, 2010, Ramalingam, 2013). This refers to the fact that a complex system is more than the sum of its parts; its behaviour is non-reducible to its individual components. It is thus impossible to predict the overall behaviour of the system through the ‘mean’ behaviour of all separate entities. The interactions shape the outcome, which emerges from a number of elements with causal power. For instance – in relation to the research questions – certain kinds of green microfinance build on the idea that changing individual incentives through (non-)financial nudges contributes to steering a system towards sustainable development. In doing so, it treats the issue as a complicated rather than a complex problem, by breaking the problem/system down to the component of individual decision-makers’ economic rationality.

## 4.2 COMPLEXITY AND CRITICAL REALISM IN SOCIAL SCIENCES

The key characteristics of complexity thinking and complex systems are uncertainty, non-determinism and emergence, and come together in this definition which is considered to be suitable for the way complexity theory is understood here: “the interdisciplinary understanding of reality as composed of complex open systems with emergent properties and transformational potential” (Byrne, 2005: 97). In the above description of these characteristics, I sometimes mixed a view on ‘systems’ as an analytical/modelling element and a view on systems as an ontological stance; i.e. as a worldview, an analogy. In this section, I clarify how I will apply the systems concept. A *model* of a system is a reduction of what is real; but in essence, it is an intent to take on some elements from the (real?) world into a possible analysis. Indeed, we need to look deeper into these views on how to deal with the *being* and *knowing* of the world we live in.

The most commonly referred-to strand of complexity theory (Santa Fé school) believes that there is a complex world out there that *can* be discovered and/or that the representation and analysis thereof is merely a descriptive task (Walby, 2007). They thereby come up with something that is expected to be the next best alternative to universal laws (Byrne, 2005). Castree et al. (2014: 764) more generally notice a tendency within complex systems approaches to “position[] researchers as metaphorical engineers whose job it is to help people cope with, or diminish, the Earth system perturbations”, whereby a “single, seamless concept of integrated knowledge is ... posited as both possible and desirable”.

The way I envisage to apply the language and insights of complexity is more in line with how Ramalingam and Jones (2008), Ramalingam (2013), Bastiaensen et al. (2015b) and Byrne (2005: 96-8) bring complexity in relation to the social sciences; namely as a variety of concepts –rather than a modelling tool– that are very useful for academics and practitioners to make sense of the complex problems they face (i.e. going beyond linear causal relations between components; explicitly incorporating reciprocal

relations and interactions with multiple variables and feedback effects; with consequences that are generally uncertain, non-deterministic and unpredictable). The following citation sums up this idea:

Complexity theory is not a matter of importing ideas from 'the hard sciences' into the consideration of the social, although some of the terminology of nonlinear dynamic theory can be rather useful to us. Rather it involves thinking about the social world and its intersections with the natural world as involving dynamic open systems with emergent properties that have the potential for qualitative transformation, and examining our traditional tools of social research with this perspective informing that examination. (Byrne, 2005: 98)

Another way of differentiating ways of dealing with systems and complexity, is between a 'hard' and a 'soft' systems approach. They differ in the extent to which they perceive the system to reliably represent the world, with the 'hard' systems approach believing models to be actual representations of the world and providing objective information to act upon it (Mormont, 2011). For the same type of possible perspectives to respond to complexity, Leach et al. (2010) refer to the 'descriptive' and the 'constructed' approach; where the 'constructed' approach recognises how any 'model' of the world entails a particular framing or social construct. There is hence a call to be more explicit about the worldview; the underlying ontological and epistemological positioning (Hukkinen, 2014, West et al., 2014).

An ontological-epistemological stance that is often referred to in writings on complexity theory is 'critical realism' (Byrne, 2005, Reed and Harvey, 1992). 'Realism' refers to the belief that a reality exists independent of our knowing about it. Although critical realists believe that there is an 'external' reality, they recognise that the process of investigating and communicating it entails its distortion and its 'discursive construction' (as values, history and interests come in)<sup>3</sup> (Neumann, 2005: 11, Castree et al., 2014). For Bromley (2012: 14), this construction is relational, as "the mind creates our own "nature" in the light of our current embeddedness in particular social and economic and cultural settings and circumstances". The mere act of setting the boundaries of a particular social-ecological

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<sup>3</sup> Note how this relates to the choice of soft and constructed systems approach.

system is a normative act (Audouin et al., 2013) and “the fundamental question of whether or not there is a ‘problem’ or ‘crisis’ to be managed” also lies in the eye of the beholder, making them “critical questions of power” (Fabinyi et al., 2014: 28). This is why there is a need to engage more critically with how ‘reality’ is described and known, and how this knowledge is used (Forsyth, 2001). Indeed, this ‘framing’ of the social-ecological system with its main concerns and components is also a political process, which can come at the expense of excluding potential alternatives and contestations (Leach et al., 2010, Cote and Nightingale, 2012, Fabinyi et al., 2014).

Critical realism describes the reality as being layered: there are underlying real, causal processes which lead to the actual (which is experienced) and the empirical (the observed) spheres (Bhaskar, 2008). Different critical realists (e.g. Bhaskar (1989), Archer (1998), Sayer (2000),...) set up the different layers in their own way, but the basics of an underlying reality with causal relations leading to the experienced and observed events – under the influence of contextual conditions and mechanisms– is a recurring thread. For the research question at hand, critical realism offers particularly relevant insights into questions of human-nature interaction. For instance, it is not because there are conflicting truths about the value of a forest, that the forest is not composed of its physical components, or that the advancement of the agricultural frontier and ensuing deforestation has less real physical effects. There are processes of human action and decisions that affect the state of the natural and social world (Proctor, 1998, Spash, 2012, Byrne, 2003). The interpretation of what a forest means, or what trade-offs are made in the safeguard of nature and how it is promoted, will influence our behaviour and will lead to different emergent outcomes. In this regard, Bhaskar refers to the “epistemic fallacy”, or the erroneous idea “that statements about being can always be transposed into statements about our knowledge of being” (Bhaskar, 2008: 5). The difficulty or impossibility of knowing the real – which is an epistemological question – should not be conflated with an ontological stance that nothing is real. Regarding the ‘truth value’ of proposed explanations, the idea is to frame arguments in their likelihood of

portraying the underlying causal processes (Danermark, 2002). It concerns a fitting and substantiated understanding of what is going on, rather than either a universal law or a fully relativist approach to truths (Hacking, 2001: 16).

Critical realism not only offers interesting insights regarding the natural world with its layered reality and its position between positivism and the more relativist stances. It also informs an interesting stance on structure-agency relationship. It allows for a perspective on processes of social change which neither falls into the trap of excessive reliance on structure or of an exclusive focus on the individual actor (Long, 2001). Reed and Harvey (1992: 369) phrase it as follows: "both the person and society, as well as the mediating relations and rules which dynamically join the two, form an interdependent triad". This provides useful leads to guide research in the area where due account can be given to the interaction between both actor and structure.

## **5. DEVELOPMENT PATHWAYS – CRITICAL LENSES FOR A COMPLEX REALITY**

### **5.1 ACTOR-STRUCTURE INTERACTIONS AND POLITICAL ARENAS**

The issue of the interaction between structure and agency is a key ingredient in the search for an appropriate framework to understand the workings of human-nature interactions and development processes. It also informs intents to reshape these processes. Particular approaches/interventions which aim to alter people's decision-making towards environmentally-friendly behaviour inherently engage with the questions of how change takes place and how people make certain choices.

In line with the above reflections on complexity and critical realism, I perceive actor-structure dynamics as being recursive. Structural components have an influence on people's possible choices, but they do

not in themselves *determine* the overall outcomes. These interactions evolve over time and are historically grounded. Rules and conventions (laws, customs, social relations...), and restrictions of availability and access to resources, shape the potential decisions and their motivation; define the 'room for manoeuvre' (Long, 2001). Within the set of possible decisions/strategies, people make choices in pursuit of living the 'life that they have reason to value' (Sen, 1999). To make a similar point – discussing the contested nature of institutions– Rankin (2008: 1967) says the following (referring also to the work of Jessop (2001)): “structures are strategic (insofar as they privilege some actors, meanings and strategies over others), and [] agency is structured (insofar as actors are situated within and must account for such differential privileging)”. Through their recursive nature, collective outcomes of individual and livelihood practices and discourses feed back into the structure -through economic activity and political, social and cultural participation- to challenge or enforce prevalent rules, ideas, meanings, practices... There is thus a level of relationality, which emerges out of the collective actions/strategies of different actors, whether they intentionally ally or not.

This view of the feedback mechanisms and recursive relations between agency and structure allow for a view that goes beyond a mere focus on what people do with the assets they have access to. It allows for paying attention to power relations in both the structural conditions as well as the (collective) agency to change or challenge them. This 'feedback' loop brings in a more systemic approach and allows for a clearer analysis of processes and systemic properties. This 'talking back' to structures through (collective) agency can be envisaged as taking place in 'political arenas'. The concept is taken from Bierschenk and Olivier de Sardan (1998: 240) and is defined as “a place of concrete confrontation between social actors interacting on common issues” (as cited in Bastiaensen et al. (2015b)). The concept underlines that bargaining processes do not only take place within formal political bodies, like parliaments or village councils, but in every 'real' meeting place of actors around resources or opportunities. These encounters involve a variegated set of local and outside stakeholders with unequal resources, knowledge and power.

## 5.2 INSTITUTIONAL BRICOLAGE AND ACTIONABLE KNOWLEDGE

The above indicates that if an intervention like green microfinance wishes to engage with particular behaviour and practices at individual or group level, it needs to be aware of the inevitable interaction with these relational processes and their emerging and dynamic outcomes. To understand these institutional processes, Cleaver proposes a 'critical institutionalist' approach, which pays attention to equity, power and political processes rather than seeing institutional arrangements as something amenable to (external) 'design' or 'fit' (Hall et al., 2014, Cleaver, 2012). Regarding the way people deal with institutions, Cleaver puts forward the idea of 'institutional bricolage' (Cleaver, 2002). It emphasises how people 'make' or perceive their institutional environment by collecting bits and pieces from the historical, social, institutional environment depending on the issue at hand (alike a 'bricoleur' looks through the same shed to fix a washing machine or a salad spinner).

The complex interaction between institutions and the decisions made by individuals leads to a series of intended and unintended consequences, of which the uncertainty but also the socio-historical embeddedness makes external intervention challenging. Cleaver's attention to issues of participation and political processes relate to the question of who gets what role in assembling the rules-in-use of the locality. This refers to the idea that "[k]nowledge creation, knowledge development and knowledge sharing are considered [...] as essentially relational processes (Bouwen and Taillieu, 2004). It is essentially related to who manages to engage others in their perceptions and priorities. The outcomes emerging from the interaction of different actors on this political field of knowledge creation and institution-building thus affect the process or path of (sustainable) development the community is embarked on.

### 5.3 DEVELOPMENT PATHWAYS

The concept of development pathways is a fitting heuristic to capture and operationalise the above reflections on the recursive nature of structure and agency, the political arenas of their encounter and the dynamics of institutions. De Haan and Zoomers (2005) prompted the use of this concept to recognise the emergence of certain 'patterns' in the activities of livelihoods, which they trace back to collective and historical processes:

[P]athways are best defined as patterns of livelihood activities which arise from a co-ordination process among actors. This co-ordination emerges from individual strategic behaviour embedded both in a historical repertoire and in social differentiation, including power relations and institutional processes, both of which pre-structure subsequent decision-making. (de Haan and Zoomers, 2005: 43)

These pathways or the 'co-ordination processes among actors' generate opportunities for certain household trajectories while limiting others. An understanding of particular motivations, activities or outcomes at livelihoods level –whether social, economic, environmental– will further need to be understood and analysed in relation to the more collective level. When seeking to understand the patterns of livelihoods and the process underlying their decision-making, typologies are sometimes made to account for different (co-existent) trajectories (Bastiaensen et al., 2011, Scoones, 1998, Ellis, 2000).

The 'co-ordinating' interactions between actors take place within the above-mentioned process of power-laden institutional bricolage (Clever, 2012, Van Hecken et al., 2015b). The development pathways framework which I will use here indeed conceptualises rural development as the emergent outcome of the dynamic interaction of guiding ideas/motivations, patterns of collective organisation and associated rules of the game.

A development pathway emerges in the wake of the creation and maintenance of a set of shared ideas that inspire determined actions by the actors, their organizations and social networks, and the rules of the game that govern the interactions among actors, to generate and expand opportunities for given activities

(product categories) that square with types of desired individual development trajectories. The set of ideas, social networks and rules of the game that underpin the development pathways are given dynamic feedback from the trajectories of the actors that reproduce and change them. (Bastiaensen et al., 2015b: 30)

In a rural, agricultural setting such pathways take the form of the support for -or exclusion of- particular products and associated value chains. This includes the mobilisation of collective effort to organise and maintain input supply, technical assistance for particular technological options as well as associative networks for processing and marketing. It also involves struggles over shifting cultural values and meaning. Altogether these processes crystallise into a real world 'road network' that either enables or constrains the desired livelihood trajectories of different groups and thereby generates particular social and ecological outcomes.

Leach et al. (2010) also apply a road analogy in their book on 'Dynamic sustainabilities'. They notice that –in international discussions on sustainability– some perceptions of desired paths forward are more mainstream than others ('the highway'), which comes at the expense of excluding potential alternatives. They also note that this 'highway' disregards processes of political participation and consultation that should take place when deciding on the course to follow. Therefore, Leach et al. (2010) speak of sustainabilities (plural) and the need for different pathways to sustainability, i.e. "alternative possible trajectories for knowledge, intervention and change which prioritise different goals, values and functions" (Leach et al., 2010: 5). These elements of political participation and framing in what is essentially a political 'process' of sustainable development – rather than a technical problem to solve – are important characteristics that I will emphasise in my approach to rural development. Development pathways are by definition a political way to look at reality, in the sense that they highlight the importance of political arenas where power relations shape the conditions of specific dynamics of change in rural territories. In doing so, it represents a powerful conceptual tool to identify and illustrate concrete and discursive struggles within specific social-ecological systems and at how these struggles influence actors' individual trajectories.

## 5.4 TERRITORIAL RURAL DEVELOPMENT AND TRANSFORMATION

Whereas Leach, et al. (2010) use the concept 'pathways to sustainability' metaphorically, opening up a set of imaginaries informing the multiplicity of 'sustainabilities', I will apply it with a more operational perspective. I follow Bastiaensen et al. (2015b) in applying the complexity perspective to the meso-level rural 'territory', where some development pathways emerge as dominant over others. They are the outcome of dynamic interactions of global and local actors with different ideas and knowledge, (perceived) interests, resources and power within local 'political arenas' and geographical spaces characterised by concrete biophysical conditions. This shift to the level of the 'territory' is inspired by ideas from the 'Territorial Rural Development' paradigm (Berdegúe and Schejtman, 2008).

The 'territorial approach' to rural development as promoted by RIMISP (Latin-American Centre for Rural Development) "promotes joint-action among rural agents, coordination between the different administrative levels of government and articulation among different sector policies addressing the problems of rural areas" (Ambrosio-Albalá and Bastiaensen, 2010: 9, Schejtman and Berdegue, 2004). This paradigm to understand the state of rural communities' development and pathways of change recognises the issue of development as a dynamic and contested process. It involves the recognition of possible trade-offs in development policy as well the need for partnerships as the key to engaging with pathways of sustainable development. There is thus a focus on key (formal and informal) institutional processes, including the role of local actors in designing and interpreting incentives and constraints.

Yet the ensuing policy implications of this deeper understanding of rural development dynamics remain strongly focused on "enhanced planning powers and support capacities in decentralised public agencies as well as the need to foster market deepening" (Berdegue et al., 2015: 1). In line with the complexity approach, a development pathways perspective to rural territorial development puts more emphasis on the unpredictable

character of development processes and institutional bricolage. Human intentionality is not absent from these territorial processes, yet there is not a single or predefined source of power or a change-maker in control. Rather, there is collective agency and political alliances to challenge or enforce the current development pathways. Neither can there be an a priori, objective view on what 'sustainable development' in this sense would be. Thinking in terms of complexity does not take away the desire or temptation to think about design and intervention in the social-ecological system (Cote and Nightingale, 2012, Anderies et al., 2004). Yet it is only through these collective practices and political alliance that change or transformation will take place; in highly unpredictable ways. It is also within these socio-political processes that an intervention like green microfinance will be reshaped in practice (Van Hecken et al., 2015a).

## **6. CONCLUSION - A POLITICAL ECOLOGY APPROACH TO GREEN MICROFINANCE**

In this PhD, I assess the interaction of green microfinance with broader development pathways in what are considered complex (rural) social-ecological contexts. I see (green) microfinance as playing a role, *volens nolens*, in environmental governance through the support and sanctioning of certain productive or consumptive practices in light of environmental concerns. The way in which it defines environmental problems (and their solution) is an act of valuation contributing to a certain distribution of costs and benefits, responsibilities and vulnerabilities. The recognition of green microfinance as an engagement in environmental governance calls for a political ecology approach to analysing how it works out (and gets re-worked) in practice.

My analytical lenses build on the idea of considering rural territories as complex social-ecological systems. This involves particular characteristics, such as inherent uncertainty, unpredictability and the *emergence* of behaviour which is not reducible to the individual parts of the system. In line with a critical realist perspective, these characteristics preclude the

possibility to 'know' the system, to objectively define its current or desired state, or to intervene in the system in a predictable way.

When translating this to a context of a rural territory, a useful framework to analyse these processes are development pathways. Indeed, interactions between a variety of actors and their social, political and natural environment lead to a number of dominant and alternative pathways in the territories at hand (Bastiaensen et al., 2015b, de Haan and Zoomers, 2005), connected to certain economic activities and development aspirations. It allows for the concretisation of different 'currents' in local development and allows for looking at the past and present institutional/relational mechanisms which have opened or closed opportunities for different groups. This includes the recognition of alternatives and resistance. In line with critical institutionalist thinking, I recognise that processes of negotiation –taking place at different levels– dynamically shape the rules of the game which lead to the differential limitations and opportunities for the heterogeneous actors in a human territory. Interventions which seek to change certain practices or patterns of development will inevitably interact with this context, with differential results for different groups in society.

Throughout the PhD, I will point to the pitfall of adopting green microfinance policies blindly as an apolitical solution to (rural) development problems, as it requires more active and socially-informed deliberation on who to support; what for; and how. With the approach I presented in this chapter, and which I apply to the case studies in the following chapters, I want to contribute to further conceptual and empirical work on this topic, and make a case for a critical engagement with this incipient microfinance practice.

The empirical analysis of a green microfinance project in the following chapters responds to the need for a contextualised empirical analysis of the ways in which development pathways evolve in a particular territory and how (new) institutional arrangements interact with them (Johnson and Boulton, 2014, Van Hecken et al., 2015b). I will thereby apply the

analytical lenses of development pathways to analyse the workings of a specific green microfinance project -Proyecto CAMBio- in the northern-central highlands of Nicaragua. Yet it more broadly engages –also through the above, abstract discussions on processes of rural development and institutional change– with the way in which green microfinance and external interventions more generally work out, and get reworked, on the ground.

## **CHAPTER 3**

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### **CASE STUDY PROJECT, RESEARCH SITE AND METHODOLOGY**

Note: This chapter was written specifically for this dissertation. The presentation of the case study project and the research site draw on sections that were previously published in Bastiaensen et al. (2015a) and Huybrechs et al. (2016).



## 1. INTRODUCTION

As indicated in the previous chapters, and in light of the rise in green microfinance projects, it is necessary to assess how these projects work out in practice and how the underlying rationale interacts with local development pathways. In the following empirical chapters I contribute hereto by presenting a case study of a particular green microfinance project –Proyecto CAMBio- which aimed at promoting broader environmentally beneficial economic transformation. It was the first large-scale green microfinance programme for biodiversity conservation in the world, and was implemented in five Central American countries in the period 2008-2013.

CAMBio stands for Central-American Markets for Biodiversity, while simultaneously meaning change in Spanish (*cambio*). It intended to support biodiversity-friendly land-use practices through a combination of subsidised loans, technical assistance (TA) and conditional cash rewards. In the remainder of the analysis I will assess the workings of Proyecto CAMBio as implemented by the Nicaraguan MFI Fondo de Desarrollo Local (FDL) in the territory surrounding the Macizo de Peñas Blancas in northern-central Nicaragua.

Following the lead from critical engagements with environment-development policies, I assess how this project interacts in multiple and complex ways -and at both discursive and material levels- with the social-ecological system it seeks to 'transform'. I will use the analytical-conceptual lenses of 'development pathways' to describe and analyse the ongoing struggles related to natural resources and agrarian development in the micro-region of the Macizo de Peñas Blancas. This allows for a more meaningful understanding of the ways in which Proyecto CAMBio worked out in this region and leads to more general lessons regarding green microfinance. As such, this case-study analysis generates insights that inform reflections on the potential role of microfinance as a tool to promote environmental sustainability.

The build-up of the empirical part of the PhD is as follows. In this chapter, I set the stage for the case study by introducing the case of Proyecto CAMBio as a particular case of green microfinance, and present the research questions, research site and methodology. In chapter 4, I provide an initial analysis of the implementation of Proyecto CAMBio and its results in terms of environmental performance, as analysed with a biodiversity indicator built on the basis of a household survey. Then I engage in a more in-depth analysis of the territorial development pathways around the Macizo de Peñas Blancas. This analysis of the complex processes of agrarian change and environmental governance forms the basis for a political ecology-inspired understanding –in chapter 6- of the processes with which Proyecto CAMBio has interacted.

## 2. WHAT IS PROYECTO CAMBIO A CASE OF?



“Mainstreaming biodiversity conservation and sustainable use within micro, small, and medium-sized enterprise development and financing”

*Baseline of Proyecto CAMBio (GEF, 2005)*

### 2.1 PROYECTO CAMBIO AS A CASE OF ‘MICROFINANCE PLUS FOR ECOSYSTEM SERVICES’

Proyecto CAMBio was implemented in Guatemala, Honduras, El Salvador, Costa Rica and Nicaragua between 2008 and 2013. It was financed by the Central American Bank for Economic Integration (CABEI) and the Global Environment Facility (GEF), and administered by the United Nations Development Program (UNDP). The main objective of the project was to

stimulate the adoption of biodiversity-friendly activities by micro, small- and medium-scale enterprises<sup>4</sup> (MSME's). It aimed to do so by 'removing barriers' for financial institutions that support biodiversity-friendly MSME's (Proyecto CAMBio, 2013a).

The origin of this project goes back to regional efforts to create and maintain the 'Mesoamerican Biological Corridor' (Elizondo, 2016). The aim of this Corridor is to interconnect natural habitats by complementing protected areas with biodiversity-friendly plantations, agroforestry systems and private nature reserves (Ervine, 2010). The declared purpose of the project is therefore to contribute to this interconnection by transforming rural SME's production systems in view of increasing their provision of ecosystem services (Gross et al., 2016b).

Based primarily on the guiding idea that pro-environmental change can be achieved through economic incentives (UNDP, 2006, GEF, 2005), the project provided subsidised credits, free technical assistance and conditional *bio-premios* (or bio-awards) to financial institutions and – through these institutions- to 'biodiversity-friendly' clients. 28 intermediary finance institutions (IFI) in the five participating countries benefited from a concessional credit line of CABEI, on the basis of which they could provide (cheaper) credit to clients who are considered to be (potentially) biodiversity-friendly. This credit eventually amounted to 55 million USD and reached more than 25,000 farmers and SMEs (Elizondo, 2016). In addition to these concessional credit lines, the project offered extra incentives for the IFIs and the participating clients. Indeed, the GEF provided non-reimbursable funds for technical assistance –targeted at the IFIs and the end-users of the credits– for a total expenditure of more than 2 million USD (Proyecto CAMBio, 2014a). Additionally, the GEF offered 1.5 million USD for the provision of environmental 'awards' (see Table 1 for a summary of Proyecto CAMBio project characteristics).

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<sup>4</sup> The definition of micro, small and medium enterprises in Proyecto CAMBio:  
 Micro ≤ 5 people employed; yearly revenue ≤ 50.000 USD  
 Small: 6-30 people employed; yearly revenue 50.000 - 200.000 USD  
 Medium: 31-100 people employed; yearly revenue 200.000 - 500.000 USD

**Table 1: Summary of Proyecto CAMBio project characteristics**

Project Name	Proyecto CAMBio (Central-American Markets for Biodiversity)
Funded by	Global Environment Facility (GEF); Central-American Bank for Economic Integration (CABEI)
Implementing institutions	United Nations Development Programme (UNDP); CABEI; 28 intermediary financial institutions
Period of the project	2008 – 2013
Number of Financial Institutions involved	28
Countries the project was active in	Guatemala, Honduras, El Salvador, Nicaragua, Costa Rica
Total amount of loans	56,439,275.96 USD
Total amount of beneficiaries of loans	12,107 credits (benefiting 25,000 farmers and MSMEs)
Total amount of land directly related to the project	140,000 hectares
Total cost of TA	2,304,522.25 USD
Total amount of beneficiaries of TA	885 members of 15 IFIs; and 26,316 MSMEs
Total cost of bio-awards	1,458,709.24 USD
Total amount of beneficiaries of bio-awards	3,371

Source: based on Proyecto CAMBio (2013a)

Different IFIs combined the incentives in different ways and the particular implementation mode could differ from one organisation to another. The extended loans ranged from 100 USD to 1,000,000 USD; hence not all Proyecto CAMBio modes of implementation can be considered green *microfinance*. Nevertheless, Proyecto CAMBio relied on a great number of MFIs and cooperatives in the five different countries.<sup>5</sup> Especially in Nicaragua and Guatemala the project reached out directly to a large amount of smaller and middle-sized farmers and producers of primarily coffee, cardamom and cattle farmers. Additionally, its overall visibility and resonance in green microfinance circles make it a flagship project for the introduction of environmental concerns and management into

<sup>5</sup> The MFIs and credit cooperatives in Guatemala were AYNLA, ADICLA, ASDIR, FONDESOL and Fundación Génesis; in Nicaragua: FDL and coop. 20 de Abril; in Honduras: Credit and saving cooperatives Intibucana and Celbenha; in El Salvador: Rural credit institutions Nueva Concepción, Sonsonate and Zacatecoluca; in Costa Rica: Coopealianza and the credit cooperative Quezada.

microfinance. More particularly, it can be seen as a case of ‘microfinance plus for ecosystem services’ (Cranford, 2011). It is a microfinance ‘plus’ approach as it combined financial and non-financial services (Bastiaensen and Marchetti, 2011, Sievers and Vandenberg, 2007). In this sense, it is in line with a suggestion by Allet that “MFIs could have a greater impact on their clients’ environmental behaviour if they took advantage of the synergies created by an integrated approach to environmental risk mitigation” (Allet, 2017: 82). The reference to ‘ecosystem services’, in turn, highlights the particular focus on the environmental goal and the conditional bio-award’s semblance to the policy instrument of Payments for Ecosystem Services (Wunder, 2015, Muradian et al., 2010, Cranford and Mourato, 2014); in which sense GEF can be seen here as acting as a global biodiversity ‘buyer’ through the payment of the conditional awards.

The central hypothesis that underlies this project – and green microcredits more broadly– is that green credits induce better environmental performance on the farms, as the credits (with or without additional services) could enable rural producers to invest in more environmentally friendly activities. The mere aggregation of different types of incentives – as solutions to partial problems of financial access, economic motivation and technical knowledge–, might however not guarantee an adequate response in the context of the problems facing the evolving social-ecological systems as a whole. Inspired by the ‘complex’ worldview presented in Chapter 2, I will analyse the workings of this project.

## **2.2. A SUCCESS OF SOME SORT**

CAMBio is proud to present such a particular and successful business model. It is a different perspective, which is needed to responsibly take into account how this planet’s biodiversity is disappearing at a rate never seen before. The contributions of CAMBio and its business model show that it is possible to contribute to the planet’s natural resources without stopping to produce in an efficient way and being committed to the well-being of the next generations as well as the economic development of the micro, small and medium enterprises in the Central-American region.

Introduction by regional project coordinator of Proyecto CAMBio  
(in Proyecto CAMBio, 2015: 11, own translation from Spanish)

The overall success of this project has mainly been assessed and reported in terms of its good financial records and its channelling of the credits towards biodiversity-friendly practices. Indeed, the Final Report of Proyecto CAMBio (Elizondo, 2016) mentions that this project can be seen as successful in 'removing barriers' for investments in biodiversity-friendly activities because the credit line ended up being three times higher than initially expected. Another report, which focused on the biodiversity impact of the project concludes with: "overall the project's public-private partnership structure demonstrates that facilitating loans through banking institutions can be an effective tool in protecting biodiversity" (Gross et al., 2016b: 4). This conclusion was derived from the finding that most investments were targeted at regions with "higher than expected biodiversity conservation value" (Gross et al., 2016b: 20). It is hence perceived as a success story, although the final evaluation reports recognise the lack of available data to assess the biodiversity effects in detail (Elizondo, 2016) (see also chapter 4).

For the remainder of the empirical analysis, I will focus on the case of Proyecto CAMBio as implemented by the Nicaraguan MFI Fondo de Desarrollo Local (FDL). FDL's implementation –which combined the three different incentives of loans, bio-awards and technical assistance (in collaboration with a long-term partner for technical assistance)– was considered an 'exemplary' case of the implementation of the overall CAMBio project (Vargas et al., 2011, Mendoza et al., 2012, Proyecto CamBio, 2014b). It is important to stress that a particular case study "may ... be unique but [it] is not singular" (Castree, 2005: 541), as it interacts with and engages with broader applications of the studied phenomena, both at a specific and an abstract level (Lund, 2014). The focus on one of the 'best' cases of CAMBio –i.e. one of the most logically conceptualised and well implemented cases and a 'success story' ready for epistemic circulation (Van Hecken et al., 2015a, Büscher, 2014)– increases the relevance of the following analysis to broader debate on microfinance's engagement with environmental concerns.

Although FDL implemented the project in different areas of the country, the study presented here focuses on northern-central Nicaragua; in particular the municipalities of El Cuá, La Dalia and Rancho Grande. This area, which surrounds the nature reserve 'Macizo de Peñas Blancas', was chosen as a high priority area by the project implementers. Indeed, it is considered of high importance in terms of biodiversity and environmental connectivity, being part of the Meso-American biological corridor and the Bosawás Biosphere reserve. The case study of Proyecto CAMBio –as implemented by FDL in Macizo de Peñas Blancas- is a particular green microfinance project in a specific setting. Yet more generally –and through the above, abstract discussions on processes of rural development and institutional change- the case study also engages more broadly with the way in which green microfinance –as any external intervention- gets reworked on the ground and engages with processes of rural development and institutional change.

### **3. RESEARCH QUESTIONS FOR THE EMPIRICAL CHAPTERS**

The key focus of this research lies with the way in which a green microfinance project unfolds on the ground. More particularly, the case study will look into the type of practices and actors that are being supported by the project; how the environmental objectives interact with local processes of natural resource governance; and how green microfinance practices are reshaped locally in their encounter with the prevailing development pathways. In other words, I look at how the project relates to the broader, contentious processes of inclusive and sustainable rural development in the area and how it closes down or opens opportunities for certain groups of people and particular development pathways. In line with the analytical framework of this PhD, I hence look at the micro-level of farms and at the particular workings and implementation of the project, but will be interpreting the results in their relation to the broader territorial development pathways. In order to do so, I will take several steps in the following three chapters, applying and

concretising the research questions presented in the general introduction and adapting them to the particular case.

In chapter 4, I delve into the implementation of Proyecto CAMBio around the Macizo de Peñas Blancas by looking at the distribution and targeting of the credits and how they relate to 'environmental performance'. I build on the project's rationale to assess evolutions in land uses of both participant and non-participant clients of FDL between 2008 and 2013 (at the time of the survey and five years prior to it). I also construct a *biodiversity index* which will inform the analysis of the socio-economic characteristics of the farmers that seem to relate to their farms' improved environmental performance; including an assessment of the role of participating in Proyecto CAMBio. Together with an assessment of whether the bio-award effectively rewarded environmental betterment, this analysis provides an initial perspective on the workings of the project and paves the way to a further analysis directly inspired by the pathway perspective.

What are the characteristics of farmers (including participation in the project) which influence the 'environmental performance' as measured by the biodiversity index?

Did the bio-award relate to on-farm improvements in terms of environmental performance?

In order to better understand and further contextualise these findings, Chapter 5 enquires into the development pathways in Peñas Blancas. This analysis allows a better understanding of the history of the region – including the socio-economic differentiation– and provides a better picture of the ongoing struggles regarding natural resources and the socio-institutional processes which shape the current situation. In addition to setting the scene for the further analysis of how Proyecto CAMBio interacts with and is inevitably embedded in the pathway dynamics of the study region, this chapter is in itself a study of the complex processes that shape local development pathways—as applied to a particular territory.

What are the development pathways around the Macizo de Peñas Blancas?

What are different types of producers, and how do they relate through guiding ideas and practices; including at the level of perceptions of environmental concerns?

Building on the leads from chapter 4 and adopting the development pathways lenses with which I will describe the processes of development in Peñas Blancas in chapter 5, Chapter 6 then delves into questions of governance by approaching green microfinance as an intervention in complex rural development processes. The chapter assesses the workings and influence of Proyecto CAMBio in light of its relation to broader socio-institutional processes of rural development in Peñas Blancas as described by the development pathways and the identified environmentalisms. It provides an alternative picture of the particular practices that are being supported (and excluded); and questions the fundamental issue of how 'success' and the objectives of the project are defined.

In light of the broader development pathways, what are the characteristics of the practices supported by Proyecto CAMBio? Who did it support in doing so?

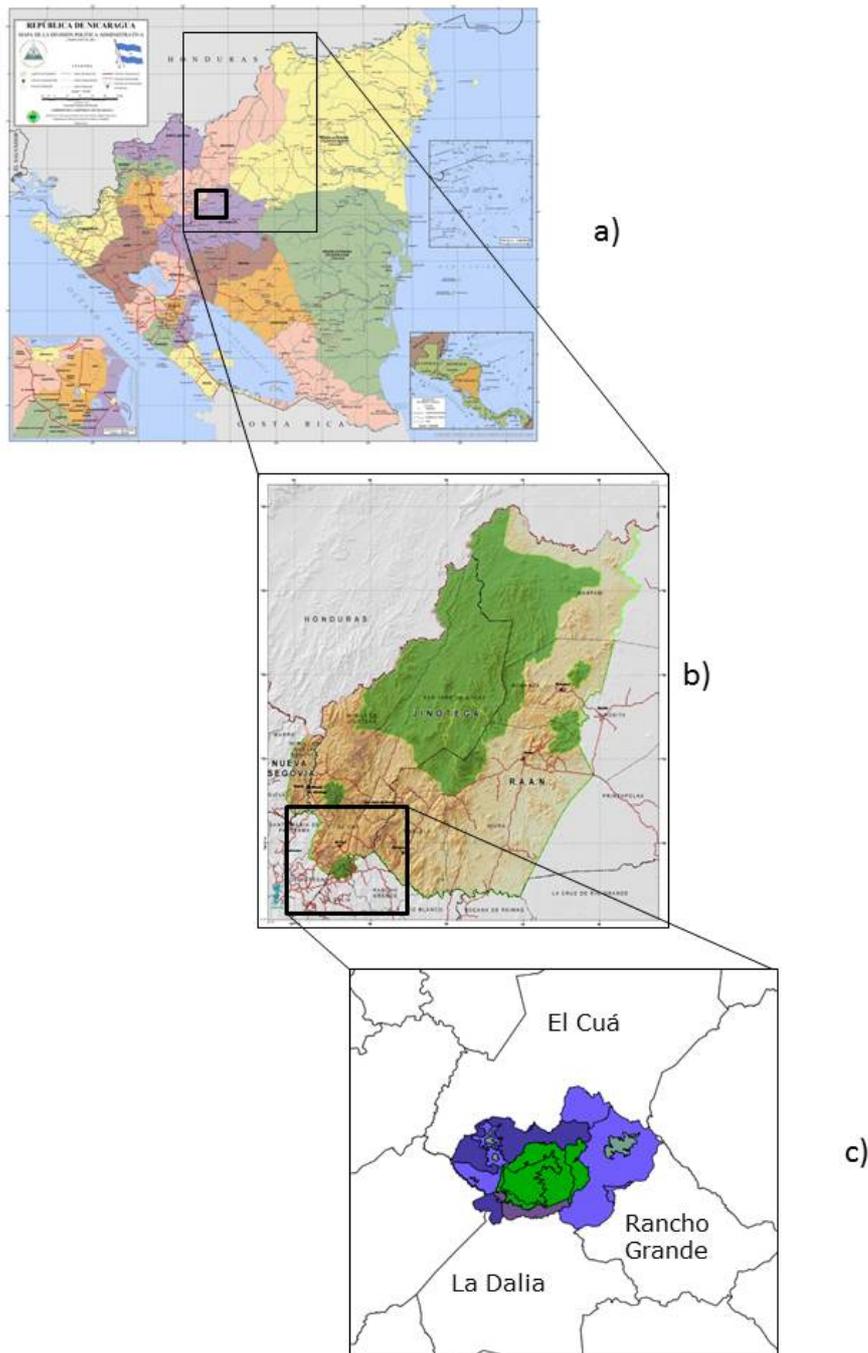
How did the (definition of) environmental objectives and (apparent) outcomes interact with local processes of natural resource governance?

I hence gradually move from a more 'project-centred' exploration of how the project worked out, towards a more systemic understanding of its interactions with the specific context of Peñas Blancas.

#### **4. SITUATING THE RESEARCH AREA**

The 'Macizo de Peñas Blancas' is located in the hilly regions of northern-central Nicaragua (see Figure 4). The highest parts of the massif go up to 1750 m and the white rocky peaks (hence the name 'Peñas Blancas') form a clear landmark for the region (see Figure 5). The elevations of the undulating landscape surrounding the plateau range from 600 m to 1500 m.

**Figure 4: Location of the Macizo de Peñas Blancas**



- (a) Situated in Nicaragua
- (b) Situated at the entrance of the Bosawás Biosphere reserve
- (c) Situated in the municipalities of La Dalia, El Cua and Rancho Grande-  
The core of the nature reserve of Peñas Blancas is indicated in green;  
surrounded by the buffer zones

Source: (a) (INETER, 1997); (b) : MARENA (2005) (c) Elaborated by the author in QGIS

The climatological and topographical features of this cloud forest and the surrounding hillsides make it suitable for coffee cultivation, which is one of the characteristic agricultural activities of this region. Besides coffee

cultivation, the landscape also consists of a number of other agricultural activities such as staple crops (maize and beans), cattle raising (primarily in lower areas) and the cultivation of vegetables (such as potatoes and carrots).

**Figure 5: The white rocks of Peñas Blancas**



Source: picture taken by Abraham Cruz (2014)

While Peñas Blancas is mainly known for its coffee production, it is also a forest- and biodiversity-rich area. In 1991, the Nicaraguan government legally declared the Macizo de Peñas Blancas a nature reserve<sup>6</sup> and the region later also became part of larger conservation frameworks such as the Bosawás Biosphere Reserve (established in 2001).<sup>7</sup> Biosphere Reserves are nationally established nature reserves which are endorsed by the UNESCO Man and Biosphere programme. The Bosawás Biosphere Reserve is one of the two Biosphere Reserves in Nicaragua (the other one being Río San Juan in the south-east of Nicaragua) and one of the 669 Biosphere reserves recognised by UNESCO in the world (UNESCO, 2018). The idea behind these reserves is to recognise the challenge of combining

<sup>6</sup> Decreto No. 42 -91: "Declaración de Áreas Protegidas en varios Cerros, Macizos montañosos, Volcanes y Lagunas del País", published in la Gaceta number 207, 4th November 1991

<sup>7</sup> UNESCO recognised Bosawás as a Biosphere Reserve in 1997, yet it was only formally approved so by the Nicaraguan National Assembly through the law No. 407 "Ley que declara y define la Reserva de la Biosfera de BOSAWAS" in 2001.

goals of conservation and development and to put particular effort in 'zoning' areas for different purposes of conservation and development and to aim for a more participatory approach to nature conservation (UNESCO, 2018, Ruiz-Mallén et al., 2015, Van Cuong et al., 2017). The Bosawás Biosphere reserve overall covers approximately 20,000 km<sup>2</sup> -close to 15% of Nicaraguan territory- and consists of six 'core' conservation areas in between which there are 'buffer zones' (MARENA, 2005). Peñas Blancas is one of the core zones and for its location in the South-Western corner of the Biosphere Reserve it is sometimes named the 'southern gate to Bosawás' (Figure 4). The core zone of the protected area of Peñas Blancas covers 15.4 km<sup>2</sup>, surrounded by another 30.7 km<sup>2</sup> of buffer zone. In the management plan of the reserve (Castillo et al., 2011), these areas are further sub-divided into seven zones with particular rules on possible and prohibited productive activities.

One of the main environmental concerns for local policy-makers in the area is how productive activities affect the quality and the quantity of the water which flows (through nearly 40 streams and rivers) from the higher regions of the massif to neighbouring towns, cities and departments (Castillo et al., 2011). Coffee cultivation, for instance, has an impact on water quality through practices of coffee husking<sup>8</sup> and the use of fertilizers and pesticides.

Two other key environmental concerns in the area are deforestation and biodiversity loss. Even though the region is now considered to belong to the 'old agricultural frontier' (see below), there is still an 'internal' agricultural frontier as the advancement of some farms impact on the remaining forest patches within existing farm boundaries. Additionally, there is active deforestation in the centre of the nature reserve. Biodiversity, in turn, attracts particular attention through emblematic species such as the quetzal bird and jaguar, which are present in the

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<sup>8</sup> Coffee husking is the process of 'washing' the coffee. In the absence of a properly functioning filter, this process adds pulps and viscose organic material (mucilage) to the water. As this organic material starts to ferment, the contaminated water –*aguas mieles* or 'honey water'– starts to smell and is prone to the development of different sorts of bacteria.

nature reserve and which are one of the attractions of the increasing ecotourism in the region.

The main reason for focusing on the area of Peñas Blancas for this study is its status as one of the priority areas for the implementation of Proyecto CAMBio. The area presents some characteristics that fit well with the challenges that certain types of green microfinances wish to address. It is a rural area with a high incidence of poverty, relatively good infrastructure (in terms of roads and markets) and promising 'development potential'; yet where environmental concerns are concurrently on the rise.

The act of setting boundaries on a social-ecological system is unavoidably normative. In this sense, I approach and perceive my study area as a "socially constructed spatial entity of which the frontiers are defined not by biophysical or political-administrative frontiers, but by the processes of the social actors who intervene in it, and transform it" (Cuéllar and Kandel, 2007). As such, the study territory is not limited to the boundaries of the nature reserve. The identity of Peñas Blancas as nature reserve makes for a particular entity through its visibility towards external actors as an attractive area for nature conservation, yet the boundaries of the nature reserve are unclear and contested. Firstly, the boundaries differ depending on whether one talks about the Macizo de Peñas Blancas as the nature reserve, defined in 1991 (with buffer zones including La Dalia); or as one of the 'core' zones of Bosawás (which excludes the parts in La Dalia). Secondly, as the boundaries have not been physically indicated, their definition and interpretation tends to advance together with the internal agricultural frontier and can depend on who considers them. Thirdly, the boundaries are not only materially but also discursively contested, as the act of defining boundaries and defining the related permitted or prohibited activities is a contentious issue.

The research area on which I mostly focus for the description of the development pathways starts from the core of the nature reserve and departs to the West. This choice is based on the recent evolution of formal environmental rules within and around the nature reserve, and based on a

shared history and evolution of this area towards the current coffee specialisation and socio-economic differentiation. More specifically, the 'centre of gravity' of the research is situated around the accessible entry-point into the core of the nature reserve, where there is a conservation NGO and a coffee producer cooperative. It is also near the access road to the coffee plantations in the core of the nature reserve. This place can be seen as a point where different development pathways and different perspectives on environment-development issues come together. When talking about the broad area around the Macizo de Peñas Blancas in which Proyecto CAMBio was disbursed, I will more broadly rely on political-administrative frontiers, as the branches of FDL of El Cuá and La Dalia cover the municipalities of El Cuá, La Dalia and Rancho Grande and as the formal platforms of environmental governance (such as the *Comisión Ambiental Municipal*, which groups different local actors such as representative of the ministries of environmental resources, forestry and health, and NGOs who work on environmental concerns) are divided per municipality.

## 5. METHODS AND METHODOLOGY

The following description of the applied methodology and the research activities I undertook is inextricably related to the discussion on ontology and epistemology in the previous chapter. Indeed, epistemology "describes how we can form knowledge about the world and what is the meaning of truly knowing something" (Spash, 2012: 37). I thereby referred to critical realism, which builds on the premise that there is an 'external' reality, yet that the process of investigating and communicating it entails its distortion and its "discursive construction" (as values, history and interests come in) (Neumann, 2005: 11, Castree et al., 2014). Methods are the particular tools which are used to collect information about this world, and methodology "concerns the principles that determine how such tools are deployed and interpreted" (Spash, 2012: 37).

Through my analysis of complex processes of local development, I want to “shed light on the situated socio-ecological relations that produce social vulnerability and environmental fragility” (Taylor, 2014). In order to do so, I adopt a case study approach (Flyvbjerg, 2006, Lund, 2014) with long term presence in the field, responding to the need for a contextualised empirical analysis of the ways in which development pathways evolve in a particular territory and how a green microfinance project interacts with them (Johnson and Boulton, 2014, Van Hecken et al., 2015b). I follow Flyvbjerg (2006: 224-228) in considering that well-chosen case studies, like the successful case of Green Microfinance Plus as implemented by the FDL, provide the possibility to derive generalisable conclusions; in this case about the usefulness and need for a more holistic, embedded ‘pathway’ perspective on the impact and interaction of such interventions with on-going territorial dynamics. The description of the project in section 2 of this chapter was therefore also informed by the suggestion of Lund (2014) to avoid “universalizing” the findings by clearly indicating why the case is being studied; what it is a case of and how generalisation relates to entering into a discussion with other cases and broader theories.

The analysis of these global-local institutional dynamics that generate the dominant development pathway in Peñas Blancas and its relation to processes of social exclusion and environmental degradation requires a ‘thick description’ of the different agents and development processes (Skovdal and Cornish, 2015: 42). This includes information about (the evolution of) farmers’ productive practices and the power-laden enabling and constraining factors (including credit, value chains, social networks, political participation, and rules in use). It also requires a historical understanding of the region, (environmental) rules and regulations and people’s perceptions about them. To this end, I adopted a predominantly qualitative approach on the basis of a combination of different methods; which will be discussed later in this chapter.

The following analysis of the development pathways is strongly influenced by the Agrarian Systems approach. The concept of agrarian systems

takes into account historical developments and the geographic traces of different forms of agriculture, and enables one to characterise major changes affecting production processes (Cochet, 2012: 130).

The aim of the agrarian systems approach is thus to understand and analyse the current situation and historical processes of changes in small-scale agricultural areas; to understand the logics of why farmers are adopting particular practices (recognising that these are influenced by more than mere economic rationality); and to suggest policies for agrarian development (Dufumier, 1996). It entails a multidisciplinary perspective which draws particularly on economics, agronomy and anthropology to adopt a systemic approach which links social, technical and ecological dimensions. Alike the development pathways approach, it starts from a view of rural territories as being complex. In this sense, this approach is strongly in line with the type of analysis I was pursuing in the region and helped to operationalise the research in terms of development pathways.

The related methodology of the 'agrarian diagnosis' consists of several stages. The first step is a social and geographical 'reading' of the landscape to obtain a first approximation of the agricultural activities in the region. A part of this 'reading' is done by doing 'transect walks' whereby one explores the region and its agricultural activities. Then, the researcher conducts historical interviews with long-term residents of the area, as well as technical-economic interviews with active farmers. Finally, the information is synthesised through a typology of the current production systems and the modelling and analysis of their main economic results (Cochet, 2012, Apollin and Eberhardt, 1999).

Although a political ecology perspective is intrinsically also part of an agrarian systems approach –studying “productive processes combined with a deep understanding of their relationship to social processes throughout time” (Cochet, 2012: 134)– it can at times be snowed under due to a more explicit and almost exclusive focus on the social structure's relation to the 'material' rather than discursive struggles in an agricultural production-centred analysis. That is why—in line with how Van Hecken et al. (2017) apply the 'agrarian diagnosis' to analyse development

pathways– I complement it with a deeper understanding of historical and political processes. I thereby pay particular attention to the practices, discourses and the lived experiences related to the evolution in environmental concerns in the area; and pay a more explicit attention to structures of power, (political) participation and aspiration.

The methodological considerations and techniques presented in this chapter allow me to shed a light on the emergence of development pathways and struggles regarding the meaning of conservation and development in the region; and to explore the (re-)workings of Proyecto CAMBio in interaction herewith. In what follows, I first describe the different research stays and phases of the fieldwork. Then I describe the different methods I applied for gathering primary data and the steps I took for analysing them.

## **5.1 FIELDWORK AND RESEARCH STAYS**

Recognising that knowledge is locally situated rather than universal (Byrne, 2005: 101, Cilliers et al., 2013), a key element to having a better understanding of the local development pathways and the project's functioning was a long term presence –immersion (Mendoza Vidaurre, 2015)– in the research area in particular, and in Nicaragua in general. Overall, I spent 18 months in Nicaragua (over four periods between April 2012 and March 2015) and a total of 4 months in the Peñas Blancas region (spread over a dozen visits). In this subsection I present the research process and the different periods of fieldwork.

The first stage of fieldwork was a scoping mission (April-May 2012), in which I focused on the general characteristics of the research site, mainly in terms of the different productive practices and local perceptions of natural resource governance. This was mainly done through the use of in-depth interviews with key actors in the close vicinity of the Macizo de Peñas Blancas nature reserve and in the municipal capitals of La Dalia and El Cuá (community leaders, producers, government officials). I also interviewed staff members of FDL-Nitlapan; key informants regarding

Proyecto CAMBio; and credit officials of other microfinance organisations. I also co-organised a participatory mapping exercise which was conducted with two members of the coffee cooperative in Peñas Blancas (22/04/2012). The exploratory phase also provided me with a first encounter with local tensions regarding nature (conservation) and production.

The exploratory phase was followed by a longer-term research stay in Nicaragua, from November 2012 until November 2013. During that year I maintained a strong presence in the region conducting interviews and being an observing participant in different types of platforms regarding the governance of natural resources (such as the municipal council on natural resources or meetings of coffee cooperatives who discussed productive practices). In this period I also supervised and participated in the elaboration of an 'agrarian diagnosis' analysis. This agrarian diagnosis was conducted by a Master student (Lucie Arribard) under my supervision in 2013 (Arribard, 2013). The master thesis and the student's presence was part of a delegation of seven students conducting research in several parts of Nicaragua under the supervision of several researchers (Sandrine Fréguin-Gresh, Pierre Merlet, Laurent Dietsch and myself). Lucie Arribard conducted 25 historical interviews and 35 technical interviews over a period of 6 months. At the end of the research stay, we also presented and discussed the findings in a workshop with several local actors.

In September-October 2013 I also conducted a survey. The closed questionnaire was informed by earlier qualitative research and sought to provide a broader picture of profiles of FDL clients (both participants and non-participants to the project), to have a view on possible evolutions in land use, and to obtain information about general perceptions of the project.

After the analysis of the survey and agrarian diagnosis results, in April-May 2014 I returned to Nicaragua in order to deepen the analysis through the use of in-depth interviews. I especially focused on understanding the evolution of livelihood trajectories and making the link with both Proyecto

CAMBio and the broader institutional context regarding environmental governance.

The last research stay (December 2014 – February 2015) took place after a large part of the analysis had been carried out, and allowed me to further challenge and corroborate some findings; both in the field as with project staff and other colleagues at the FDL and research centre in Managua.

Overall, the research strategy sought to obtain information from a variety of complementary sources, offering possibilities to triangulate insights gained from these sources when consensus prevailed, or to capture the diversity of perspectives (Skovdal and Cornish, 2015: 6). Most of the actual *fieldwork* took place around the Macizo de Peñas Blancas (with key locations being the municipal centres of La Dalia and El Cuá, as well as the entrance to the Macizo de Peñas Blancas where I mostly resided in the *eco-albergue* of the coffee cooperative). The rest of my time in Nicaragua was mostly spent in Managua, where I also conducted several interviews with key informants of BCIE, Nitlapan and FDL. Also –as I worked from the offices of Nitlapan and FDL– it was a perfect way to interact with the staff of these institutions and to be part of internal reflections, e.g. on the role of technical assistance or on the practical implications of thinking in terms of ‘development pathways’.

During the different research stays and activities, I generally introduced myself as a student/researcher at University, interested in agricultural practices and live in rural areas. I was not always particularly explicit about what the more specific subject of my study was; which was often also reflected in the rather open-ended approach to the interview or activity. During the introduction and at the end of conversations or activities, it was often necessary to further stress that I was not affiliated to any particular NGO and not in the position to provide any project or particular assistance. My recurrent local presence helped me build a relationship with people in the research area. It was important to keep coming back, as –in the eyes of the people who saw me come back

regularly and who had past experiences with rapid research appraisals or short-lived projects - it made me a different kind of researcher/student. It provided me with some credibility and trust in the region and provided me with access to people who otherwise do not talk easily to researchers (e.g. the fact that I was allowed to keep talking to the leader of the conservation NGO even though he had sometimes refused to talk to other researchers).

In what follows I will further explain the different data collection activities undertaken, which are summarised in Table 2.

**Table 2: Overview of research activities**

Interviews	78
- <i>With farmers (of which 18 were participants of Proyecto CAMBio)</i>	33
- <i>With local representatives of municipal council or ministries</i>	11
- <i>With FDL staff members (general manager, branch managers and credit officials)</i>	10
- <i>With Nitlapan-UCA staff members (project officials and technical assistants)</i>	9
- <i>With other researchers</i>	5
- <i>With BCIE staff (local and regional representatives of the project)</i>	4
- <i>With managers of other MFIs and credit cooperatives in the research region</i>	3
- <i>With members of the local conservation NGO CEN</i>	3
Focus groups with Nitlapán-FDL Staff – discussion of preliminary findings	2
Participatory mapping exercise	1
Observation at (formal and informal) platforms on local environmental governance	7
Observation at events and daily rounds of FDL credit officials and Technical assistants	5
Workshops with members of coffee cooperative and producers of the region	6
Local discussion of research results	1
Surveys	128

## 5.2 INTERVIEWS

Over the different research stays, I conducted 78 semi-structured interviews with farmers, conservationists, government workers, and staff of MFIs and development organisations. For the definition of 'semi-structured interviews' I follow Pretty et al. (1995: 71) who define them as a "guided conversation[s] in which only the topics are predetermined and new questions or insights arise as a result of the discussion..." . The outline of the semi-structured interviews depended on the interviewee and the particular topics I envisaged to address; a kind of checklist.

The interviews which aimed at a better understanding of the functioning of Proyecto CAMBio were largely conducted with people involved in the project, either as project designers, implementers or participants; or they specifically touched on the subject of credit and coffee/agricultural development. Some specific follow-up questions after the survey related to livelihood trajectories of farmers, the novelty of the supported practices in Proyecto CAMBio and the perception of technical assistance. As respondents were all located close to or within the nature reserve of Peñas Blancas, in the interviews I also asked about respondents' perception on the limitations and opportunities the project had provided.

A first step into the sampling of people to interview was largely based on the idea of key informants (Skovdal and Cornish, 2015: 41). For instance regarding the functioning of the project, a first number of contacts included the project officials and members of staff of the executing organisations. When entering the field to research the environmental governance around the Macizo de Peñas Blancas, I had a number of key contacts. I was recommended by researchers who knew the area to get in touch with a number of people quickly, in order not to 'burn' myself; i.e. not to be perceived as solely talking to one type of actor (e.g. only the members of the cooperative or primarily engaging with the conservationist NGO). Another important part of the sampling happened through the 'snowball' effect (Skovdal and Cornish, 2015: 41, Miles and Huberman, 1994); following recommendations of people about who to talk to in order to obtain more or different information about the particular topic. In terms of the sample size, this was determined by 'saturation'; i.e. the point at

which little new data emerges from additional interviews (Skovdal and Cornish, 2015). For the sets of interviews which took place after the survey, the sample was purposively selected as being Proyecto CAMBio and A-clients who participated in the survey and who lived near the Macizo de Peñas Blancas.

## 5.2 OBSERVATIONAL FIELDWORK AND WORKSHOPS

The long-term research stays involved many daily conversational and observational interactions with the people living in the area, both in informal and more formal settings. The participant observation took place at different levels. This allowed me to develop a better informed understanding of farming practices, livelihoods and interpersonal relations. As Sullivan and Brockington (2014: 9) describe it,

[p]articipant observation, or observant participation, implies both participating in, and observing, social phenomena relevant to research aims, with the intention of interpreting, analysing and theorising material that arises therefrom in order to generate meaning

The practices of participant observation were also one of the means to “embrace[] the witches’ brew of situated processes and relations” with the aim to better understand “the ‘how’ of government and politics as practice” (Li, 2007a: 271).

An example of participation in daily practices and encounters, is the participation in activities such as harvesting and husking coffee; helping in the kitchen of the local cafeteria; joining on hikes in the Macizo; or helping to guard the potato-fields at night. Thoughts and insights from these experiences were gathered in a fieldwork diary.

I also participated in eight meetings of formal local platforms on productive or environmental issues in La Dalia and El Cuá, where I could learn about the key (formal) local actors in environmental governance, their discourse as well as the environmental regulations and projects. Six of these meetings were of the Municipal Environmental Council or the *Comisión Ambiental Municipal*. These meetings group key local actors in

(formal) environmental governance, such as representative of the ministries of environmental resources, forestry and health, and NGOs who work on environmental concerns. These meetings were hosted in the municipalities of El Cuá and La Dalia, although they sometimes were also held at the CEN. I also participated in governmental meetings on the demarcation of the Peñas Blancas nature reserve (also held at CEN) and a meeting regarding a project of support for forest guards (held at the coffee cooperative). Being present in the *comisión ambiental* and in other platforms and activities is not only about observing and extracting information, but also about being seen and building up a relationship with the people you are dealing with.

In order to have a better understanding of the work of credit officials and technical assistants, I accompanied them for a day in the field. One day with a credit official of FDL, one day with a Technical Assistant of Nitlapan-UCA and one day with a coffee expert of CATIE. I was also present at a one-day workshop on coffee filters aimed at informing technical assistants.

In terms of focus groups: on two occasions I presented and discussed the preliminary findings of my analysis of Proyecto CAMBio to the staff of FDL-Nitlapan; both to the local TA providers (during a meeting in La Dalia) and to the managing staff of FDL and Nitlapan-UCA (in Managua). These encounters provided useful feedback for a better understanding of the workings of Proyecto CAMBio. Similarly, at the end of the 'agrarian diagnosis' which Lucie Arribard had performed in the region under my supervision, we organised a meeting with local farmers and other people who had been involved in the study, in order to present and discuss the findings.

I also participated in several workshops of local cooperatives and community members. In three workshops, members of coffee cooperatives discussed the inner workings of the cooperatives, their relation to the market and their evolution in productive/cooperative practices (especially in times of coffee crises). I also participated in two workshops with young farmers/students to reflect on 'innovations', offering the floor to openly

question the status quo and to engage in new ideas and practices. Furthermore, to better understand the land ownership and land uses in the area, I facilitated an exercise of participatory mapping with a member of the local coffee cooperative. These workshops and mapping exercises were organised by and with Edgar Fernández and René Mendoza, two researchers/consultants specialised in coffee and rural development. They were also key informants with whom I could exchange and corroborate ideas and findings.

Altogether, these observations provided a deeper understanding of the (re-)workings of the project as well as the daily productive and communal activities in the research area.

#### **5.4 RECORDING AND ANALYSING THE QUALITATIVE DATA**

In the majority of the interviews and meetings I took written notes, including key words, quotes and notes in order to have a good representation of the interview or observations. As soon as possible after the event, I would transcribe and complete the notes. Similarly, for the fieldwork diary –which recollects daily encounters and observations – I tried to write the input down as soon as possible after the encounter or the observation. Some of the interviews (20) were recorded on tape and transcribed afterwards (verbatim). For the series of interviews for which I used a recorder, participants were asked whether they objected to it or not. Few people did not consent, in which case I would go back to written notes. Recordings appeared to have both advantages and disadvantages. Although people would soon forget that the recorder was there; at the start it sometimes made the conversation and the breaking of the ice more difficult. Afterwards, the transcribed recordings would provide very rich data with less risk of leaving out aspects of the conversation which –at first- would seem less relevant. The advantage of the notes, on the other hand, was that I immediately went back to them, while still in the field; whereas this was less the case when I waited for the transcripts of the recordings.

The first step of the analysis of this data was to get familiar with it by transcribing and reading the data (Miles and Huberman, 1994). I entered the fieldwork diaries, the notes and transcripts of the interviews and workshops into Nvivo, which is a Computer Assisted Qualitative Data Analysis Software (CAQDAS) that I used to support the analysis of the qualitative data (Bazeley, 2007, Bazeley and Richards, 2000). This programme provides tools to manage, organise and analyse text-based information. I mostly used the Nvivo software for data reduction and open coding; labelling pieces of interviews while writing, as a way to break up the material in smaller pieces on the basis of topics. In doing so, I managed to explore recurring themes, triangulate information, label striking quotes and detect data saturation.

In terms of coding, I primarily adopted an inductive approach; without a pre-defined set of codes or concepts (Skovdal and Cornish, 2015: 48, Bazeley, 2007). The codes emerge throughout the reading. Of course the reading and interpretation of the material is to some extent informed by my particular epistemological and theoretical approach; hence it cannot be fully inductive. For instance, after the exploratory research, I had identified a number of key themes/variables/concepts that I would be looking at; as I had noticed the strong reliance on coffee and the impact of related crises, the tension between the environment-development perspectives of local actors and questions about 'motivation' and rules in environmental governance. Yet I did not code with a particular model –or pre-determined codebook- with which to code. After the first steps of open coding, I further ordered the information through selective coding, bringing together similar and related parts and cleaning up the codes.

## 5.5 SURVEY

### *Setting up and conducting the survey*

In September-October 2013, at the end of the CAMBio project, I also conducted a survey with project participants as well as other, non-participating clients from FDL. The aim of the survey was to provide a complementary view on land-use evolutions in the region (and its possible relation to Proyecto CAMBio) as well as particular information about the appreciation of Proyecto CAMBio. Indeed, this quantitative approach is suitable for having a broader view on land use dynamics and was inspired by previous assessments of Proyecto CAMBio and Payments for Ecosystem Services in terms of its environmental performance (Pagiola et al., 2007, Guerrero, 2012, Forcella, 2012). The questionnaire inquired about the respondents' land uses and socio-economic characteristics (credit sources, use of credit, structure of and land uses on the farm, membership of organisations...) at two points in time: at the time of the survey and by asking respondents to recall their land uses five years prior to the survey. Although clients had received credits at different points in time over those five years project time, this time-frame was selected to inquire into the general land use changes over the years. The questions regarding the land-uses were set up in such a way that they allowed for the construction of a biodiversity index (BI), which I use as one of the ways to assess the evolution in 'biodiversity' on the farms (see chapter 4).

I conducted the survey together with a team of five local enumerators. The team was selected from a number of candidates on the basis of their prior experience with surveying and their knowledge of farming practices. The team received a two-day training workshop and there was a two-day pilot round of surveying. This training included a part on how to introduce themselves and how to stress the *research* objective of the survey. It was thereby important to emphasise that the research team and the use of the results was not directly related to an MFI or NGO; that the results would be used in an anonymous way and that it has no repercussions on being part of a later project or not. The training and pilot phase also allowed for

the further testing and improving of the questionnaire. The surveys were conducted face-to-face and took place at the respondents' home. They lasted about 1 hour (less for non-PC respondents).

### *Sampling*

In terms of sample selection, 115 names were randomly selected from the list of 238 producers who participated in Proyecto CAMBio in the research area. Compared to the complete portfolio of Proyecto CAMBio credits disbursed by the branches of El Cuá and La Dalia, this sample reflected similar distributions in terms of the productive practices for which the credits were used (agroforestry and silvopastoral practices) as well as the timing of the contracts and the distribution of the contracts over the two branches of El Cuá and La Dalia.

In addition to project participants, the survey also targeted a group of 60 FDL clients who did not participate in CAMBio with the aim of comparing patterns of change between participating and non-participating farms. In an attempt to limit the selection bias (Miteva et al., 2012), the names of the non-participating clients were drawn from a list of producers that – according to the FDL branch manager- could have been selected for participation in the project due to their 'A-client' classification; meaning the clients had no record of arrears on payments. Although there were other –unofficial– selection criteria (including the willingness to participate and being a long-term client, see chapter 4), this was the only criterion on the basis of which the local branches provided me with a list of supposedly comparable clients. Contrary to the random selection of the participating clients, the group of non-participating clients was obtained through purposive sampling in order to match the distribution of this sample in terms of the productive practices for which they received a credit (i.e. in terms of representation of contracts for agroforestry versus silvopastoral investments and in terms of the branches of La Dalia and El Cuá). Furthermore, the sample was to some extent adapted for logistical reasons, namely when the contracts were in a zone that was not at all

attended by Proyecto CAMBio, which had little analytical nor logistical sense.

The size of the samples was strongly driven by temporal and financial constraints, with the main emphasis being on a large size of the sample of producers of Proyecto CAMBio. I initially aimed for 100 respondents of the Proyecto CAMBio group, for a 95% confidence level and error margin of 7.5% in relation to the Proyecto CAMBio regional population. Eventually, 99 PC producers and 48 'A-clients' responded to the survey (respectively 85% and 83% response rate). After rejecting 19 surveys for incomplete or inconsistent information, I ended up with 88 PC respondents and 40 for non-PC client group. The sample corresponds to 37% of the clients that participated to Proyecto CAMBio in the same area and 8.2% at national level.

#### *The purpose of the survey and its analysis*

Although this survey design seemingly alludes to the type of 'control' group of Randomised Control Trials (RCT), I do not pretend to use it as such here. Firstly, an RCT departs from a 'randomisation' at the level of participation. In the analysis, it will become apparent that several other criteria played a role in the choice of participating clients; hence it is not a random 'treatment' group (Miteva et al., 2012). Secondly, the other explicit assumption of RCT is the idea of attribution (Bédécarrats et al., 2015, Vaessen and Van Hecken, 2009), namely the idea that impact or changes in particular variables can be attributed to a given intervention. Considering my epistemological positioning which considers rural development processes as complex systems, this is challenging. I am hence not proposing to build a completely reliable counterfactual, nor suggesting randomisation or attribution. Rather, I'm using findings of the survey as a way to understand the workings of the distribution and targeting of the project; to have an overview of apparent evolutions in land use changes and how these relate to particular livelihoods. I will thus use the findings as a lead towards understanding possible connections and 'different causal pathways' (Johnson and Boulton, 2014) and will integrate

the different forms of data to have a broader view on Proyecto CAMBio's working in the area (Lund, 2010, Sullivan and Brockington, 2014). The key is to assess the insertion of the project in the local dynamics of the region, in which it dissolves and with which it blends, having both intended and unintended consequences (Jabeen, 2016). This analysis is what I turn to in the following chapter.



## CHAPTER 4

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### PROYECTO CAMBIO'S IMPLEMENTATION AROUND PEÑAS BLANCAS – AN INITIAL ANALYSIS

Note: Parts of this chapter have been published in Huybrechs (2014), Huybrechs et al. (2015b), Bastiaensen et al. (2015a), Huybrechs et al. (2016), and the presentation of the quantitative analysis is largely based on Forcella and Huybrechs (2016). I acknowledge the feedback of the anonymous reviewers of these publications and want to thank the participants of the workshops and conferences where these findings were presented: the IOB lunch seminar (April 2014), the University Meets Microfinance conference in Frankfurt (July 2014) and the 2<sup>nd</sup> Interdisciplinary Congress of Sustainable Development in Namur (May 2015).

Special thanks to Davide Forcella for the insightful collaboration –in particular for the quantitative analysis– and Johan Bastiaensen and Gert Van Hecken for their overall guidance and input. Many thanks to the team of enumerators; to José Inocente and Elias Ramirez for helping with the set-up of the survey; and to the many people who were willing to spare some time to share their experience and knowledge.



## 1. INTRODUCTION

As indicated in the previous chapter, Proyecto CAMBio intended to encourage micro, small and medium-sized entrepreneurs to adopt biodiversity-friendly practices through a combination of (micro)credits, bio-awards and technical assistance. This chapter provides a first step in my analysis of Proyecto CAMBio, mainly on the basis of the results of a survey I conducted with participants of the project and with other clients of FDL. Inspired by previous assessments of Proyecto CAMBio's 'environmental performance', I seek to identify which socio-economic, household-level characteristics of the FDL clients are associated with an evolution in the environmental performance of their farm (as defined by a particular biodiversity index) and explore which role is played by the CAMBio credits, the technical assistance, and/or the bio-awards herein.

The findings of the survey analysis shine a light on the questionable definition of the environmental targets in terms of the novelty of the supported practices. They also point to a particular targeting of the credits towards larger producers and suggest a need to enquire into the evolution of livelihood trajectories and their relation to broader development pathways in order to better understand the (evolution of) environmental performance. While the analysis in this chapter provides particular insights into the possible role of Proyecto CAMBio in improving 'environmental performance', it is not an attempt to provide a conclusive impact analysis. Rather, as an explorative analytical step –and inspired by Proyecto CAMBio's theory of change and previous evaluations of the project– it provides different leads towards a further analysis of the project's interaction with broader development processes in and around the Macizo de Peñas Blancas.

## 2. ASSESSING PROYECTO CAMBIO

The underlying theory of change of Proyecto CAMBio is neatly summarised by Gross et al. (2016a: 6):

[I]nnovative financial mechanisms can be used to incentivize the adoption of biodiversity friendly practices and expand the area under such practices in production landscapes, leading to improved biodiversity conservation at farm and landscape scales.

The project narrative hence builds on an expected positive role of finance and associated services as well as targeted subsidies in improving biodiversity conservation, at both farm and landscape-level. The underlying idea is that the adoption of biodiversity-friendly practices can be incentivised through the provision of particular incentives at the individual level; through the reduction of investment costs, the provision of expert knowledge through technical assistance and the provision of additional monetary incentives. In what follows, I will build on this expectation and try to discern and interpret evolutions in environmental performance among project participants.

While official evaluation reports praised the project for successfully having channelled substantial funds to biodiversity-friendly practices, they also lamented the lack of available data to assess the biodiversity effects in detail (Elizondo, 2016, Gross et al., 2016a). The final evaluation report phrased it as follows:

With the exception of only a few cases, the quality and integrity of the field data collected on farms is a major project limitation. This finding is also corroborated in the Biodiversity Impact Evaluation report, where consultants reported on the constraints they faced producing an impact evaluation, given the limited available information. This is an unexpected finding, considering the high cost of the [Project Implementation Unit], the number of project staff, and the numerous contracts outsourced to analyze project results and impacts. (Elizondo, 2016: 45)

As a lead-out to the further analysis in this chapter, I explore previous evaluations' efforts to provide a picture of Proyecto CAMBio's contribution to biodiversity-friendly practices. I look at their approach to face these challenges of scant available data, see how they evaluated the project's

environmental performance and provide an overview of their findings. For instance, for the evaluation report commissioned by Proyecto CAMBio, Gross et al. (2016a) projected the locations of participating farm sites onto biodiversity value maps in four areas in Guatemala, Honduras, Nicaragua and El Salvador. They thereby used the 'Local ecological footprinting tool' (LEFT), a "remote biodiversity assessment web based tool" which combines the available biodiversity information of geographical locations and provides the possibility to construct maps based hereon. The analysis confirmed that "almost all investments were allocated to ecoregions where tropical forests are considered the dominant ecosystem" (Ibid., 56). Furthermore, a comparison between the values of CAMBio sites and other random plots in neighbouring areas led to the conclusion that the "allocation of funds through the program slightly out-performed a random selection process" (Ibid., 63). One important remark of the evaluators – which will also be more prominently dealt with later in the analysis- is the suggestion to look into the potentially negative consequences of the "selection of high yielding, lower quality coffee varieties that are resistant to coffee leaf rust" (Ibid., 70).

Tobar and Ruiz (2014), in turn, analysed the workings of Proyecto CAMBio in the zona Reyna in Quiche, Guatemala; as implemented by the MFI *Asociación Ayúdense y Nosotros les Ayudaremos* (AYNLA). On the basis of semi-structured interviews with several participant producers as well as non-participant producers, they conclude that the green credit had a positive impact on the adoption of agroforestry practices; as farmers with the green credit adopted these practices at a higher rate than those without credit. Another study which looked at the workings of Proyecto CAMBio in Guatemala is that of Forcella and Lucheschi (2016). Their analysis focused on the implementation of the project by the MFI Génesis and was based on interviews with participating farmers. The findings indicate that credits were predominantly allocated in a 'business as usual' fashion and for working capital rather than for investments in new land uses. Although a learning curve did lead to some more biodiversity-focused allocation and follow-up by the end of the project, it appears that the novelty of this type of credit –with the combination of incentives and

in the context of a conservation project– initially provided a high burden for the participating MFI. This is noteworthy, in the sense that it is thus not only the choices of rural households, but also the practices of the financial intermediary institutions that are potentially being challenged and adapted through such projects.

Yuriza Guerrero (2012) analysed CAMBio as implemented by FDL in Northern-Central Nicaragua, with a focus on silvopastoral practices; i.e. the integration of trees in livestock systems (Dagang and Nair, 2003). She thereby used the same biodiversity index as the one I will introduce later in this chapter (Murgueitio et al., 2003), which she calculated for participating clients and compared to a control group of non-participating farmers (which, however, were not necessarily other clients of FDL). On the basis of semi-structured surveys, she analysed the evolution of land use changes and changes in silvopastoral practices between 2009 and 2012 and between participants and non-participants. She concludes that – as participating farms incremented their biodiversity indicator from 0.27 to 0.3– the increase in biodiversity “corresponds to the conservation value caused by the project” (Guerrero, 2012: XII). The participating group appeared to be more inclined to planting trees in grazing lands than the control group.

Another view on Proyecto CAMBio in Nicaragua, in a different region (Matiguás-Río Blanco), is provided by Forcella (2012) and Huybrechs et al. (2015b). This analysis -which was also strongly focused on the promotion of silvopastoral practices- looked beyond the investment which was made with Proyecto CAMBio. It pointed to the fact that larger credits and bio-awards went to larger producers, whose land-intensive cattle ranging practices did not appear to be significantly altered herewith. In this sense, the functioning of the project was interpreted in the larger context of land concentration by larger producers and how this relates to the further expansion of both internal and external agricultural frontiers. It indicated the importance to look beyond the project and its intervention area and to interpret the dynamics with a broader, systemic understanding of the local development processes.

The set-up of this chapter is in line with the above studies which intended to compare average trends in 'environmental performance' and land-use changes between participating and non-participating clients; for which they worked with particular indices to have a view on the evolutions in terms of biodiversity.

### 3. PROYECTO CAMBIO AS IMPLEMENTED BY FONDO DE DESARROLLO LOCAL

In Nicaragua, Proyecto CAMBio was implemented through four intermediary financial organizations; of which two large banks (Lafise-Bancentro and BANPRO), one cooperative financial institution (cooperative 20 de Abril) and one MFI (FDL). In this case study, I will zoom into how Proyecto CAMBio was implemented by FDL. More than a third of Proyecto CAMBio's credit funds in Nicaragua were channelled through FDL; and the MFI was the primary recipient of resources TA and bio-awards (Proyecto CAMBio, 2013b) (see Table 3). It is hence one of the cases where most attention was paid to the integration of the three incentives. Furthermore, the case of FDL is particularly interesting because –as previously indicated– its implementation mode has been described as 'exemplary' and worthy of emulation (Vargas et al., 2011, Mendoza et al., 2012, Proyecto CamBio, 2014b).

**Table 3: Distribution of credits, TA and Bio-awards per intermediary financial institution. Situation per December 2012**

IFI	Proportion of credits to IFIs	Proportion of Technical assistance beneficiaries	Bio-awards	
Coop 20 de Abril	0.8 %	0 %	\$ 2,232.07	0.76%
FDL	38.6 %	95.7 %	\$ 291,372.94	99%
Lafise-Bancentro	49.8 %	3.7 %	0	0
Banpro	10.5 %	0.6 %	0	0

Source: Proyecto CAMBio (2013b)

### **3.1 THE FONDO DE DESAROLLO LOCAL**

The FDL is one of the largest MFIs in Nicaragua, with a portfolio of 90 million USD in loans and 70,000 clients (FDL, 2018). It has a strong commitment to agriculture, currently targeting 35% of its portfolio to agricultural production. The MFI originated in 1993 out of the research and development institute Nitlapan-UCA. This development institute from the Central-American University of Managua (UCA) is specialised in providing technical assistance and conducting research in rural territories and it is still FDL's preferred partner for non-financial technical services.

Before participating in Proyecto CAMBio, Nitlapan-UCA was part of a similar GEF-financed PES pilot project in Nicaragua, namely the Regional Integrated Silvopastoral Ecosystem Management Project (RISEMP) (Huybrechs et al., 2015b, Van Hecken et al., 2015a, Pagiola et al., 2007). Furthermore, FDL's participation in Proyecto CAMBio was in line with the MFI's past and present engagements with green Microfinance. More specifically, they had undertaken previous attempts to greening cattle practices through a particular credit ('Paquete Verde') and had been involved in the provision of loans for solar panels. They also participated in an Inter-American Development Bank-funded project regarding loans for climate change adaptation (EcoMicro, see Forcella et al. (2017) and EcoMicro (2018)). The participation of FDL-Nitlapan in Proyecto CAMBio can thus be situated in their ongoing search for a triple bottom line in microfinance provision with the aim to improve the environmental performance of agricultural practices. It has benefited from the historical track record and learning processes of both institutions. As such, the critical analysis in this case study aims to further inform the green microfinance plus efforts and strategy of FDL-Nitlapan.

### **3.2 THE SPECIFICITIES OF THE DIFFERENT INCENTIVES**

In total, FDL disbursed 1132 'green loans' at national level under the auspices of Proyecto CAMBio (between 2009 and 2013). To provide these

loans, FDL had access to a credit line from the CABI at a 4.5 per cent annual interest rate. This enabled the provision of CAMBio loans at a cheaper interest rate of 20 per cent annually, as compared to FDL's average rural interest rate at the time of around 27 per cent (as per 31/12/2013). In order to qualify for a loan under Proyecto CAMBio, farmers were required to commit to one or more biodiversity targets. The choice of these targets were set on a farm-by-farm basis, as farmer and technician would agree on one or more targets based on a list of options provided by CABI (the particular process of agreeing on these targets with the farmers will be dealt with later). These options included

- planting shade trees in coffee and cocoa plantations or pastures.
- establishing live fences around pastures and plantations
- establishing fodder banks for cattle
- conserving forested areas around water springs
- installing filters for treating coffee husking waste water.

Farmers thus received a loan for an investment in particular productive practices and concomitantly committed to an environmental target which was linked to a particular plot on their farm (the 'intervention area'). They also received free Technical Assistance from Nitlapan-UCA in order to further enable them to make the envisaged investments. This TA consisted of four on-farm visits and one collective training moment over the course of the loan period.

Upon positive ex post verification of the agreed-upon investments by project staff, the producer would receive a cash-back premium equal to 14 per cent of the loan principal. Each successful case also resulted in FDL receiving a cash premium from CABI corresponding to 6 per cent of the loan. As such, both the producer and FDL had a financial incentive to achieve the stated goals. The incentives are summarised in Table 4.

**Table 4: Summary of project incentives**

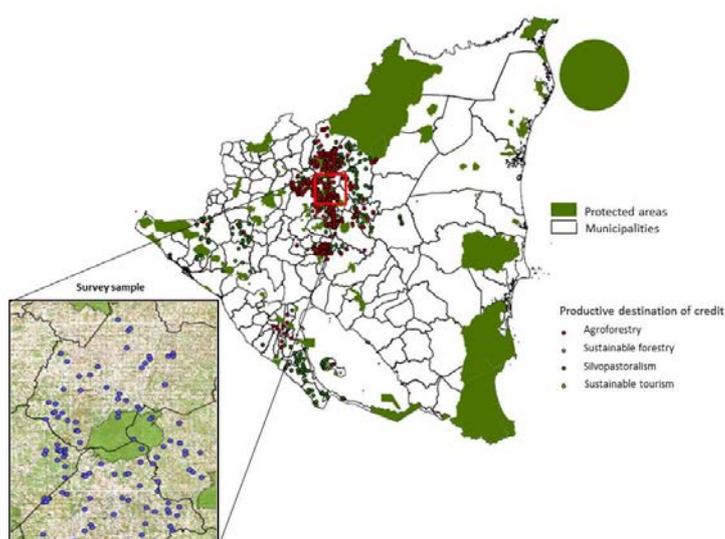
	Condition	Incentive / cost
Credit	Credits for investments in biodiversity-friendly activities	Cheaper interest rates for both FDL (4.5% to CABEI) and the client (approx. 20% to FDL)
Technical assistance	Comes with the credit	Free for the client Nitlapan-UCA receives 10% of loan principal to cover costs (paid by GEF)
Bio-award	Upon ex post verification of the agreed-upon targets (such as number of trees planted)	14% of loan principal for the client 6% of loan principal for FDL (bio-awards paid by GEF)

Source: own elaboration

## 4. PROYECTO CAMBIO CREDITS AROUND PEÑAS BLANCAS

In total, 238 of FDL's 1132 Proyecto CAMBio 'green loans' were allocated to farmers in the research area between 2009 and 2013 (see Figure 6). In what follows, I describe the distribution and characteristics of the loans, comparing the respondents of the survey to the regional and national contracts.

**Figure 6: Distribution of FDL Proyecto CAMBio credits**



Legend: the large Figure shows the distribution of the Proyecto CAMBio credits (subdivided by productive practice) and the protected areas of Nicaragua. The left-hand zoom shows the sample of the survey (blue dots).

Source: National map elaborated by Nitlapan-staff; the regional focus is elaborated by the author in QGIS

In the study region, the Proyecto CAMBio loans were mostly directed at investments in either silvopastoral cattle farming or (mainly coffee-related) agroforestry (see Table 5). Agroforestry thereby refers to the integration of shade and trees in agro-productive areas (Jose, 2009); and in this particular context it mostly refers to investments in new coffee plantations with shade trees. Silvopastoral activities, on the other hand, refer to livestock systems which use shade trees, fodder plants or live fences (Dagang and Nair, 2003). In the sample, 80.7% of the Proyecto CAMBio participants received a credit for agroforestry (AF) activities (80.7%), for an average amount of 3,066.4 USD. The remaining 19.3 % received the credit for silvopastoral (SP) activities for an average amount of 2,282.9 USD. The distribution between producers with SP or AF credit in our sample is very similar to the one at regional level (78.6% and 21.4% respectively) (see Table 5).

**Table 5: Productive practices targeted by Proyecto CAMBio, at national, regional and sample level**

	National Level	El Cuá - La Dalia	Survey Respondents
Agroforestry	752 66.4%	187 78.6%	71 80.7%
Silvopastoral practices	327 28.9%	51 21.4%	17 19.3%
Agriculture and organic plantations	48 4.2%		
Sustainable tourism	4 0.4%		
Sustainable forestry	1 0.1%		
<b>Total</b>	<b>1132</b>	<b>238</b>	<b>88</b>

Source: own elaboration on the basis of Nitlapan's Proyecto CAMBio database and survey results (as per October 2013)

The average credit that the survey respondents received with Proyecto CAMBio is 2,915.2 USD, which is larger than the average credit from Proyecto CAMBio in the region of study (2,642.4 USD) and at national level (2,070.3 USD) (see Table 6). This is probably due to the focus on credits for the renovation of coffee plots and investments in larger areas of

the farm as compared to other regions where more credits were either related to investments on smaller plots or where credits were also disbursed as working capital (for costs of maintenance and harvesting of existing plots). With the obtained credit, Proyecto CAMBio participants on average dedicated 2.07 Ha of their farm to the project (this is the ‘intervention area’; the area on which the investment related to the green credit is made). Regarding the environmental targets and the obtainment of the bio-award, the majority of the survey respondents (98.9% of clients in the PC group) declared to have achieved the environmental targets. The reward they received for achieving these goals amounted to –on average– 390.4 USD.

**Table 6: Size of loans and ‘intervention area’ of Proyecto CAMBio at national, regional and sample level**

	National	El Cuá - La Dalia	Respondents
Average amount of credit PC	2,070.25	2,642.36	2,915.5
Average amount of credit SP	2,669.37	3,139.33	2,282.9
Average amount of credit AF	1,795.12	2,505.36	3,066.4
	National	El Cuá - La Dalia	Respondents
Average intervention area PC	2.03	1.98	2.07
Average intervention area SP	2.08	1.72	1.46
Average intervention area AF	1.49	2.04	2.3

Legend: PC = Proyecto CAMBio; SP = silvopastoral; AF = agroforestry

Source: own elaboration on the basis of Nitlapan’s Proyecto CAMBio database (as per October 2013)

In what follows, and as a first step in the analysis of the project’s functioning in this region, I analyse the survey data to explore the following:

- i) which characteristics of rural producers influence changes in the farms’ biodiversity index; and
- ii) did the related environmental incentives (bio-awards) effectively reward better environmental practices.

In order to do so, I will mainly perform mean difference, two-side t-tests (without assuming equal variance) to analyse differences in environmental

performance and in bio-awards (Acock, 2006: 121). For a number of mediating factors I will hence look at whether the average values for the environmental performance indicators are significantly different. For a robustness check I will complement these with a non-parametric tests of distribution difference, the Mann–Whitney–Wilcoxon (MWW) test, which does not assume normality of distributions and analyses the difference between groups by ranking the data and comparing the ranks of the two samples to see if they could come from the same population (Acock, 2006: 144). I perform these tests to assess the main characteristics that appear to influence the evolution in environmental value of the farm and the amount of environmental reward received by the producers (see also Forcella and Huybrechs, 2016).

## **5. ASSOCIATIONS BETWEEN ENVIRONMENTAL PERFORMANCE AND FARMER CHARACTERISTICS**

### **5.1 CHARACTERISTICS OF FARMS AND FARMERS**

To analyse the workings and results of Proyecto CAMBio, and inspired by the previous evaluations of Proyecto CAMBio discussed in section 2, I look at the evolution in terms of land use and environmental performance of both participants and non-participants, and reflect on the possible characteristics that could drive this evolution (of which project participation could be one). In this section, I present the factors for which I will be analysing the relation to the evolution in 'environmental performance' of the farms.

#### *i) Participation in Proyecto CAMBio*

An important variable in terms of understanding the role of participating in Proyecto CAMBio is the dummy variable which indicates whether someone is a participant or not in Proyecto CAMBio (PC = 1 or 0). The straightforward hypothesis –which is also the one underlying the project– is that green credits induce better environmental performance on the

farms. The combination of green credits (with or without additional services) could enable rural producers to invest in more environmentally friendly activities, thereby influencing the overall environmental impact of MFI clients. There is also a further sub-division within Proyecto CAMBio, namely participants that received funding for agroforestry or for silvopastoral practices. This is indicated by the dummies AF and SP as well as the variables PCAF and PCSP, which indicate the size of the credit that was received for these specific types of productive practices.

### *ii) Farm size*

In the analysis I also include the size of the land holdings in order to see how it relates to the environmental performance. I use the total surface of the farm as a proxy and divide the sample in two groups on the basis of the median of the sample: small farms being the ones in the sample smaller than 10.5 Ha; while large farms are considered to be larger than 10.5 Ha. In the sample, the average farm surface five years prior to the survey (t-5) was 19.7 Ha. This is a relatively high average for a region where about 80% of the farms have less than 14 Ha (INIDE-MAGFOR, 2013a, INIDE-MAGFOR, 2013b); although to some extent it also reflects the unequal distribution of land holdings (Gómez et al., 2011b), as the sample has a long tail with a few larger farms.

In addition to the size of the farm, another variable is created by dividing the sample into the clients that increased their farm surface over the last five years and the ones that decreased it or did not change their farm surface. The respondents on average increased their farm surface by 3.49 Ha in the surveyed time-frame.

### *iii) Main economic activity*

One of the questions in the survey referred to the respondent's main economic activity, both 5 years prior to the survey (2008), and at the moment of the survey (2013). In 2008, 57.5% of the respondents had coffee as main economic activity; 15.0% mentioned cattle raising as main

economic activity; 6.3% mentioned more than one principal activity; and the rest had staple crop production as principal activity. In what follows, the ones that mentioned more than one principal activity are termed 'diversified producers'.

The distribution of main economic activities reflects the strong focus on coffee production in this region, while pointing to a heterogeneous set of producers. During the five years prior to the survey there have been evolutions in the main economic activity of the respondents. 11.9% of the producers in the sample changed their principal activity to coffee; 3.2% changed it to cattle and 9.5% became diversified producers. In order to look at the influence of the evolution of a farmer's particular productive activities on the measured environmental performance, an indicator of such livelihood trajectory has also been divided on the basis of the switch they made to another principal economic activity in the last five years; switching to coffee, cattle, or becoming a diversified producer.

#### *iv) Access to credit*

The access to credit is included to approximate the influence of available financial means on environmental outcomes. One of the key ideas behind microfinance's increased attention to its environmental bottom line (Anderson et al., 2002, Wenner et al., 2004) is that financing activities of poor households or micro enterprises which are potentially having a negative impact on the environment might exacerbate this negative impact. At a more regional level, a number of studies also point to the relation between more credit and more deforestation (Angelsen et al., 2001). For the analysis of this variable, clients with high access to credits are considered to be the ones that received more than 4,615 USD in credits in the last five years (the median value in the sample), while the ones with low access to credits received less than 4,615 USD.

#### *v) Biodiversity value*

As discussed in chapter 3, the questions regarding the land-uses were set up in such a way that they allowed for the construction of a biodiversity index (BI), which I use as one of the ways to look at 'biodiversity' on the farms. The BI indicates the assumed biodiversity potential of the various land uses on the farm (Murgueitio et al., 2003) and ranges from a value of 0 for land uses assumed to deliver least biodiversity -like degraded pasture- to 1 for the land use supposedly contributing most to the delivery of the ecosystem service, being primary forest (see Table 7). In between, incremental improvements in the delivery of the service are reflected in higher indices.

**Table 7: Values of indices per hectare of different land uses**

Land-use	BI	Land-use	BI
Annual crops	0	Improved pasture with high tree density (>30/ha)	0.6
Degraded pasture	0	Monoculture fruit plantation	0.3
Natural pasture without trees	0.1	Fodder banks	0.3
Improved pasture without trees	0.1	Fodder banks with woody species	0.4
Sun-grown coffee	0.3	Cocoa with shade	0.6
Natural pasture with low tree density (<30/ha)	0.3	Shade-grown coffee	0.6
Natural pasture with high tree density (>30/ha)	0.4	Scrub habitats	0.6
Living fences (per km)	0.45	Riparian forest	0.8
Windbreaks (per km)	0.6	Secondary forest	0.9
Improved pasture with low tree density (<30/ha)	0.3	Primary forest	1

Source: adapted from Van Hecken (2011) and Murgueitio et al. (2003)

I recognise that any attempt to grasp the environmental complexity in a single index is reductionist and involves value-judgements (Vatn, 2009, Sagoff, 2011, Bartkowski et al., 2015). The use of this indicator was inspired by its previous usage in a similar project, namely the GEF-financed PES-project RISEMP (Regional Integrated Silvopastoral Ecosystem) (Pagiola et al., 2007). In this sense, this indicator reflects to some extent a measure of the supposed objective of the project. Furthermore, in the following analysis I also consider broader reflections on land use practices (such as reports on the common coffee practices in the region) as well as other information from the survey such as the number of trees planted, the density of the trees planted, and the amount

of surface of the farm dedicated to implement the activity agreed under Proyecto CAMBio.

In order to compare environmental performance across farms, I will be working with the BI per hectare. The total BI value per farm would make comparisons difficult, as the index is directly related to amount of land one has. A per hectare value gives an idea of the overall impact on the land, even though it does not inform the way in which it is distributed over the farm. The average biodiversity value per Ha (BI/ha) at t-5 was 0.424. In the five years before to the survey there was a tendency towards improvement of the environmental value of the farm both per Ha and for the total environmental value of the farm, with an average increase of 0.058 for the biodiversity value per Ha.

The following table (Table 8) provides an overview and descriptive statistics of the above-introduced variables; as well as some of the variables which will be used further on in the analysis of the bio-awards.

**Table 8: Profile of the respondents - descriptive statistics**

	Name of the variable	N	Min	Max	SD	Mean
Producers with PC	PC	128	0	1		0.688
Producers with PC for Agroforestry	AF	88	0	1		0.807
Producers with PC for Silvopasture	SP	88	0	1		0.193
Total farm surface 5 years ago	TotFarm5	128	0.875	150.15	26.19	19.66
Biodiversity Index per Ha 5 years ago	BioHa5	128	0.067	1.09	0.176	0.424
Evolution Biodiversity per Ha	EvoBioHa	128	-0.522	0.6	0.158	0.058
Evolution Biodiversity value Total	EvoBioTot	128	-6.51	22.05	4.16	2.45
Number of planted trees with PC	TreesPC	63	20	1,000	205.6	173.0
Surface invested in P CAMBio (Ha)	IntArea	78	0.175	14.7	2.28	2.07
Credit PC Agroforestry (USD)	PCAF	70	469.5	10,000	2,386.0	3,066.4
Credit PC Silvopasture (USD)	PCSP	17	669.6	6,000	1,688.3	2,282.9
Credit No PC received last 5 years (USD)	CrdNoPC	122	0	62,000	9,445.4	6,132.0
Environmental Reward (USD)	BioAward	84	65.7	1,400	317.1	390.4
Environmental Reward per tree (USD/tree)	BioAward/tree	62	0.34	12	2.54	3.04
Cattle as Principal Activity 5 years ago	Cattle5	127	0	1		0.150
Diversified production 5 years ago	Div5	127	0	1		0.063
Coffee as Principal Activity 5 years ago	Coffee5	127	0	1		0.575
Change principal activity to Coffee	Others-Coffee	126	0	1		0.119
Change principal activity to Cattle	Others-Cattle	126	0	1		0.032
Change principal activity to diversified prod.	Others-Diversified	126	0	1		0.095
Evolution in the surface of the farm (Ha)	EvoFarm	128	-18.73	56	9.92	3.49

Source: Adapted from Forcella and Huybrechs (2016)

## 5.2 ASSESSING CHANGES IN THE BIODIVERSITY INDEX

In this section, I start by discussing the comparisons of means of the evolution in BI to obtain a view of the role –in statistical terms- of some

mediating variables. The results of the comparisons of means can be found in Table 9.

**Table 9: Equality of means and distribution tests per environmental outcomes**

	N	EVOBioHa		N	EVOBioHa
<b>Proyecto CAMBio</b>			<b>Farm Dimension t-5</b>		
Clients	88	0.056	Big (> 10.5 Ha)	64	0.038
No-Clients	40	0.064	Small (<10.5 Ha)	64	0.078
t-test		-0.21	t-test		-1.44
MWW-test		-0.05	MWW-test		-1.56
<b>Activity financed</b>			<b>Change in farm size</b>		
SP	17	0.033	Increased	83	0.052
AF	71	0.061	Reduced	45	0.069
t-test		-1.39	t-test		-0.57
MWW-test		-0.7	MWW-test		-0.15
<b>Principal Activity t-5</b>			<b>Credit in the last 5 years</b>		
Cattle	19	0.028	High (>4615USD )	61	0.055
Coffee	73	0.034	Low (<4615USD)	61	0.069
Diversified	8	0.144	t-test		-0.47
Staple crop	26	0.116	MWW-test		-0.61
Cattle-Others			<b>Change in main activity to</b>		
t-test		-1.3	Coffee	15	0.22
MWW-test		-1.08	Cattle	4	0.033
Coffee-Others			Diversified	12	0.087
t-test		<b>-1.82*</b>	Others – Change to Coffee		
MWW-test		-1.62	t-test		<b>2.99***</b>
Diversified-Others			MWW-test		<b>3.35***</b>
t-test		1.11	Others – Change to Cattle		
MWW-test		0.63	t-test		-0.85
Staple Crops -Others			MWW-test		-0.43
t-test		1.47	Others – Change to Diversified		
MWW-test		<b>2.33**</b>	t-test		0.73
			MWW-test		0.81

\* p < 0.10; \*\* p < 0.05; \*\*\* p < 0.01

Source: Adapted from Forcella and Huybrechs (2016)

On the basis of these comparisons in means, I do not find indications of a significant difference in the evolution of the BI on the farms between those who received green credits and those who did not. Indeed, neither the t-test nor the Mann-Whitney-Wilcoxon test indicate a significant difference in the evolution of the BI/ha between the two groups. Albeit insignificantly, the comparison of means suggests a tendency towards a larger improvement in the index for the non-PC group. In light of the presentation of the underlying expectations of green microfinance programmes, this result may look surprising. As will be discussed in the next sub-section, this comparison between the two groups is of course also strongly influenced by the difference in the types of producers in the two groups.

The farm dimension and the access to credit do not appear to relate to significantly different average results in terms of environmental performance. The direction of difference does indicate a tendency of smaller farms and less access to credit to relate to a better increase in environmental performance. The results also indicate that the principal activities influence the evolution of the environmental value of the farm. When farmers primarily dedicated to cattle farming at t-5 are compared to farmers with other main activities in the same period (*Cattle-Other*), the test for equality indicates a negative influence on environmental performance, while a positive influence is revealed for staple crops (*Staple Crops -Other*). For the evolution over the years, it is mostly the *change* in principal activity that makes the big difference. The change of principal activity toward coffee fosters an increase in the BI (*Others – Change to coffee*), while the change to cattle rising has negative environmental effects (*Others – Change to Cattle*). The livelihood trajectories of the clients hence induce a positive or negative effect on the evolution of the environmental value of the farm; as measured by the biodiversity indicator. It underlines the need to focus on what the opportunities and constraints are that shape decisions and the evolutions for the various kinds of farmers.

The t-test analysis and MWW test do not allow concluding that producers that participated in Proyecto CAMBio had a better evolution of the environmental value of their farms compared to other clients that did not participate in the programme. Other factors such as the principal activities and the livelihood of the producers (the activity to which they change to), on the other hand, did have a significant influence. In the following sections, I will further engage with the differences between the participants and non-participants to Proyecto CAMBio in the sample; and I will further focus on the changes in main economic activities.

### 5.3 ASSESSING THE DIFFERENCE BETWEEN PROYECTO CAMBIO AND NON-PROYECTO CAMBIO CLIENTS

To explore what the observed differences are between the clients in the PC group and the non-PC group, I test the PC and non-PC group on the variables reported in Table 10. These results –which provide a picture of the two groups’ situation in terms of farm size and BI at the onset of the project as well as the total accumulated credit over the years– shows clients in the PC group owning larger farms and having obtained more/higher credits over the years. This indicates that Proyecto CAMBio was de facto targeted at better-off clients.

**Table 10: Differences between PC and non-PC clients**

	BI per Ha 5 years ago	Farm Surface 5 years ago (Ha)	Tot Cumulated credit in the last 5 years (USD)
PC Clients (N)	0.42 (88)	24.0 (88)	9297.0 (86)
No-PC Clients (N)	0.43 (40)	10.1 (40)	5686.7 (36)
t-test	-0.26	<b>3.71***</b>	<b>1.81*</b>
MWW-test	-0.29	<b>3.98***</b>	<b>3.81***</b>

\* p < 0.10; \*\* p < 0.05; \*\*\* p < 0.01

Source: Based on survey data; adapted from Forcella and Huybrechs (2016)

To interpret and contextualise this difference, it is important to mention that the project arrived precisely in the aftermath of a severe repayment crisis in Nicaragua. Indeed, in 2008 there was a nation-wide anti-microfinance movement –called the No Pago movement- which originated in the rural areas of Northern Nicaragua (Bastiaensen et al., 2013). This rebellion accused MFIs of making money on poor people’s backs with usurious interest rates and with exaggerated confiscations upon default. FDL’s strategy at the time was to counter this narrative by emphasising its role in supporting the progress of farmers and by maintaining a close relationship with them. In this context, when FDL obtained Proyecto CAMBio’s new credit line and concomitant benefits of cheaper interest rates, bio-awards and TA, it mainly selected loyal and long-term clients for participation. Hence, in addition to environmental objectives, the project was also used to reward clients with a good credit record. In other words, it was a *producto estrella*; a star product (project official, CABEI, 03/05/2012).

The preference of the MFI to direct the star product to better-known and more ‘credit-worthy’ clients was further triggered by the way in which the bio-awards and the technical assistance repayments were calculated. The funding for TA, corresponding to 10% of the credit principal, was deemed insufficient to provide technical assistance to clients with smaller loans, as Nitlapan-UCA could not recover the full cost of the visits. Additionally, the 6% premium for FDL upon successful completion of an investment was more easily earned on fewer loans of larger amounts.

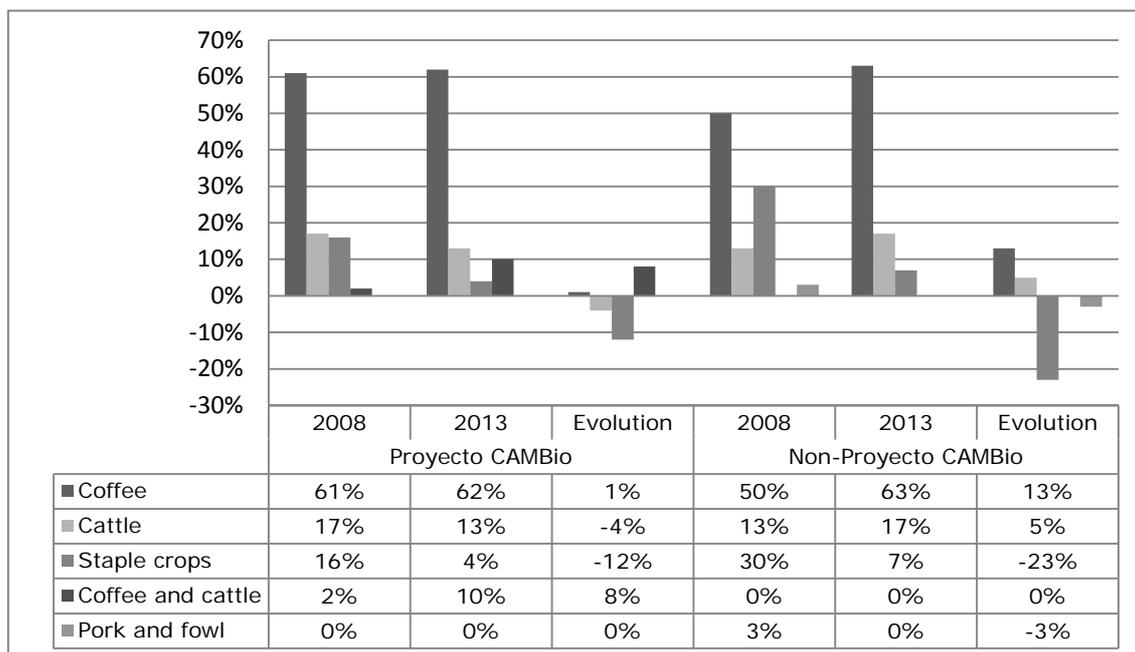
The project officials from FDL, CABEI or Nitlapan-UCA did not consider the focus on relatively larger farmers to be problematic. On the contrary, there was the expectation that larger farmers would dedicate larger plots of land to the project; which would lead to a greater environmental impact (FDL director, 02/05/2012). In comparison to some other cases of implementation of Proyecto CAMBio, where clients sometimes had access to over 1,000,000 USD, the relatively ‘larger’ customers within FDL’s portfolio are still among the smallest. As will be shown throughout the

analysis, however, targeting certain types of farmers matters in terms of how the project engages with local development pathways.

## **5.4 UNDERSTANDING THE RESULTS THROUGH LIVELIHOOD TRAJECTORIES**

In the analyses of the evolution in on-farm biodiversity since the start of the project, the dummy variable of programme participation was not found to be significant. Rather, the analyses pointed to other factors such as the principal economic activities and –more importantly- the change in main activity over the years, or the livelihood trajectory. Indeed, the change of principal economic activity toward coffee appeared as a key explanatory variable for the betterment of the BI of the farm while the switch to cattle raising had negative environmental effects. This rather logically ensues from the way in which the BI is construed. Nevertheless, it points to interesting differences in terms of the evolution in main economic activity among the two groups. It appears that at the start of Proyecto CAMBio in 2008, the Non-PC group had a higher incidence of producers depending on staple crop production –which is strongly associated to smaller, subsistence farmers- with a large decrease in this main activity over the years (see Figure 7). Over the years, there was a significantly larger proportion of Non-PC farmers who switched their main economic activity to coffee production (see Table 11, which indicates a significant Chi-squared test (Acock, 2006: 104), testing the significance of the relationship between project participation and a change in main economic activity to coffee).

**Figure 7: Evolution in main economic activity of CAMBio and non-CAMBio clients between 2008 and 2013, as stated in survey**



Source: Based on survey data

**Table 11: Chi-Squared test for testing relationship between project participation and a change in main economic activity towards coffee production**

	Change to coffee as main activity	
	0	1
PC = 0		
<i>Frequency</i>	32	8
<i>Expected frequency</i>	35.2	4.8
<i>Row percentage</i>	80.0	20.0
PC = 1		
<i>Frequency</i>	79	7
<i>Expected frequency</i>	75.8	10.2
<i>Row percentage</i>	91.86	8.14
Total		
<i>Frequency</i>	111	15
<i>Expected frequency</i>	111.0	15.0
<i>Row percentage</i>	88.10	11.9

Pearson's  $\chi^2 = 3.66^*$

\* p < 0.10; \*\* p < 0.05; \*\*\* p < 0.01

Source: Based on survey data

Altogether, these findings imply a switch to more environmentally-friendly land-use practices among the non-PC clients, which relates to a more general transition from staple crops to coffee as a main economic activity. The non-PC credits hence proportionally engaged more with farmers who made the switch from staple crops to coffee in the last 5 years; and thus with farmers who –according to the BI indicator- had a more positive evolution in terms of environmental performance. The relevance of this paradoxical finding lies not in taking a stance on whether one credit or the other is more environmentally-friendly in and of itself, or to look for a particular attribution to a singular intervention for the evolutions in the past five years. Rather, it calls for a further reflection on who is included in such a project and who is not; and what type of practices and livelihood trajectories are being supported.

## **6. WHAT DOES THE BIO-AWARD REWARD?**

The previous findings had a strong focus on discussing differences between the group of Proyecto CAMBio participants and non-participant clients of FDL –as represented by the sample– as well as a more general search for characteristics of the whole sample which seem to influence ‘environmental performance’. In this section I will further look ‘within’ the group of Proyecto CAMBio participants, in order to inquire into the link between the provided bio-awards and measured environmental changes.

### **6.1 ENVIRONMENTAL PERFORMANCE AND BIO-AWARDS**

Farmers who participated in Proyecto CAMBio received a monetary reward, which was conditional upon the fulfilment of the environmental condition(s) agreed upon with FDL-Nitlapan. On the basis of this conditionality, expectations of additionality and the supposition that monetary incentives provide motivations for changes in environmental practices, it is reasonable to expect the payment to reflect the improvements (Engel et al., 2008). This is why in the following paragraphs

I discuss how these bio-awards relate to the particular efforts and investments made by the participating farmers. Also, I assess the distribution of these monetary incentives. Similar to the above discussion of the evolution in BI, I will look into which variables influenced the height and distribution of the bio-award, and how it relates to the underlying evolution in the BI. I assess the difference in means between the different variables to get insights into the main characteristics that influence the height of the award received by the producers; both by looking at the absolute amount of money that participants received as bio-award and by looking at the money received per tree planted. This does not amount to assessing the 'effectiveness' of the bio-awards *per se*, but rather evaluates whether and how it relates to the adopted practices and the evolution in environmental performance.

A first set of observations is based on the correlations between the monetary payments (both the absolute value per client as well as the bio-award divided by the number of planted trees), and some proxies to measure the environmental outcomes. In addition to the BI I have used up to now, I also include the number of trees planted, the farm area dedicated to implement the activity agreed under Proyecto CAMBio (the intervention area) as well as the density of the trees planted on this area. These last three indicators measure the environmental improvement directly related to the activity financed and agreed under Proyecto CAMBio. In this analysis they are used as a first step to assess if the bio-award was able to reward the activities which were directly related to the project, while the BI will be employed to assess if the bio-award correctly rewarded the clients that had overall better environmental outcomes.

Table 12 reports the results for the correlations between the amounts of the bio-awards and the various environmental proxies. Various producers did not report on the number of trees planted, and this unfortunately limits the size of the sample for this inquiry. Moreover, among the clients that received Proyecto CAMBio, I had to exclude the ones that reported activities that are difficult to compare with more standard ones (coffee or cattle for example) in terms of number of trees planted. Two producers

that implemented a coffee filter and one that declared to have invested the credit from Proyecto CAMBio in fodder plants were then excluded from the analysis. The remaining sample is reduced to 63 clients.

**Table 12: Pearson Correlation of bio-awards with environmental proxies**

	Bio-award per client	Bio-award paid per tree
Number of planted trees	<b>0.35***</b>	<b>-0.30**</b>
Intervention area	<b>0.53***</b>	0.03
Density of planted trees	0.05	-0.20
EVOBioHa	-0.12	-0.20

\* p < 0.10; \*\* p < 0.05; \*\*\* p < 0.01

Source: adapted from Forcella and Huybrechs (2016)

The first results of Table 12 show that the bio-award rewarded the number of trees planted and the amount of surface of the farm dedicated to the activity financed with Proyecto CAMBio: producers that dedicated more land to the project received higher amounts of bio-awards, which is logical. Surprisingly, however, the amount of money paid per tree appears to be negatively correlated with the number of trees planted. Additionally, receiving a higher payment per tree does not seem to have influenced a higher increase in environmental indices. For a further investigation, Table 13 reports equality of means and distribution tests for highlighting mediating variables regarding the total Bio-awards as well as the Bio-award per tree using the t-test and the MWW test. These tests are conducted in relation to the increase or decrease in environmental value of the farms; the changes in principal economic activity; the density of the trees planted in the intervention area; the activity for which the credit was disbursed; the dimension of the farm and its evolution; the total credit (excluding Proyecto CAMBio) which were received over the 5 years prior to the survey; the intervention area and the number of trees planted in the project.

**Table 13: Equality of means and distribution tests per environmental incentives**

	N	Bio-award (USD)	N	Bio-award/tree (USD)		N	Bio-award (USD)	N	Bio-award/tree (USD)
<b><i>EVOBioHa</i></b>					<b><i>Activity Financed</i></b>				
Pos	54	384.22	39	3.00	SP	15	296.29	10	2.99
Neg	30	424.64	24	3.86	AF	69	420.91	53	3.39
t-test		-0.54		-0.87	t-test		<b>-1.87*</b>		-0.55
MWW-test		-0.15		-1.03	MWW-test		-1.39		0.48
<b><i>Principal activity 5 years ago</i></b>					<b><i>Farm dimension</i></b>				
Cattle	12	462.56	8	2.73	> 10.5 Ha	49	537.22	34	4.27
Coffee	51	423.25	39	3.60	< 10.5 Ha	35	204.67	29	2.23
Diversified	5	387.57	4	5.02	t-test		<b>6.25***</b>		<b>2.65**</b>
Staple crop	14	295.36	10	2.42	MWW-test		<b>5.03***</b>		<b>2.33**</b>
<b><i>Cattle-Other</i></b>					<b><i>Land dynamics</i></b>				
t-test		0.75		-1.14	Increased Farm	49	429.49	37	3.26
MWW-test		1.05		0.65	Reduced Farm	35	355.49	26	3.41
<b><i>Coffee-Other</i></b>					t-test				
t-test		0.83		0.82			1.08		-0.16
MWW-test		0.15		0.48	MWW-test		1.44		0.61
<b><i>Diversified-Others</i></b>					<b><i>Total Credit received in the last 5 years no PC (USD)</i></b>				
t-test		-0.15		0.77	High (> 3000)	42	505.44	32	4.04
MWW-test		0.42		0.43	Low (≤ 3000)	42	275.42	31	2.60
<b><i>Staple Crops -Others</i></b>					t-test				
t-test		<b>-1.86*</b>		-1.49			<b>3.55***</b>		<b>1.74*</b>
MWW-test		-1.05		-1.26	MWW-test		<b>3.52***</b>		0.82
<b><i>Density of Trees planted (Trees/Ha)</i></b>					<b><i>Intervention area</i></b>				
≥ 85.71	32	316.09	32	1.98	>1.4 Ha	27	572.35	21	3.96
< 85.71	30	417.48	30	4.48	≤1.4Ha	46	235.34	41	2.79
t-test		-1.31		<b>-3.21***</b>	t-test		<b>5.07***</b>		1.09
MWW-test		-1.10		<b>-4.34***</b>	MWW-test		<b>5.26***</b>		0.71
					<b><i>Number of Trees planted</i></b>				
					> 100				
					30				
					515.43				
					30				
					2.49				
					≤ 100				
					33				
					242.92				
					33				
					4.09				
					t-test				
					<b>3.79***</b>				
					<b>-1.95*</b>				
					MWW-test				
					<b>3.66***</b>				
					<b>-2.63***</b>				

t-test: \* p &lt; 0.10; \*\* p &lt; 0.05; \*\*\* p &lt; 0.01, MWW-test: \* p &lt; 0.10; \*\* p &lt; 0.05; \*\*\* p &lt; 0.0

Source: Adapted from Forcella and Huybrechs (2016)

The above provides mixed results in terms of the apparent effectiveness of the bio-awards in rewarding higher environmental engagement in the project. The payment per producer seems to be in line with the number of planted trees and the size of the intervention area; but not significantly related to the density of planted trees or the relative evolution in BI. Neither is the payment per tree influenced by the surface of the farm dedicated to the activities promoted by Proyecto CAMBio. Furthermore, it is negatively affected by the number of trees and the density of trees.

Overall, the value of bio-award as disbursed per tree planted varied strongly, ranging between 0.34 and 12 USD/tree planted. Moreover, the bio-award paid per tree appears to be unrelated to the evolution of the farm level environmental indicators, being the BI and the number and density of trees planted on the area of intervention. More strikingly, the analysis points in the direction of an average (albeit statistically insignificant) tendency to give higher rewards to producers whose overall farm environmental value has decreased compared to the ones whose farm BI has improved. So a number of farmers received a bio-award, even though the overall environmental performance of their farm might not have improved or might even have worsened according to the BI indicator.

The apparent inability of the bio-award to stimulate or reward the intensification of tree cover in the farm can be explained by the way in which the reward was operationalised. Indeed, the payment was proportional to the amount of credit received, which in turn had no direct relation to the achieved environmental betterment. This procedure leads to the awarding of higher rewards for the most credit-worthy producers, even though they might not necessarily be those with the best environmental outcomes. From the results for equality of means and distribution it seems that other characteristics of the producers influence the amount of environmental reward received in green microfinance programmes. Proyecto CAMBio rewarded clients with better access to credits, bigger farms and bigger land expansion in the last five years, as these characteristics positively influence both the level of bio-award per client and per tree. This ought not to be surprising. The bio-award handed

out to the producer amounted to 14% of the loan principal, regardless of the conditions (s)he agreed upon with the technician. Hence, due to the proportional relation with the loan amount, the higher bio-awards were received by farmers with larger credits.

## **6.2 THE PROCESS OF SETTING ENVIRONMENTAL TARGETS**

To better understand the above, it is also important to discuss how the targets were set and how they were perceived by the participants. The definition of the environmental targets was a negotiation process between credit officers and clients. The choice of indicator, a credit promotor said, “depends to a large extent on the client, because we depend on the client” (FDL credit promotor, 29/10/2013). At times, the credit officers were thus somewhat reluctant to strongly impose any particular environmental practice. The CABEI list allowed flexibility in this sense, and some practices were more common, popular or easily obtained than others. In a context of an MFI intending to please long-term, loyal clients and trying to achieve positive results in terms of its image and relationship to the funding agencies, the client indeed had an arguably interesting bargaining position regarding the choice of indicators. In line with Ramprasad (2018: 16) and Peterson (2012), one can even perceive a kind of ‘collaboration of convenience’ in this Bank-NGO-client relationship, where –in the context of reaching external project goals, but also in the context of increasing rural finance competition for these larger farmers– a mutual dependence/indebtedness becomes apparent.

In the supposition that the bio-award was conceived to reward or compensate farmers and financial institutions for their additional efforts in light of biodiversity-friendly activities, the questionnaire and interviews probed for the innovative or extraordinary character of the supported practices. It turns out that most participants indicated that they had already implemented the required practices prior to the intervention (78.6%) and all indicated that they would continue to do so after the project (100%). When people said they wouldn’t have made the same investment without the award, they mostly add that otherwise they would

not have had the resources (which at times also referred to the credit rather than the award). Overall, it appears that the supported practices were not particularly 'innovative' in the context of the research area. For instance, for the planting of shade trees in coffee (a condition specified in 90% of the coffee-related contracts in the region), the conditionality did not compel producers to go far beyond common practice, which is also confirmed in interviews with participants.

**Table 14: Survey questions probing for the innovative character of the adopted practices under Proyecto CAMBio**

		N	%
Did you already apply this practice before?	YES	66	21.4
	NO	18	78.6
Will you keep applying this practice?	YES	87	100.0
	NO	0	0.0
Would you have made the same investments without the award?	YES	68	20.0
	NO	17	80.0

Source: Based on survey results

When conducting a Chi-squared test on these questions to check for a relation to the type of environmental condition to which the credit was related, only the question 'did you already apply this practice before' shows a significantly different distribution than expected. The people who invested in a coffee filter did not have one before, and investments in cocoa were a primer for four participants. For the other questions, there was no indication of a difference between the investments or conditions. When discussing these results, project staff indicated that in practice the silvopastoral activities and the installation of coffee filters did seem considerably more difficult to promote and commit to than the practices related to shade trees in plantations (discussion of survey results, 29/10/2013). Overall, the technical staff recognises that the link between the bio-award and the required efforts was questionable.

Another question in the survey inquired into the main meaning of the Bio-award according to the participants and whether they considered the

payment to be high or not (see Table 15). Only five percent of the respondents considered the payment to be low; hence it appears to have been perceived as a (at least) reasonable contribution for the undertaken effort. Additionally, I asked about their consideration of the bio-awards function to see whether it was perceived as a key 'nudge' or support for making particular investments or reducing their cost. This was not the primary appreciation, as it was mainly perceived as a 'reward for taking care of the environment' and 'a reward for being a good client'.

**Table 15: Survey questions probing for the appreciation of the bio-award**

		The bio-award is ...			
	N	%		N	%
High	47	59%	A reward for being a good client	25	32%
Low	4	5%	A reward for taking care of the environment	48	61%
Neither high nor low	23	29%	A necessary support for the investment	1	1%
I don't know	1	1%	A reduction of the investment cost	2	3%
			Don't know	3	4%

Source: Based on survey results

These observations regarding the apparent lack of 'novelty' of the required practices as well as the questionable link between the bio-award and the environmental targets have also been reported in related studies for Proyecto CAMBio in another region of Nicaragua (Forcella, 2012, Huybrechs et al., 2015b) and in Guatemala (Lucheschi, 2014, Forcella and Lucheschi, 2016). It relates to the relative freedom provided by CABEL in terms of possible environmental targets, and the respective MFIs' reluctance to insist on less popular –or less mainstream- practices. Yet the questions that I deal with in the remainder of the analysis of Proyecto CAMBio in Peñas Blancas are not focusing on flaws in the project incentives per se. They rather further investigate what this means in terms of what/who the project supported and how this can be interpreted in light of the intervention's entwinement with the local institutional context. A broader, development pathways analysis provides further insights into the relationship between the promoted practices, the local development pathways and their intersection with different environmentalisms.

## 7. CONCLUSION

Proyecto CAMBio is often perceived as being a successful project, whether in financial terms (the successful channelling of funds directed at biodiversity-friendly activities) (Elizondo, 2016); in organisational terms (the successful management and fulfilment of the exigencies of the project by the intermediary financial institutions) (Forcella and Lucheschi, 2016); or in terms of environmental performance (because of the high compliance to the environmental targets and because of a positive evolution in terms of particular environmental indices) (Gross et al., 2016b, Guerrero, 2012). Inspired by these previous assessments of Proyecto CAMBio and on the basis of its underlying theory of change, this chapter engaged with an initial analysis of the project. It analysed the results of the survey which provided information on the evolution of 'environmental performance' at the level of participating and non-participating farms and provided a picture of the distribution of the bio-award among project participants.

One of the limitations of the above quantitative analysis is the size of the sample –especially the small sample of non-participating farmers–, which makes it challenging to draw statistically powerful conclusions. Furthermore, the survey was based on recall questions instead of a baseline elaborated at the onset of the project (Hayes et al., 2017). Lastly, the focus on a particular index to cover the complex issue of biodiversity and environmental practices is reductionist. Rather than intending to be an all-encompassing impact evaluation of Proyecto CAMBio, and regardless of the mentioned limitations, this analysis provided useful insights into a range of influential variables and provided leads for a deeper analysis of the economic, environmental and socio-institutional processes with which this green microfinance project interacted in the particular context of Peñas Blancas.

For instance, the targeting of the project appears to have been directed at better-off and longer-term clients. The difference between the groups of Proyecto CAMBio participants and non-participants –in terms of their livelihood trajectories– was shown as key elements of the evolution in

environmental performance, as defined by the BI. Indeed, there was an overall positive evolution in terms of BI, but there was no clear indication of the role that (green) microfinance played a role herein. Interestingly though, similar or even more environmentally-friendly changes took place in the non-PC group; and talking to the PC farmers further fuels the finding that the project did not substantially alter their land use decisions. Instead, a key factor driving the improvement in environment performance was a change to coffee as a main economic activity which ought to be understood in a much broader perspective, for which we will turn to the analysis of livelihood trajectories and development pathways in the next chapter.

It is also important to note that the choice of a particular indicator or environmental target is not value-free; neither at the level of the assessment of the project's performance nor at the level of the project design (Mosse et al., 1998, Vatn, 2009). At the level of project design, it appears that the environmental targets –as set by the project- allowed for a high level of compliance, while being questionable in terms of their innovativeness. Furthermore, there was an unclear relation between the bio-award and the evolution in environmental performance. Hence it begs the question of how environmental performance is defined; and how it relates to current agricultural practices.

Altogether, these limitations and findings indeed invite us to look more deeply into the connection between the workings of Proyecto CAMBio and the particular context in which I will analyse it –in terms of processes of agrarian change and natural resource governance. In the remainder of the case study, I will further clarify that the complexity and unpredictability of the underlying processes, as well as the influence of broader development pathways, unavoidably interact with the way a project like this functions. This paves the way for a more 'political ecology' approach to understanding green microfinance, dealing with questions of value-judgements in defining environmental goals and the politically-laden act of supporting particular actors and practices over others.

## CHAPTER 5

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### **THERE'S COFFEE AND COFFEE, TREES AND TREES - DEVELOPMENT PATHWAYS AND CONTRASTING ENVIRONMENTALISMS AROUND THE MACIZO DE PEÑAS BLANCAS**

Note: This chapter is inspired by the description of the development pathways provided in Huybrechs et al. (2016) and Bastiaensen et al. (2015a). It also draws on collaborative efforts in Merlet and Huybrechs (2014), Freguin-Gresh et al. (2016) and Arribard et al. (forthcoming); and the Master dissertation of Lucie Arribard, conducted under my supervision (Arribard, 2013). Special thanks to René Mendoza, Edgar Fernandez, Pierre Merlet, Lucie Arribard, Sandrine Fréguin-Gresh, and of course all the people who let me into their homes and who took the time to talk to me.



# 1. INTRODUCTION

The analysis of Proyecto CAMBio in chapter 4, with some of its counter-intuitive results and its narrow focus on particular ways of framing 'environmental performance', pointed to a need to better understand and study the project's embeddedness and interactions with local development processes and how these are related to land use decisions and emerging landscape dynamics. The present chapter takes the next step in this analysis and presents the dominant development pathways in the area of the Macizo de Peñas Blancas as well as its relation to (perceptions of) the environment. This will allow subsequently for the analysis of the interaction of CAMBio with the pathway dynamics in the territories in chapter 6.

As explained in the conceptual chapter, the development pathways approach is based on the idea of conceiving rural territories as complex Social-Ecological Systems (SES). It conceptualises development processes as emanating from a historical, power-laden evolution. Development pathways emerge through configurations of (uneven) access to particular (material) assets as well as political participation and struggles over meaning. The emergent characteristics of a particular territory are both the result and origin of activities and motivations at the individual/livelihoods level, shaped by guiding ideas and practices. The development pathways approach offers insights into the political weight of supporting a particular activity or a group of people in a specific context, pointing to the need to balance different values and to forge alliances to come to a meaningful reflection on what (local) sustainable development can entail. As such, it also illustrates the type of (power) relations and institutions which a managerial lens of microfinance or financial inclusion leaves out of the equation, but which it encounters in practice.

In the case of the Macizo de Peñas Blancas, my analysis discusses the emergence of the micro region's specialisation in coffee production, the concomitant socio-economic differentiation and the evolving tensions

related to nature conservation. As discussed in Chapter 3, the analysis of the socio-economic differentiation and the description of particular livelihood trajectories is strongly influenced by the Agrarian Systems approach (Cochet, 2012). In the following analysis, I describe the rural space through a set of characteristic livelihood trajectories or production systems and the mechanisms that have influenced their historical evolution.

In the following analysis, I also pay specific attention to the identification of a number of co-existing 'environmentalisms' in the region. This entails the different types of "discursive constructions of nature and human agency" upheld by different actors in the region (Brosius (1999: 278) as cited by Brockington (2006)). These environmentalisms are thus particular "representations of nature" and guiding ideas on human-nature interactions (Brockington, 2008: 553, Guha and Martínez Alier, 1997), regardless of whether they have materialised in particular formal institutional arrangements. They are part of the socio-institutional context with which any intent to steer or define 'environmentally-friendly behaviour' will interact; thereby leading to hybrid environmentalities in which power relations influence which views and whose knowledge dominate over others (Fletcher, 2017, Cleaver, 2012, Van Hecken et al., 2015a, Luke, 1995).

The analysis depicts a dominant development pathway where small-scale farmers face pressures from an exclusionary entrepreneurial approach to coffee production and an increasingly strict approach to nature conservation. This enables a better understanding of the processes through which the introduction of new institutional arrangements (such as particular incentives for environmentally-friendly practices; *in casu* Proyecto CAMBio) are reshaped and reinterpreted. By identifying prevailing ideas and institutional arrangements, the study also offers avenues for thinking about alternative pathways and emphasise that change necessarily requires shifts in power and influence at a collective level.

It is noteworthy that the following presentation of the development pathways and environmentalisms around the Macizo de Peñas Blancas ought to be seen as more than just a context analysis for Proyecto CAMBio. It illustrates a particular analytical practice of understanding and synthesizing local rural development processes; a way of grasping broader processes of agrarian change. At the same time, the development pathways approach indicates how microfinance is only one among many possible ways of 'intervening' in these processes, and hints at the unpredictability of it. In this sense, the exploration of these complex development processes is part and parcel of the suggested approach to green microfinance (analysis).

## **2. THE EMERGENCE OF DEVELOPMENT PATHWAYS**

The emergence of development pathways relates to the interactions between local and global actors, structural forces and political alliances, which shape differential opportunities and constraints for particular livelihood trajectories. As I analyse the historical evolution of the agrarian changes in Peñas Blancas in this section, I will hence zoom in and out on the region to link the activities/evolutions in the region to broader influences and trends. This section is built up according to key historical periods. As a starting point, I first discuss how I relate the history of Peñas Blancas to dynamics of the agricultural frontier. In doing so, I adopt a more systemic approach to the analysis of agrarian dynamics in Peñas Blancas by pointing to its historical, economic and socio-institutional relation to other geographical areas.

### **2.1 DEFINING THE 'AGRICULTURAL FRONTIER'**

One way of viewing Peñas Blancas is as part of the 'old' agricultural frontier (Maldidier and Marchetti, 1996). By 'agricultural frontier' I here refer to processes of gradual land use change, from forest to crop or pasture land in combination with social change. The agricultural frontier is related to the existence of a pioneer front which represents "the interface

and rather vague frontier between forests and the expanding area given over to agriculture" (Maldidier, 2004: 185). Hence, the concept of agricultural frontier is broader than the concept of the active pioneer front (Rasmussen and Lund, 2018). It is an area in expansion and the interaction between the different frontier areas leads to "relational spaces, produced through scaled interactions which are simultaneously material and representational" (Barney, 2009: 147). This particular view involves the recognition of a strong relationship between the expulsion/choices of actors in the areas proximate to the pioneer front and the further advancement of the colonisation of forests and social change. This process has been described by Maldidier (2004) as a 'domino migration process', with interrelated processes in different 'stages' of the agricultural frontier.

This process of migration makes land available in the new and old agricultural frontiers and allows mostly medium and large size farmers to remain in these areas and pursue a process of accumulation of capital and land (Merlet and Huybrechts, 2014, Van Hecken et al., 2017). In the case of Nicaragua, it leads to a gradual eastward advancement of the pioneer front following remaining large tracts of forests and involving processes of changes in land use, property regimes and social relations.

In the Macizo de Peñas Blancas, the first wave of in-migration took place in the 40-50s with people coming from the South-West of Peñas Blancas (Estelí, Jinotega, Matagalpa...). Then the pioneer front gradually went further North-East (towards El Cuá, Bocay, Waslala) and now into the North Caribbean Coast Autonomous region. I highlight these (simplified) relational dynamics of frontier regions to emphasise that a systemic approach is necessary to understand the current processes of social, economic and environmental change in pioneer fronts. In light hereof, it is indeed important to understand the current development pathways in old agricultural frontiers as a contribution to the further conflictual advancement of the pioneer front (Van Hecken et al., 2017, Maldidier, 2004).

## 2.2 COLONISATION IN THE EARLY YEARS

The agrarian colonisation process in Peñas Blancas started in the 1940s, when people arrived in this region and settled on unclaimed, national lands (typically about 20-40 ha per family).<sup>9</sup> Initial settlers were either ex-workers of coffee haciendas or small farmers who had been pushed east by the expansion of the major coffee estates, primarily around Matagalpa, Estelí and Jinotega (Craipeau, 1992, Samper, 1999). Since the late 19th century, coffee has been a key export product of Nicaragua, and successive governments have adopted particular policies to spur (international) investment into coffee production. For instance, Europeans and North Americans received large tracts of 'national' land or pecuniary incentives to invest in coffee plantations (Paige, 1997). At times, this also involved the forceful displacement of farmers and the coercive incorporation of indigenous populations to work on the plantations (Rocha, 2001, Argüello, 2011).

Upon their arrival in the region of Peñas Blancas, the first settlers would typically clear forest to grow staple crops and raise fowl and pigs for subsistence. Whenever savings, social ties or credit would permit (with the main credit sources being forward sales to processors and exporters (Mendoza et al., 2013)), they typically planted some coffee shrubs as a complementary cash crop. The farmers who maintained ties with the larger coffee estates through (seasonal) labour could obtain coffee seeds from these estates.

From historical interviews and from broader accounts of the workings of agricultural frontiers (Van Hecken et al., 2017, Maldidier and Marchetti, 1996), the following evolution typically unfolds. After typically 5 to 10 years, diminishing soil fertility would lead to a decreasing return of the staple crop plantations that were first established. As a result, farmers installed new areas of staple crops on the forested areas of their land.

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<sup>9</sup> There are no clear indications of pre-Columbian inhabitants in this particular territory; although there are stories about the use of the large cascade in the Macizo de Peñas Blancas for spiritual purposes by indigenous populations. Either way, there are no accounts of overt conflictual encounters or forced evictions, such as was the case e.g. in Matagalpa at the end of the 19<sup>th</sup> century (Rocha, 2001).

They then also had several strategies to further expand their activities; which strongly influenced the further development and socio-economic differentiation in the region. One option was to turn areas of forests or staple crops into pasture and buy cattle (for reasons of dietary diversification and as a type of saving). Another way was to expand the areas of coffee. The third option was to let the used lands fallow and to further increase production (including staple crops) by buying more land. The choice of strategy strongly depended on the conditions of soil and climate; the availability of workforce; the size of the land owned by the farmer; the available capital; and the social network which mediated the access to these assets. For instance, climatic conditions and the size of the land can make it difficult to expand cattle activities –which is often the case in this region. Also, the expansion of coffee areas requires the accessibility and affordability of workforce for harvest and maintenance. Lastly, the buying of extra land requires capital as well as the availability of land. These are the economic accumulation strategies and concomitant challenges which further shape livelihood trajectories in the region.

### **2.3 IMPROVED ACCESSIBILITY AND SECOND WAVE OF IN-MIGRATION**

Until the '70s, there was no proper road in the region and only small trails led the new settlers onto the Western hillsides of Peñas Blancas. The construction of a road in the '70s by a Matagalpa-based timber company – Maderas Centroamericanas (MADECASA)- made for an easier entry-point into the region. The timber company, which received logging rights for this area from the government<sup>10</sup>, bought timber from the first inhabitants and built roads into the forest to extract it. Furthermore, a new road connecting Matagalpa (to the west) and Waslala (to the east) further improved the connection between Peñas Blancas and the emerging 'mountain port' of La Dalia (Argüello, 2011). This improved access for goods and people increased the opportunities for the farmers to

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<sup>10</sup> Published in 'La Gaceta' 2<sup>nd</sup> January 1968.

commercialise their produce and it opened up the region to a second wave of newcomers.

The second wave of in-migration consisted of displaced or migrating family farmers as well as larger landowners and investors looking for new opportunities. They either claimed forested land or bought land off of already installed families, who would then move further east. Sometimes new landowners also coercively moved in, as was for instance the case of the conflict regarding the hacienda 'El Carmen' –in the Southern of the Macizo de Peñas Blancas- where peasant holdings and houses were burnt down for the installation of the hacienda (Argüello, 2011). The increased land dynamic pushed the agricultural frontier further north-east (such as e.g. Rancho Grande, where –at that time- land was about thirty times cheaper (Chaffotte and van den Berg, 2003)) and up the slopes of the Macizo de Peñas Blancas. More generally, it also entailed an increasing socio-economic differentiation in the region with the establishment of large coffee and cattle estates or latifundios and a combination of smaller farmers and landless workers. By the end of the 1970s, small and medium producers owned about 70% of the land; haciendas owned the rest (data for El Cuá according to Dirección general de reforma agraria (1983)). The property titles of the new holdings were not systematically recorded and their formal and informal recognition depended strongly on the local arrangements and the support of the municipal and departmental government.

The different waves of in-migration, the evolution in the accessibility of markets and the pursuit of different strategies to expand the agricultural activities led to the co-existence of several types of farmers in the region by the end of the 1970s. A number of farmers remained strongly dependent on wage labour in either the large-scale coffee haciendas in the periphery of the region or for neighbouring farms. A typical large-scale coffee hacienda covered about 100 to 200 hectares of land and required a permanent workforce of more than 100 workers; and up to 500 workers during the harvesting period. These coffee haciendas tended to be part of a wider consortium, controlling the different stages of coffee

transformation and export which allowed them to capture a higher price for their products.

By the end of the '70s, a typical family-based, small-scale farm would have approximately 35 ha of land. A large part of the land would still be forested, and the rest of the farm consisted of staple crops for subsistence farming, grazing lands for a few heads of cattle and small plots of coffee. The coffee was cultivated under varied shading, including banana trees, fruit trees and trees for fuelwood (Heinze, 2013). An important function of this shading was the cash flow and nutritional value of the bananas and other fruits. At this point in time, some of the farms that managed to further expand their areas of coffee also started to require a permanent waged workforce in addition to hiring more people during the harvesting season. Except for the size of the coffee areas and the type of workforce, the technical aspects of coffee production at this point were largely similar to the family-based farms.

## 2.4 THE DISRUPTION BY THE (CONTRA)REVOLUTION

The ongoing processes of agrarian change were interrupted during the 1980s, when the country was gripped by an armed conflict between the Sandinista regime and the counter-revolutionary *Contras*. Already in the late 1960s, the region became more openly absorbed in an increasingly widespread *guerrilla* war.<sup>11</sup> Revolutionary forces eventually succeeded in overthrowing the military dictatorship of Somoza. As the *Frente Sandinista de Liberación Nacional (FSLN)* came to power, it marked a new era at the level of social and economic policies.

The change of government had a strong impact on how the production, processing and marketing of agricultural production were organised. One of the key actions of the revolutionary government was an agrarian

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<sup>11</sup> El Cuá, the municipality in the North of the Peñas Blancas region, is still famous for the *mujeres del Cuá* (partly thanks to the famous Nicaraguan singer-songwriter Carlos Mejía Godoy who made a song about them). The *mujeres del Cuá* were a group of female combatants in the region, which were imprisoned, taken to El Cuá and tortured by the Guardia Nacional (León Leiva, 2014). This was a sign of the rising unrest in the region and increasing oppression by the Guardia Nacional.

reform, strongly reshaping the agrarian landscape in Nicaragua (Deere et al., 1985). This agrarian reform also took place in the regions of El Cuá, La Dalia and Rancho Grande (although to a lesser extent in the higher regions of the Macizo de Peñas Blancas) with the creation of several cooperatives and state-owned farms (*Unidades de Producción Estatal*), mainly on the land of haciendas which were either confiscated by the state or were abandoned by their owners after the revolution. The producers in the area remained strongly focused on the production of coffee and staple crops.

There was thus a continuation of large-scale (now mainly state-owned) plantations on the one hand, and increased support for small farmers (often collectively organised by coercion) on the other. Through the cooperatives, the government facilitated credit, access to heavily subsidised inputs and technical assistance. Yet this was only one side of the medal; a meagre compensation for the difficult context in which (coffee) farmers had to operate. The coffee sector (as well as other export sectors) was nationalised and the state monopoly –through ENCAFE (the National Coffee Enterprise)- offered only low prices for the commodity (Rocha, 2003). In this centrally planned war economy, the conditions of coffee plantations deteriorated and overall national production declined by approximately 40% (Samper, 1999, Rocha, 2003). The growing uncertainty regarding land tenure and market opportunities made farmers reluctant to invest in their farms.

As the revolution sparked a counter-revolution, Nicaragua continued to be submerged in violent conflict; which was again very present in the mountainous regions of northern-central Nicaragua. The ongoing conflict influenced the availability of workforce in the region, due to obligatory military service and forced recruitment by the government. Furthermore, it made the transportation of the harvested crops very difficult. The intensification of the civil war spurred people to flee to other countries to avoid having to join the armed forces; and in the region of Peñas Blancas *contra* forces also convinced farmers to join the armed resistance to express their discontent with the situation at the time. The civil war eventually came to an end with an election in 1990, in which the liberal

Violeta Barrios de Chamorro was elected into presidency. This marked the start of a return to pro-market reforms; without the military dictatorship but setting the scene for a new elite. Paige (1997: 359) sharply phrases it as follows:

“[a]lthough the socialist revolutionaries destroyed the old order and opened the way for democracy, the ironic outcome of their efforts was the triumph of the agro-industrial bourgeoisie and neo-liberalism.” (cited in Topik (2000))

## **2.5 BACK TO BUSINESS**

The Chamorro administration had the daunting task of starting a pacification process and re-invigorating a war-torn country. In a bid to regain the trust of donor countries and in order to depart from the centrally planned economy of the 1980s, they embarked on a “far-reaching structural adjustment program” (Boucher et al., 2005: 110). For instance, this entailed the liberalisation of the coffee sector as well as the withdrawal of the generous state-led credits of the 1980s (Horton, 2013). Regarding credits and financial services, the market-friendly structural adjustments favoured the extension of the commercial financial sector (Boucher et al., 2005). The change of government marked the end of a state-centric decade and repositioned capital and private companies as the ‘organising principle’ (McMichael, 2008).

The end of the civil war also spurred intense in- and outmigration of people in the study region. This coincided with the dismantlement and ‘parcellation’ of the (coffee) cooperatives established in the 1980s and the reduction in the (ambiguous) support for small-scale farmers (Jonakin, 1996). Larger, privately-owned coffee estates revived as a lot of land changed hands. Some managed to buy land off of smaller farmers who had relative difficulties in making beneficial use of their land and who would migrate further east. Other land was either sold or abandoned in light of the exodus of demobilised farmers after the war or because of the overall land tenure insecurity (Roux, 2011). The co-existence of several types of land titling indeed meant insecurity of land tenure for many farmers, especially those who had less social and political networks to

defend their right to the land. As Puig and Baumeister (2017: 386) describe it: “the prevailing balance of political and family power would define the final and effective ownership allocation of farms.” Also, because of the tedious processes of engaging in the judicial procedures with the (often absent) government to settle discussions over land tenure, conflicts were regularly settled out-of-court (Roux, 2011). Such informal solutions to land disputes offered fertile grounds for the continuing ambiguity over land ownership. Still today, ambiguities over (formal) land titles make it difficult for smaller farmers for example to access credit and financial services (Rocha, 2001, Gómez et al., 2011a).

Farmers who had sold their land would either stay in the area and work for the larger estates or leave to the new agricultural frontier in the east (Gómez et al., 2011a). The in-migration of new farmers and the out-migration of others reinvigorated the agricultural frontier and deforestation in the area and beyond. The overall wave of ‘distress sales’ by smaller farmers led to a growing victim-blaming discourse and stigmatisation of peasants as “unattached to their land” and as “having a natural propensity to use one track of land and moving on to the next after selling their land” (Roux, 2011: 78). As we will see when discussing the recent price- and sanitary crises in coffee and the increasing environmentalist pressure, this discourse still holds today and constitutes part of the guiding ideas in the area.

In terms of the approach to agricultural production, the Chamorro government promoted new types of seeds/varietals and an increased use of fertilisers, pesticides and machinery. Previously, the Sandinista government had already embarked on a kind of ‘green revolution’, especially on the state-owned farms and cooperatives (Puig and Baumeister, 2017, Roux, 2011). In the early 1980s, for instance, there was a large-scale coffee renovation project in Western-Nicaragua. Designed by the ‘national commission for coffee renovation’ CONARCA (Comisión Nacional de Renovación del Café), this renovation project replanted 11,000 hectares of coffee with newer coffee varietals (caturra and catuai, as compared to bourbon and típica). The new varietals offered

higher yields (related to a higher use of agrochemicals and more dense plantations) and were supposedly more resistant to common pests (Westphal, 2008, Fernandez, 1994, Bravo-Monroy et al., 2016). The new practices and varieties spread piecemeal to other coffee regions, yet investments in these new techniques were at first low due to the unfolding intensity of the civil war. As peace returned and coffee plantations revitalised<sup>12</sup>, the Chamorro regime further took on the task to support large-scale renovation operations for the coffee plantations and the (new) private actors of the coffee chain (at the level of finance, processing – such as CISA and Atlantic) continue to promote technical packages aimed at a maximisation of coffee productivity (Westphal, 2008, Gómez et al., 2011a). This can thus be seen as a powerful alliance of large supply chain actors, financiers and local actors promoting a new, ‘modern’ approach to coffee production.

As coffee cultivation is not susceptible to much mechanisation, one of the few ways in which productivity can be increased is through changing the coffee variety and through the use of fertilisers and pesticides; which are capital-intensive practices. Paige (1985), in this sense, notes that “in the case of coffee cultivation, capital literally grows on trees.”

The ‘modernisation’ or ‘technification’ of coffee cultivation –which Infante-Amate and Picado (2018) call a social-ecological transition- thus focuses strongly on the productivity of the plant and the concomitant management practices, such as the amount of shade under which the coffee is cultivated and the use of (agrochemical) fertilisers and pesticides (Westphal, 2008). These new practices are developed and promoted by an alliance of research institutes, development projects and providers of agro-chemical products and technical assistance. Typically such modernisation efforts first take place in the larger farms, after which these practices get promoted to and copied by smaller farmers (McCook, 2017). In interviews, farmers refer to how they rely on technical assistance and

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<sup>12</sup> There is also an influence of the return of previously exiled farm-owners (and/or their children), with new ideas about agricultural production and marketing; for which they were termed the ‘Miami sharks’ in one interview.

the large coffee exporters for their orientation towards new varieties: “they tell us that we have to look for this new variety [*catimor*] because the old ones ‘do not work’ anymore” (farmer, 29/05/2014). Or as a young participant at a workshop about innovation said: “we listen more to the *casa comercial* [provider of seeds and fertiliser] than to each other” (12/02/2013). When referring to coffee productivity, it is important to stress that here I refer to the mere productivity of the coffee plant in terms of coffee berry production per harvest. Although short-term land and labour productivity of coffee plantations may have augmented with new varieties, a view on energy productivity shows a large decline in energetic return on investment Infante-Amate and Picado (2018) say: “Examining this process purely in terms of energy, the efficiency of coffee growing declined substantially in the process of industrialization.”

The mainly productivity-based monoculture approach to (coffee) farming does not necessarily fit well with the production logic of smaller farmers. Family-based producers are typically more constrained in capital for the intensified, agrochemical management of the coffee plantations and have a more diversified approach to their productive system for reasons of food security and risk mitigation strategies regarding coffee crises and other unforeseen events (Bacon, 2004). Hence, smaller farmers tend to cultivate coffee with denser and more diversified shade cover, which provide them with cash flow as well as dietary diversification. They also tend to use fewer agrochemicals (Cuadra Mayorga and Alvarado Narváez, 2011, Mendez, 2008), even when they already adopted some of the newer varieties which would actually require a more ‘technified’ or input-intensive approach. When discussing why he had not (yet) adopted the newest variety, a coffee farmer put it this way (in addition to mentioning that the *marsellesa* seeds<sup>13</sup> were 8 times more expensive than *catimor* and that it would require too much fertilisers): “science, technology, they are sometimes not in favour of humanity, or the producer” (interview with farmer, 16/05/2014). There is hence not a singular type of coffee production practice as it can take on many forms according to

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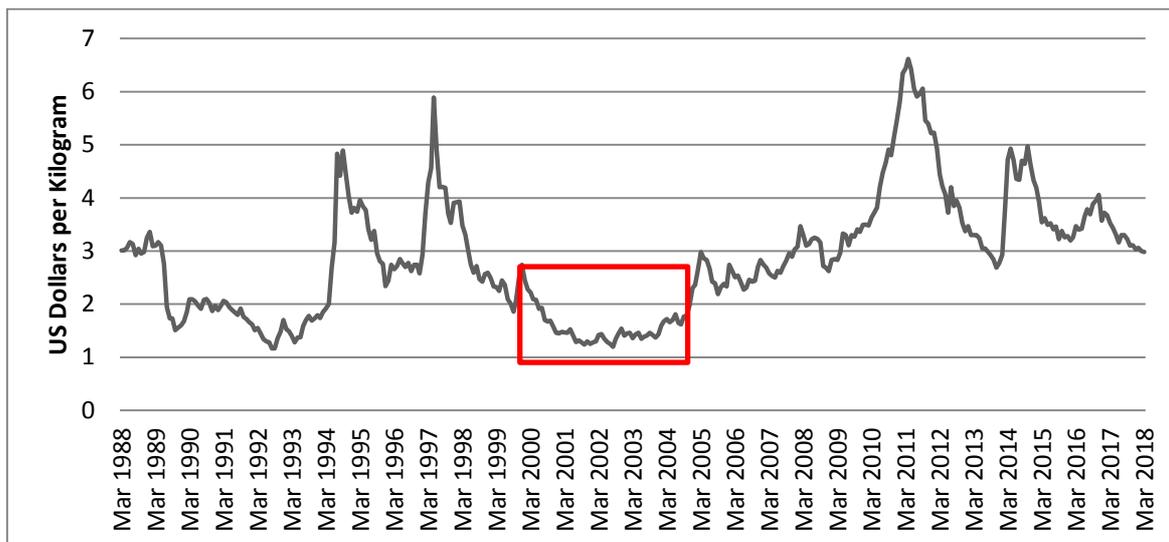
<sup>13</sup> For the largest haciendas, who are already experimenting with the newest, hybrid varieties, the *catimor* variety –the most common variety for coffee renovations among small-scale farmers today- is already *passé*.

management practice, production rationale and its role in the broader production system. Its 'sustainability' at social, economic and environmental level is hence subject to debate and interpretation (Tulet, 2008).

## 2.6 DISPOSSESSING CRISES

To better understand and analyse the debates and implications of the role of coffee production in the different production systems, I now turn to the discussion of two severe coffee crises which occurred in the past 20 years: a price crisis in the year 2000 and a sanitary crisis (of *roya* or coffee leaf rust (*Hemileia vastatrix*)) in 2012. Such crises are a recurring threat. They can force smaller producers to reduce their coffee areas, considering alternative economic activities or even to sell their holding altogether. Although larger producers are also hit by such crises, it also creates opportunities for them to acquire additional land at fire sale prices, contributing further to the concentration of land holdings. Additionally, these crises are decisive moments regarding the adoption of the classic, technical recipes as a response to pathogen outbreaks and the variability of climatic conditions: the renovation of plantations with new, more productive and supposedly resistant coffee varieties (Bravo-Monroy et al., 2016, Bacon et al., 2017, Mendoza, 2013, Rocha, 2003).

In 2000, international coffee prices plummeted (see Figure 8). This had strong consequences for all actors in the coffee supply chain. The price directly affected farmers' incomes as well as their ability to repay their loans or to access new ones. Overall access to credit for coffee dropped by 70 to 90% in 2000 (Rocha, 2001, Wilson, 2010). Farmers who were unable to repay their loans and who did not manage to negotiate a renewal of the loan sometimes lost (part of) their land to the bank. Still today, some people link 'credit' to 'land confiscation' and it is clear that this episode has left a mark in people's memories in terms of their relation to credit and banks.

**Figure 8: International coffee prices for ‘other mild arabicas’**

(International Coffee Organisation indicator price)

Box indicates the period of the price crisis

Source: [www.indexmundi.com](http://www.indexmundi.com)

More recently, the ‘coffee rust’ fungus decimated mainly older, weaker plantations and the least resistant varieties. After the 2011-2012 harvest, the disease left 20% of the national coffee fields in need of renovation (Avelino and Rivas, 2013). This had devastating effects for those households that depend in great part on the income from this crop, which is a large proportion of this region’s population. The epidemic strongly affected the least privileged coffee farmers, because of their different approach to coffee production, using fewer agrochemicals and generally trying to benefit from the long productive life of the coffee plant (Jha et al., 2011, Mendez, 2008, Westphal, 2008).

One important limiting factor for smaller farmers to renew their plantations (whether or not with newer varieties), is a limited access to longer-term credits. This is key to renovating plantations, as it takes three years before newly-sown coffee plants become productive. Instead, most small-scale producers must rely on forward sales to middlemen or coffee exporters (Mendoza et al., 2013, Mendoza, 2013), or on mostly short-term microfinance loans.

Whether there is a price crisis (Rocha, 2001, Bacon, 2004, Ponte, 2002), credit crisis (Bastiaensen et al., 2013) or a sanitary crisis (Avelino and Rivas, 2013), the vulnerability of small-scale farmers worsens with the combined effect of being indebted and not being able to obtain (reasonable) credit for the renovation of the plots (Mendoza, 2013). Furthermore, larger farms tend to react to the crises by reducing their personnel, which again impacts the most vulnerable – landless as well as land-poor farmers, who depend on their waged labour as their main or complementary income (Bacon, 2004, Rocha, 2001).

As discussed above, the renovation of coffee plantations (with or without new, resistant varieties) is a recurrent reply to sanitary crises. But it is only one among many coping strategies and reactions to the past crises. For instance, the 2000 coffee crisis drew international attention to the predicament of small coffee farmers, resulting in an increasing attention for 'fair trade' coffee certification. Fair trade coffee supports certified farmers, who are organised in cooperatives, by guaranteeing a minimum price for the coffee. In the research region, a number of cooperatives were supported and connected by the project FONDEAGRO (a large-scale agricultural programme which ran from 2001 until 2010 in Nicaragua, funded by the Swedish International Development Cooperation Agency).<sup>14</sup> FONDEAGRO brought together six cooperatives from different parts of the northern-central highlands to form the second tier coffee cooperative *Unión de Cooperativas de Cafés Especiales Cordillera Isabelia* (UCCEI), which owns its own 'dry mill' and warehouse and provides the opportunity to sell coffee under the Fair Trade Label.

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<sup>14</sup> I will not further expand here on the multiplicity of development projects that have been operating in this region, which is nevertheless striking. Every other mile on the main road one can see increasingly rusty billboards, commemorating international aid programmes. I once heard the cynical observation that for a lot of these programmes the clearest impact is on people's wardrobes; stacked with polo shirts with the logos of the respective projects. Another almost comical landmark close to the centre of the nature reserve is a sidewalk which leads to a brand-new bus-stop, on an old road which has no buses. The latter example appears to be symptomatic of a lack of inclusion of local concerns in the design process. With other projects, the problem seemed to be in the later follow-up. As some point, for instance, some project officers came to the region, measuring different trees on several farms to measure them in view of paying for 'oxygen'. They did not come back, however. Such unfinished projects or unfulfilled promises lead to disillusion and distrust. Talking about his disappointment with a recent project, a farmer told me: "It's a shame that there is no follow-up... It's like if I told you, every time that you come: 'there are quetzals in the woods; I'll show you one day', but then we never go..." (13/07/2013)

One of these first-level cooperatives is Guardianes del Bosque, a coffee cooperative located at the foot of the Macizo de Peñas Blancas and which was set up in 2000 'out of despair after the debts' of the coffee price crisis (interview with cooperative member, 13/04/2012). Overall, the cooperative-fair trade movement is not strongly present in the research area. Even within the existing cooperatives, there appear to be difficulties to motivate farmers to sell their coffee through the cooperative. This is related to distrust, past failures to obtain the expected Fair Trade price premium and the time-lag between handing over the coffee beans to the cooperative and the actual sale and payment (Mendoza, 2017). For the coffee cooperative representatives, it is challenging to enter the cobweb of international coffee markets, to engage with these niche markets and to render accounts to the cooperative members (see Mendoza (2017) for more information about challenges to the current fair trade system, drawing from examples of limitations for producer cooperatives in Nicaragua).

The certification bandwagon is not restricted to fair trade and cooperatives of small farmers though (Bacon, 2004). The growing concern for the social and ecological consequences of coffee production and the fact that Fair Trade had shown that consumers (and producers) were willing to pay more for certified products, opened the gates for a myriad of other labels. These labels do not always have the same (social) focus on smaller, organised producers (Barham and Weber, 2012, Reynolds et al., 2007). For instance, the largest estate of the study area is affiliated to the ecological label Rainforest Alliance as well as the sustainability labels UTZ and 4C. The certifiers and the central government turn a blind eye to the expansion of this estate into the core of the nature reserve. The estate owner's strong power position and good connections to the ruling political party grant him some sort of political immunity (which is why people talk about the owner as 'Super Mario'). The bottom line is that sustainability labels are currently also benefiting large-scale estates in the region (Gómez et al., 2011a), even though it is questionable whether the

practices of some of these haciendas can be considered 'sustainable' in a social and environmental sense (Vanderhaegen et al., 2018).

So far, I have discussed certification and cooperatives as strategies that farmers use to cope with the coffee crises. Yet another risk mitigation strategy is the diversification of economic activities (Bacon et al., 2017). Indeed, and as indicated earlier, there are also other economic activities, such as staple crops (maize and beans, both for subsistence and the market), cattle raising (mainly for cheese and meat, in the lower regions, where the climate is warmer and drier), cocoa and horticulture. Horticulture for commercialisation (particularly potatoes, cabbage and carrots) is a rather recent phenomenon in the area. The production cycle of the vegetables fits well with the downtime of coffee production – the *tiempo de silencio* or 'thin months' (Caswell et al., 2014)– and hence provides liquidity at times when coffee provides none. However, it requires high investments in agro-chemicals and the downside of the potentially high returns on investment is also the high volatility of the market prices. Additionally, the possibilities to diversify through changing land uses towards for instance staple crops or vegetable production is strongly limited by the increasing environmental concerns in the area. It is to these environmental concerns that we now turn.

## **2.7 CONFLICTING ENVIRONMENTALISMS**

The nature reserve of Peñas Blancas was officially established in 1991. It was one of the first laws passed by the newly elected president after the Sandinista revolution. Envisaging a possible reinvigoration of the agricultural frontier after the civil war, the president's administration declared several areas as nature reserves; "with one fell stroke of the pen" (Kaimowitz et al., 2003: 6), arguably with little consideration of the local situation (Barahona, 2001). In a similar top-down manner, Macizo de Peñas Blancas also became part of the United Nations Bosawás Biosphere Reserve in 1997.

The declaration of Peñas Blancas as part of these reserves did not immediately impact on the local population. For a long time, Peñas Blancas was not much more than what Ravnborg (2010) would call a 'paper park'; or as Kaimowitz et al. (2003: 3) described it for Bosawás:

A decree is not a park. Management plans generally have little to do with how things are managed. Just because a ministry or project has fancy brochures and a large office in the capital does not mean it influences daily life in the interior.

The enforcement of the protection of the Macizo de Peñas Blancas on the ground was indeed long absent, and the rules and boundaries of the nature unclear. However, the dynamics regarding environmental concerns and the nature reserve have recently become more visible and dynamic. In addition to a more general increase in environmental concerns in Nicaragua (Van Hecken et al., 2015a), the reinvigoration of environmental regulations around Peñas Blancas is strongly linked to the arrival of a new environmentalist actor in the area. Since the early 2000s, the *Centro de Entendimiento con la Naturaleza* (CEN or, oddly translated, the 'Centre for an understanding with Nature') bought large plots of land within the nature reserve.

After having made a map of part of the Peñas Blancas area during a participatory mapping exercise, indicating the land holdings, a community member took a step back to have a better look at the map and noted, in a combination of surprise and confirmation, "the main landowner is CEN" (22/04/2012). Indeed, CEN has a strong presence in the area and can be considered another type of 'production system', based on the accumulation of lands with the goal of conservation and the related educational and eco-touristic activities. This could be conceptualised as a 'green grab' in the terminology of Fairhead et al. (2012), referring to different forms of appropriation of nature.

The NGO's presence also has an effect which goes beyond the accumulation of land and the competition for particular projects and eco-touristic activities. It is also about how it manages (or not) to ally with

others to impose or spread their vision on the environment, its conservation and the role of human-nature interaction. What kind of environmentalism does this actor support, and how does this compare to and interact with that of other actors in the region?

One of the goals underlying the establishment of this private reserve, is to build an 'Ark of Noah'; a place which would make the dire consequences of climate change and pollution more bearable (member of CEN, 16/05/2014). At the same time, members of the NGO also refer to educational purposes, and consider themselves the 'water harvesters' of the region. The vision of CEN on environmental conservation is strict and very 'wilderness'-focused, emphasising the need for humans to become more conscious of their relationship with nature and its sanctity. In order to do so, CEN believes that education and strict regulation are key elements.

CEN's strict conservation focus aligns with what Hecht (2012, 2014) has termed the 'Ür nature' environmentalism, or the classic strict conservation approach.<sup>15</sup> In her account of different environmentalisms in Amazonia, Hecht depicts two other approaches. 'Neo-nature' environmentalism considers land to be "basically a substrate for silvo-industrial, agro-industrial or livestock production into what are essentially monocultures". This fits well with the stance of the coffee estates' efforts towards environmental considerations. Within the limits of the mono-culture approach, these estates' environmental discourse and practice is indeed mainly geared towards opportunities of certification. Additionally, as some invest in sophisticated water filters, provide social services to workers and have extents of land on which they can afford to maintain tracts of forests, they can avoid being the first to be targeted when it comes to environmental scapegoating by government authorities; hence adopting a prudential approach.

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<sup>15</sup> Especially with the reference to Noah's Ark and CEN's reference to the sanctity of the cascade in the Macizo de Peñas Blancas, there is also a possibility to link it to 'eco-messianism', as termed by Gudynas (1992: 114), which refers to an extreme belief environmentalist ideas and the central role for the 'eco-messiahs' in bringing about change.

The third environmentalism presented by Hecht is 'socio-environmentalism', which is in favour of the "inhabited forested or mosaic countryside", aiming for "socioecological sustainability in forest landscapes" (Hecht, 2012). This fits well with the discourses and perceptions of small- and medium-sized producers. They are caught in between the strict environmental regulations, the apparent impunity of larger producers and the general, guiding idea that small farmers are polluters. They bump against the imposed rules regarding the environment and fail to obtain support of certification and conservation projects. They consider the imposed rules as a strong burden for their development, most often with reference to the liberty of benefiting from timber and changing land uses. As one farmer put it "apparently, we are no longer the owner of our forest, as we cannot even get a cutting permit for a single tree." (03/06/2014). They perceive their productive system to be environmentally-friendly, especially when comparing to others ("the millionaires deforest, more than the poor ones" (farmer, 15/05/2014). This comparison also influences their motivation to conserve ("how are we going to conserve, when we know that multinationals are doing harm on other sites?" (farmer, 07/04/2013)). Feeling the pressure on their mode of life and production, one small-scale coffee farmer put it this way: "we are a species at risk of extinction."

These different views are not easy to reconcile and are hence contentious, in competition to forge alliances, gain authority and legitimacy at different levels. Indeed, "actors, whether individual or collective, cannot independently develop their preferred trajectories without having the conscious or unconscious support and cooperation of many other actors" (Bastiaensen et al., 2015b: 30).

CEN has become the most visible actor in the region with regards to natural resources. A number of key characteristics and practices provide them with a certain authority. Indeed, CEN has an important role in producing 'scientific' knowledge on nature in the region (e.g. regarding biodiversity); it presents itself as a very successful case of regenerating

and conserving a large part of the nature reserve and by living in the area they are perceived as being tightly linked with the local community. CEN was also one of the main driving forces behind the elaboration of a management plan for the nature reserve. This management plan (Castillo et al., 2011) was a collaboration between CEN, The Nature Conservancy (a big international conservation NGO) and the Nicaraguan Ministry of the Environment and Natural Resources (MARENA); although it was mainly CEN that held the pen. Through its high visibility, the NGO attracts (international) projects and funds to the area, which has also offered possibilities to forge alliances to enforce the newly established rules. The attraction of funds and projects provide them with strong leverage, as even the formal environmental platforms such as the *Comisión Ambiental Municipal* and local water committees are short on available funds. A local representative of MARENA, for instance, described the workings of water protection committees as follows: “[The members of the committee] have to wait until a project comes. Now they are not active. They are rangers, but they are not rangers” (09/04/2013). Through the NGO’s active physical and financial presence in local formal and informal decision-making platforms, it can thus take an active role in setting the agenda.

Although CEN might thus not always have the direct support or legitimation through its neighbours or surrounding community, the NGOs interaction with a financially-restricted government and with projects which seek local partners, provides the necessary support. Similarly, and independent of how they came to be, formal rules – such as the Peñas Blancas management plan – exert a certain pressure through their influence e.g. on the reduction of diversification possibilities and the fact that financial services in the area take it into account in their loan policy (Mendoza, 2014). In this sense, a farmer at a cooperative workshop in Peñas Blancas called the management plan a ‘machete’ (21/04/2012) in relation to how it reduces opportunities for producers in the broader area, which influences people’s room for manoeuvre in terms of livelihood options.

## 2.8 DOMINANT, ENTREPRENEURIAL DEVELOPMENT PATHWAY

The above historical account of Peñas Blancas depicted the co-existence between 'diversified', family-based farming and the predominantly entrepreneurial approach to coffee production. It also zoomed in on different human-nature epistemes and how different actors frame human-nature relations. This depicted a situation where the pressure of environmental concerns has been growing and where the related environmental concerns are strongly put on the agenda by one particular actor.

To summarise the situation today and its historical trajectory, I present a typology of production systems. On the basis of historical interviews and the technical and economic evaluation of different production sub-systems, similar cases are iteratively grouped into farming system typologies. These allow for their comparison in terms of performances, constraints and opportunities. The typologies are based on different variables reflecting aspects such as land holdings, type of labour force, family structure, history and technical-economic characteristics of production systems. As Lacoste et al. (2018: 186) indicate, "The relevance of defining variables and segregating criteria is not derived a priori from local expert knowledge or from the literature, but determined during an iterative, in-depth, multi-disciplinary investigation grounded in direct observations."

The use of typologies helps to visualise and discuss the co-existence and relationality between different types of producers, and how they relate to dominant/alternative development pathways and guiding ideas regarding nature. To this end, I further synthesised the nine production systems which emanated from the study of Arribard (2013) along the terminology of typologies in coffee regions which was adopted by Maldidier and Marchetti (1996). It intends to reflect on the differences between family-based, diversified farming systems and more entrepreneurial approaches to farming:

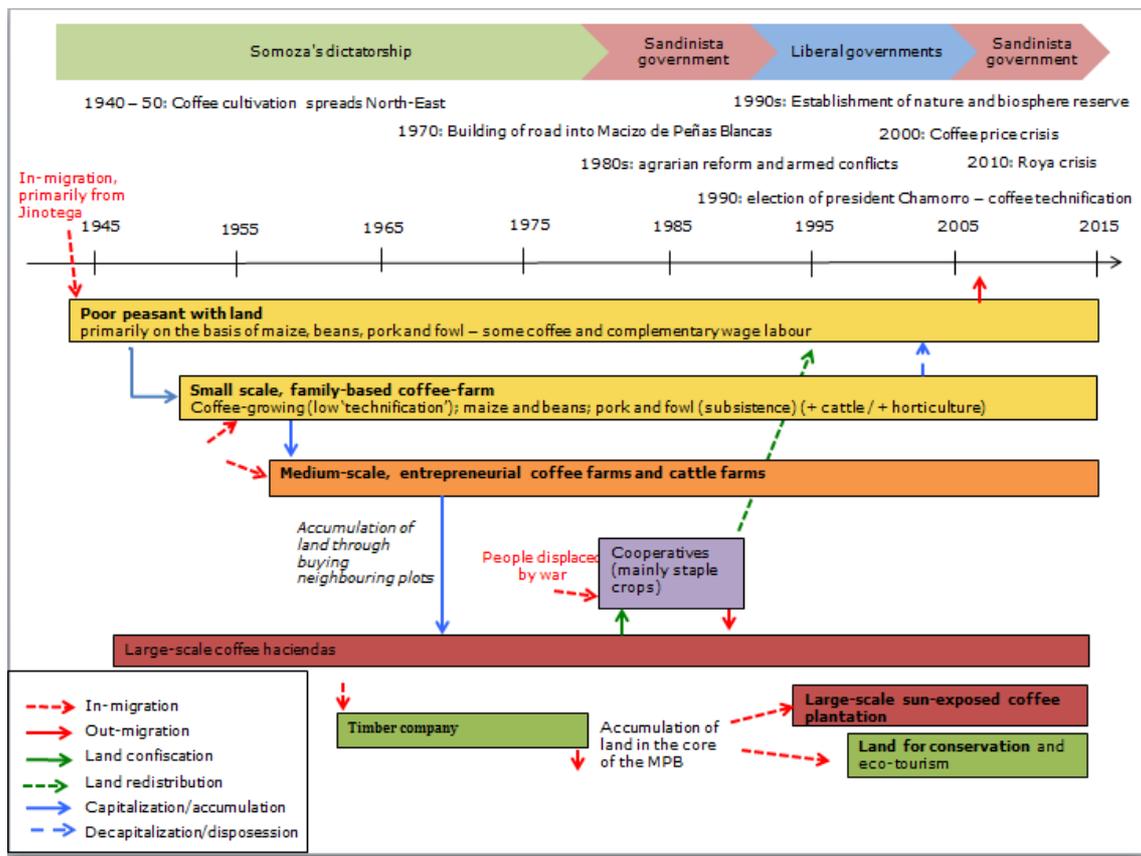
- i) **'Poor peasants with land'** hold approximately 5 ha of land. They rely exclusively on family labour, sometimes complementing agricultural revenues with remunerated work on other farms. They produce subsistence staple crops, keep fowl and pigs, and install small plots of coffee. The coffee plantation is managed with diversified shade and low use of agrochemicals, and the farmers rely mostly on 'forward sales' to the main coffee exporters and middlemen to finance this production.
- ii) **'Small-scale coffee farmers'** hold areas between 3 and 30 ha and employ temporary workers during harvest. They have better, yet limited, access to credit. Like the 'poor peasants with land', they sell their coffee mostly to intermediaries or to the main export companies in the region; although some are part of cooperatives, providing them with access to more rewarding markets. In lower-lying areas, some of these farmers also engage in small-scale cattle raising and within the group of small-scale coffee farmers there is a differentiation as to the level of diversification in economic activities, some including horticulture. In light of cash flow, food security and risk management, the activities of producing maize and beans, keeping fowl and pigs and selling bananas and fruit remain very important activities.
- iii) **'Medium-scale coffee farmers'** own between 30 and 100 ha and they complement family labour with the employment of both temporary and permanent workers. These farmers tend devote most of their land to coffee production, though some, particularly those operating at lower altitudes, engage in medium-scale cattle rearing and milk production. With better access to capital and with the constraint of waged labour, these farmers increase the focus on the productivity of the coffee plantations and use larger amounts of agrochemicals and other management techniques such as shade regulation. The coffee is still mostly sold to the large agro-exporters although they sometimes also engage in the first stages of coffee processing to obtain better prices.

- iv) The '**coffee estates**' are the largest actors in the region, with holdings measuring up to 700 ha. Their approach is based on an entrepreneurial model of production and they often operate as part of a larger, more integrated enterprise that is also involved in the processing and trade stages of the value chain, selling the coffee directly to international clients. They work with the newest technologies in terms of coffee varieties and agrochemical management for the highest possible productivity of the plants.

The majority of farmers in the region belong to the first two groups, with more than half of the farms measuring less than 7 ha (Gómez et al., 2011). The 10% largest producers own over half the available arable land. While the proposed typology is inevitably a simplification and a historical snapshot, it allows us to reflect on the territorial development pathway, synthesising the above-mentioned historical and current dynamics in a sufficiently diversified way. Hence, the privileged position of the larger estates, the concentration of farm ownership, the economic vulnerability of the smaller farmers, and the general trend towards a myopic, mono-cultural approach to coffee production may be important dynamics within the currently dominant development pathway.

The description of the historical dynamics in the region and the different typologies are brought together in the following figure.

**Figure 9: Overview of producer typologies/trajectories and historical context**



Source: adapted from Arribard (2013)

As I started the above historical description by framing the evolution of Peñas Blancas in the context of the 'agricultural frontier– the red arrows represent in- and out-migration in the region. This emphasises the relationality of this region with dynamics in other regions of the country. Especially the 'out-migrating' arrow of poor peasants with land, for instance, reminds us of the above-mentioned domino-migration effect; when farmers leave to the east in search of new opportunities.

The blue arrows depict the processes of capitalisation and de-capitalisation. The characteristic trajectory in the region would be the subsistence farmer who incrementally capitalises on coffee production and cattle raising to become a small-scale (family) farmer and to further expand its activities. As discussed in the historical overview, however, multiple mechanisms are at play which distribute opportunities and constraints. The differential access to markets and credits for coffee, for

instance, impacts on the added value and the possible investments in the productive system; which according to the guiding ideas and main networks of support should be the capital-intensive high-yielding form of production. The lack of support for the diversified activities and a focus on the 'modern' approach to coffee production are indeed further constraining particular livelihoods. The difficulties for smaller farmers to consolidate their holdings are further exacerbated at times of crises. This can also offer opportunities for larger farmers to expand their holdings, at the expense of the smaller farmers who have to engage in distress sales (which, in a victim-blaming discourse is translated into the idea that small farmers are not attached to their land). Altogether these differential opportunities and constraints –which relate to social networks, guiding ideas and alliances of support and evolved over the historical, power-laden institutional bricolage– shape the particular development processes in the region.

### **3. RESISTANCE AND AVENUES FOR CHANGE**

The description of the power-laden emergence of the dominant development pathway indicated evolutions in terms of the concentration of land and the vulnerable position of smaller farmers in the face of coffee crises. However, this does not mean that the related entrepreneurial approach and typical livelihood trajectories do not appeal to smaller farmers. Indeed, smaller farmers aim to learn from and mimic certain aspects of the larger, 'successful' farmers as it seems to offer the most promising option out of poverty. Also, the idea that larger farmers are allowed to deforest –or at least appear to be less constrained by the increasingly strict conservation rules– inspires the aspiration to further grow and specialise in a particular type of coffee production or cattle raising; as a way out of the 'environmental persecution'. Such influential ideas historically shape what the 'moral landscape' is (Setten, 2004). The deprivation of (formal) political representation, powerful social relations and economic opportunities potentially deprive the excluded from their 'capacity to aspire' (Appadurai, 2004, Bastiaensen et al., 2015b). It can

lead to the classification of processes of exclusion and exploitation to be termed as “natural” (interview with a farmer, 03/06/2014); as being the way things are. That is precisely the idea of institutionalised, guiding ideas; or as Cleaver says it:

[f]or arrangements formed through bricolage to become institutionalised, to be more than diverse and ad hoc practices, they must seem normal to the people who practice them.

There is hence a tendency towards conformity and an induced rationality to ride the current wave; which also relates to a perceived lack of alternatives. However, there is also an undercurrent of resistance and possibilities to explore avenues of change.

In line with development pathways and complexity thinking, presenting avenues for alternatives or change is certainly not a matter of prescription or prediction. They can and will only emerge out of new correlations of power, and related new institutional articulations that allow these alternatives to crystallise and develop. This, however, does not preclude the possibility to describe some possible alternatives –either already marginally present in the current development pathway or wholly imaginative (Leach et al., 2010)- and to learn from instances of contestation (Sparke, 2008).

One of the ways in which the dominant development pathway can be contested, is through the productive practices themselves. Guiding ideas, both locally and beyond, tend to refer to the larger, modern farmers as the successful ones; and the small-scale, diversified farmer as the ones in want and need of more ‘modern’ practices. To counter the guiding idea of the successful modernisation narrative and to open spaces for alternatives, the following quote by McCook (2017: 15) is very enlightening:

Many smallholders [in Brazil] continued to cultivate coffee as part of a diversified agroforestry model, in which coffee was just one element of a much more complex agroecosystem. The farmers’ decision not to adopt “improved” varieties or agricultural chemicals should not be interpreted as blanket conservatism or resistance to innovation, but rather as an alternate farming strategy. Although systems like this are often described as being “traditional,” this understates the continuing innovation and experimentation in this kind of productive ecosystem.

Indeed, diversified farmers have reasons to value their practices in and of themselves and not only as a stepping stone towards a more 'modern' approach to coffee farming. For instance because this production system better relates to the socio-environmental perception on human-nature interactions or for the intrinsic logic of being self-sufficient with a wider range of agricultural products in a diversified production system. To recognise it as an 'alternate farming strategy' offers avenues for a possible alternative pathway where further opportunities are provided to better recognise the merits of such a farming strategy and its own state-of-the-art character.

More generally, in the discussion of the different producer typologies in the historical account, I discussed the more diversified production system of smaller producers as a mechanism to reduce vulnerability to different crises and insecurities (Romero et al., 2016, Bacon et al., 2017, Gliessman, 2018). Nevertheless, the formal natural resource management rules (which have been partly crafted and activated by the strong environmentalist actor) limit the opportunities for diversification. For instance, in some areas, land use changes are not permitted, the use of agrochemicals is prohibited and trees cannot be felled without a (difficult to obtain and politically coloured) permit. This is where other accounts of resistance or 'disobedience' can be seen. For instance, farmers near CEN openly started growing vegetables in areas where it is not permitted. Additionally, and in reaction to the conservationist eco-tourism of the NGO, the neighbouring cooperative is focusing on tourism which is called *turismo en finca* or 'farm-based tourism', where they want to stress the co-existence of nature and agricultural production, in a socio-biological corridor. These are again versions of alternate farming strategies, but with a particular touch of resistance (or resilience, as a form of resistance (Sparke, 2008)) in light of the increasingly conservationist pressure.

Beyond the alternate productive practices, other forms of contestation are also present in the region. In the direct vicinity of the CEN, discontent arises not only because of the aforementioned imposition of laws and the

accumulation of land in the nature reserve. Indeed, one of the elements which spurs counter-reaction is the perception that 'the community' is being (mis)used to attract funding. As one farmer said it in an interview:

I do not see much of what happens with the projects that go to them, they do it all internally. On the sign it says that they work with the community, but I do not see this in practice.  
(interview with farmer, 16/05/2014)

One of the attractive features of CEN, in the eyes of external projects and funders, is indeed its embeddedness in the nature reserve and the fact that it is supposedly part of the community. At first, there were indeed good relations; with CEN even being part of the neighbouring cooperative. Overall, daily encounters between the NGO and the neighbouring members of the community are non-conflictive. "It's better to have them as friends than as enemies" –as one young farmer said (18/12/2012)– in order to leave open the possibility and expectation for future alliances or benefits. Also, some members of the community do perceive benefits, when work is offered as a tour guide for the NGO, for instance. This 'public transcript' is at times contested through infrapolitics (Scott, 1990), though. An interesting opening quote in Scott (1990: v) which helps to 'visualise' the idea of such hidden transcripts: "When the great lord passes, the wise peasant bows deeply and silently farts" (as cited by Divon (2018)). In the research region, this has sporadically taken forms of arson, vandalism and theft aimed at CEN. There are also 'lighter' encounters, such as through humour and gossip. For instance, referring to the leader of the NGO as the 'guru' (member of La Dalia municipal council, 8/05/2012), or the 'doctor in *I-don't-know-what* who comes to ruin our lives' (interview with farmer, 2/6/2014). From the side of CEN, too, the discourse can at times be more conflictive. At some point, in a meeting of the 'Mesa del Agua', the leader of CEN pointed at me and said

You talked to me about harmony with the community. I don't want harmony. I'm rather in a mood to fight more. The thing is, [the farmers/the community] do not take the impact [of their activities] into account (5/02/2015).

Both in the account of the relations between 'the community' and CEN and between the different productive practices, it becomes apparent that these

are dynamic and sometimes ambiguous relations. Petit et al. (2018), for instance, refer to “the porosity of the peasant and entrepreneurial worlds” to recognise the formation of hybrid forms of practice. More generally, when exploring the development pathways and reflecting on possible alternatives it is important to note how there is neither a singular unit/relation of power nor a single topic of contestation. The construction of entities such as the typology and the guiding ideas on environment helps to understand some of the current dynamics and to highlight heterogeneity within communities and rural territories (Hall et al., 2014). It also helps to explore (political) alliances in light of particular goals. Yet particular positions, aspirations and the definition of these goals are dynamic. Relations of resistance and collaboration can evolve over space, time, topic and interlocutor (Cleaver, 2012). This makes it particularly difficult to grasp alternatives and to make value judgements over what would be more desirable pathways. Alternative pathways can be difficult to imagine, because they are currently closed or impeded by the incumbent interests and ideas. This is where open negotiation is key, and this is why there needs to be support to open up new avenues. In light hereof, the following quote captures well the dual challenge of trying to understand the incumbent processes of exclusion and looking for ways to support alternatives:

For those who opt to support different vulnerable and excluded groups, the challenge consists of two complementary issues: 1) understand the production of exclusion and stripping away of capabilities (Casolo, 2011), and 2) respond to nascent creative and effective alliances that allow actors to discover for themselves the most beneficial changes in their life trajectories, increase their social negotiation capacity (including with the development agencies) and thus generate conditions that allow them to increase their agency and generate a more satisfactory life. (Bastiaensen et al., 2015b)

## **4. CONCLUSION**

The analysis of the emergence of the development pathways shows some of the mechanisms behind the socio-economic differentiation of different livelihoods and the existing tensions at the level of environmental

concerns and degradation. It highlighted differential constraints at the level of credit, access to markets, land titling and coping strategies in light of (coffee) crises. In a more 'reductionist' view, the above processes could be seen as separate and primarily individual constraints. A project might then suggest to lift one of these constraints –such as access to certification, or the provision of (green) credit. The point of looking at the evolution and emergence of these development pathways is however to uncover the interrelatedness of a number of embedded processes of exclusion. The outcome is more than the sum of the individual constraints and leads to a particular distribution in opportunities and challenges; costs and benefits. The pathways approach informs us about how today's development pathway came to be, providing information about underlying relations and mechanisms. These are the dynamics with which any development intervention will interact in an inevitably uncertain and political way –through the choice to support a specific type of actor, action or idea. Indeed, even if a particular policy, practice or intervention is not intended or pretending to be green or social, it will enter into the political arenas and "tug on the strands" of this social-ecological system (Robbins, 2004). Especially if an intervention is expected to materialise into social or environmental transformation, there's a need to realise that there is no straightforward way to engage with these contentious issues. This, we will see, has consequences also for the workings of projects like Proyecto CAMBio.

A change of direction of the currently dominant development pathway requires a change in the correlation of forces; a shift in favour of (collective) actions or coalitions of relevant actors to support alternative pathways. It is thus key to try to discern how fortune and misfortune are distributed, to be able to debate the adequacy of different models in light of different development objectives; which in turn have to be deliberated on. Questions such as 'who values what?' and 'what alternative pathways are possible?' are hence key elements of any reflection on how to engage with issues of sustainable rural development.

When taking a particular social-political commitment in support of the people who “for one reason or another, almost systematically end up at the losing end of the multiple bargains ... around available resources and opportunities” (Bastiaensen et al., 2005), then the analysis of this case of Peñas Blancas offers possible entry-points. It points to the need for strategies to strengthen the economic viability and stability of smaller producers in the face of growing environmental concerns and in reaction to an exclusionary yield-oriented entrepreneurial approach to coffee production. Indeed, the economic viability of small-scale farming in the area is under threat. The coffee sector context is skewed towards the large-scale entrepreneurial model; and small-scale farmers remain in precarious positions at the eve and wake of price-, credit- and sanitary coffee crises. Furthermore, their room for manoeuvre and participation – including at the level of environmental regulation- appears to be reduced and opportunities are hoarded by more visible and vocal agents. In light hereof, a careful reflection is needed as to how diversified farming activities can be further supported and how current processes of exclusion can be exposed and contested; stressing that the biological corridor is indeed a ‘social-ecological corridor’.



## CHAPTER 6

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### A POLITICAL ECOLOGY APPROACH TO PROYECTO CAMBIO IN PEÑAS BLANCAS

Note: This chapter is strongly inspired by a conference paper written for and presented at the workshop Critical Perspectives on the Financialisation of Nature in Brighton (May 2015) and the Fourth European Research Conference on Microfinance in Geneva (June 2015) (Huybrechs et al., 2015c). This chapter also draws in part on Huybrechs (2014), Bastiaensen et al. (2015a), Huybrechs et al. (2016), and Bastiaensen et al. (*in review*). I acknowledge the contributions of the anonymous reviewers of these publications and want to thank the participants of the workshops and conferences where this paper was presented. Special thanks to Johan Bastiaensen, Milagros Romero and Gert Van Hecken for their suggestions and contributions.

## 1. INTRODUCTION

After the discussion of the processes of agrarian change and environmental governance in the Macizo de Peñas Blancas in chapter 5, the present chapter delves more deeply into the workings of Proyecto CAMBio. More particularly, I build on the leads regarding the importance of the livelihood pathways and the question of what the project's environmental incentives actually rewarded, to assess the ways in which the project related hereto in the particular context of Peñas Blancas.

Chapter 5 depicted a dominant coffee pathway, in which larger coffee farmers were found to have better access to added value for their coffee production, better access to markets, certification and credits. Considering the environmental concerns that Proyecto CAMBio tried to address, it is important to emphasise the finding that smaller farmers tend to cultivate coffee with denser and more diversified shade cover, and use fewer agrochemicals (Cuadra Mayorga and Alvarado Narváez, 2011, Notaro, 2014). They also usually intend to diversify their economic activities as a risk-coping strategy for their vulnerability to coffee crises, such as price fluctuations, sanitary crises and climatic stresses.

In terms of sanitary crises, for instance, many farmers in the region have been strongly affected by an outbreak of *roya* or coffee leaf rust since 2011 (Avelino and Rivas, 2013, Mendoza, 2013). Such crises are a recurring threat for coffee farmers in Nicaragua (Bacon et al., 2017) and they can force smaller producers to reduce their coffee areas; or even to sell their holding altogether. Conversely, such crises also create opportunities for the larger farmers to acquire additional land at bargain prices, leading to an even greater concentration of land holdings (Gómez et al., 2011a). This may, in turn, result in landless farmers moving to the agricultural frontier in search of new farmland, a process previously observed in other regions in Nicaragua (Polvorosa, 2015, Van Hecken et al., 2017); which was the earlier-mentioned 'domino effect' and which is part of the systemic relation between different geographical and socio-

institutional scales. Hence, the privileged position of the larger estates, the economic vulnerability of the smaller farmers, and the general trend towards production methods involving more agrochemicals and less shade –as a merely technical response to the aforementioned crises (Bacon et al., 2017, Mendoza, 2013, Westphal, 2008)– are important dynamics within the currently dominant development pathway.

Another evolution which is relevant for the study of Proyecto CAMBio's relation to environmental governance is the increasingly strong presence of and stand-off between the worldviews of conservationists, policy-makers and farmers in the region. The declaration of the area as a nature or biosphere reserve attracted attention from external funds and actors. One of these actors is an NGO which bought land in the Macizo de Peñas Blancas reserve and is acting as a major spokesperson/reference for the area. In this capacity it attracts funds, projects and administrative control regarding a 'conservationist' view on nature, mostly with a focus on water. Even though conservationist actors are not present as 'producers', they influence the agrarian development in the area. The 'scientific' knowledge, the projects and the financial means that this actor brings to the region, gives it access to authority and opportunities to promote its strict focus on conservation.

From a political ecology perspective, the following analysis traces Proyecto CAMBio's intervention's entwinement with the complex social-ecological system and local narratives of environmental governance and change. Drawing on the development pathways approach, I critically assess the consequences of the project's individualised focus on producers; its implicit targeting of more established medium-sized producers; its rather uncritical promotion of a particular coffee production model; and the *a priori* focus on biodiversity as the key environmental concern. As such, the analysis mainly focuses on the institutional processes and the political struggles over meaning and practice. These tensions and potential trade-offs are typically left out of more technical-managerial approaches to sustainable development. However –as I have conceptually explored in chapters 1 and 2, and as I will elaborate empirically for the case of

Proyecto CAMBio– such interventions will inevitably encounter them (Leach et al., 2010, Rankin, 2008, Li, 2007a). The intent of the analysis is not only to critically assess the apparent implications of the project and its underlying rationale, but also to provide avenues for alternative approaches. This entails a call for a more holistic territorial perspective that is conducive to thinking about the interactive socio-technical dynamics and ensuing opportunities and constraints for different producer types. Such strategic reflection is both inevitable and political, as it contributes to the opening and closing of dominant and alternative development pathways.

## 2. PROMOTING THE DOMINANT PRODUCTION MODE

The analysis of the survey results in Chapter 4 found that the non-Proyecto CAMBio credits in the sample appeared to engage proportionally more with farmers who made the switch from staple crops to coffee in the surveyed period; and in this way had a higher influence on the evolution in 'environmental performance' as measured by the Biodiversity Index. Rather than taking a stance on whether one credit or the other is more environmentally-friendly in and of itself, or to look for a particular and unequivocal attribution to a particular intervention for the measured evolutions, this finding called for a further reflection on who is included in the project and who is not; and what type of practices and livelihood trajectories are being supported.

Triggered by the analysis of the survey in terms of the importance of the change in main economic activity, follow-up interviews on the survey focused on the farmers' livelihood trajectories and this 'jump' from being economically dependent primarily on staple crops, to having coffee as main economic activity. Interviewees generally described it as follows:

The difficult part is to plant the first *manzana*<sup>16</sup> of coffee, through your own effort [*esfuerzo propio*, i.e. using your own means and not being supported by a credit]. It is difficult but it is possible ... And once you have these first *manzanas*, you can get

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<sup>16</sup> 1 manzana = 0.7 hectare

access to the money and go forward (coffee farmer, project participant 29/05/2014).

There's no credit until there's harvest. If you say you already produce coffee, they take you seriously. But until then, it's a three year wait until your coffee is productive (coffee farmer, FDL client, 30/05/2014).

In other words, in order to be eligible for receiving credit support for coffee, you first need coffee. For FDL, coffee is indeed the main '*rubro pagador*' in the region (project officer Nitlapan, 16/12/2014); the crop which is most highly valued in terms of assessing the credit-worthiness. This is reflected in the 90% dominance of coffee in FDL's La Dalia portfolio (Romero et al., 2016). Hence, it becomes the main lens with which credit officials look at (potential) clients.

With their relatively low interest rate and their relatively long loan term (up to 3 years), Proyecto CAMBio credits were particularly well suited for the installation of new coffee plots or the restoration of old ones ("we sell new plantations", as the manager of a local branch of FDL phrased it (09/05/2012)). Indeed, this was the main activity which was supported with Proyecto CAMBio credits and its related technical assistance. More particularly, Nitlapan-UCA promoted these renovations with a strong preference for the varietal *catimor*. Especially after the *roya* crisis of 2011 this varietal was massively adopted, because of the varietal's alleged resistance to the fungus. Furthermore, it is a high-yielding plant; provided it is planted in higher densities and with a high use of fertilisers (guaranteeing at least two fertilisations and two leaf protection cycles). It is also more suitable for higher temperatures and has less requirements of shading compared to older varietals such as *borbón* and *maragojype*. In terms of taste, or cupping quality, *catimor* is however often referred to as producing a coffee of lower quality (Hocdé, 2010). Its difference in taste with other varietals has been lyrically described as follows: "the clean citric lemon notes of the estate-grown caturra, the winey aftertaste of a bourbon and the disappointing bitter-sour aftertaste of the catimor" (Boot, 2006: 1). Because of the particular characteristics of this varietal in terms of technical management and quality, some might question its relation to

sustainable agroforestry and biodiversity. Indicative hereof is the fact that the Association of Organic Producers of Turrialba in Costa Rica has a list of five standards in terms of 'care of biodiversity', which includes the rule that "using the *catimor* coffee variety is not permitted for new planting or for replanting" (Blackman and Naranjo, 2012: 5).

The renewal of coffee plantations as promoted by FDL-Nitlapan thus completely fits the type of input-intensive monoculture approach which characterises the dominant development pathway of this region. As such, they become yet another actor in support of producing high volumes of undifferentiated coffee –as compared to specialty coffee (Borrella et al., 2015, Mendoza, 2017)– in (implicit) alliance with local (chemical) input suppliers, mainstream processing-exporting companies and (larger) entrepreneurial coffee plantations. An analysis of the promotion of these practices in light of the development pathways points to a number of social and ecological consequences.

The promotion of a particular approach to coffee production, in combination with the almost exclusive focus on a single crop for the majority of the loan portfolio, implicitly generates exclusion from significant outside support for families of smaller peasant producers. It can even close down the possibility of obtaining credit altogether, or it can have effects of 'adverse inclusion' in this mode of coffee production. Indeed, the latter is the case for farmers who are attracted to the idea of high-yielding coffee production and *roya*-free plantations, but for whom this production mode is in conflict with other motivations and constraints.

This finding is further corroborated as I assess farmers' perceptions of the provided technical assistance. The interviews and survey with Proyecto CAMBio participants –and other farmers who had past or present experience with TA– indicated that they valued the TA in response to the devastating *roya* crisis, in particular the choice for the more resistant *catimor* varietal. It is indeed important to understand that in light of the *roya* crisis and in light of the guiding ideas of what constitutes a successful

farmer and what constitutes the 'right way' of dealing with the sanitary crisis, these new varieties can be very appealing.

However, farmers often added that they found the technical recommendations for fertiliser and pesticide use to be unattainable. In several interviews, the TA was portrayed as the standard provision of a list of products that need to be bought ("a list of silly things", according to a Proyecto CAMBio participant, 30/05/2014), but for which there is no money or which the farmer does not deem necessary or desirable.

[They] only come by to say what you should theoretically use, but on the farm it is practice, not theory. ... If there's no money, it cannot be done (FDL client, 30/05/2014).

The technician can come, but then he gives me a large piece of paper with his recommendations. If I do not have the necessary funds to buy it, I cannot do anything (farmer at a workshop on coffee cooperatives, 23/03/2014)

In this encounter between technical assistants and clients, there could be opportunities for dialogue and tailored support. This depends on the room for experimentation, and the room for questioning the standard approach. As it was practiced in the project, however, it most often came across as what Franzel et al. (2015: 2) describe as "an arm of a top-down technology transfer model, in which communication is one-way, from extension staff to farmer-trainers to farmers" (as cited in Taylor and Bhasme (2018)).

In practice, when producers are unable or unwilling to implement all the technician's recommendations and therefore do not obtain the expected results, it is not interpreted as a failure of the model to actually help them to improve their production or reduce their vulnerability. Instead, it tends to be seen as a failure caused by alternative perceptions, understood as a cultural resistance of the families to change and progress, or sometimes outright laziness. As one technical assistant phrased it, referring to the non-adoption of technical suggestions: "What happens is not the technicians fault" (10/07/2013). This is very much in line with what Rodriguez et al. (2009) mention in their analysis of the perception of

extension workers regarding the adoption of sustainable agriculture practice: “[r]eluctance to change is frequently mentioned ... but more as a way of blaming farmers for nonadoption than explaining the often tangible reasons for their behaviors.” Some technicians do recognise the variegated nature of farmers’ motivations and needs, but find that the time constraints of the visits do not allow them to go beyond the standard list of suggestions.

Another element which may influence the relationship between the client and technical assistants, is the client’s perception of the positionality of the technical assistant. In a case study on a pilot project of an MFI providing technical assistance for environmental risk reduction, Allet (2017: 77) “observed how some microenterprise clients ignored the advice provided by loan officers, because they did not always perceive loan officers as legitimate ‘messengers’ of pro-environmental practices.” In the case of TA of Nitlapan, I also perceived how –in the eyes of the farmers– the credit officials and technicians can appear to be ‘interchangeable’. They appear to represent the same organisation and are both *cobradores* or ‘collectors’; with technicians being there to check, not to help.

What if the technician who is checking the plants is thinking ‘this man has a big problem, he will not be able to pay’ ... They only come to value if there will be harvest. And they only come for a few *manzanas*, see which credit you want and what you will have to do for it. (project participant, 29/05/2014)

[The technical assistants] don’t come often here. They come at the moments where the works have to be done or at the moment where they come and pick up the money (project participant 04/06/2014)

When farmers receive a relatively expensive ‘prescription’ (in terms of agrochemical inputs) which has unclear relevance to the farm’s agro-ecological characteristics and the farmer’s needs, the farmer can indeed decide not to apply the recommendations. Small-scale producers take several factors into account in their productive system, such as food security, availability of family labour force and the timing of cash flow. These variegated factors are at the core of diversification strategies - featuring cocoa (where possible), plantains, fruits, staples and/or cattle.

They indicate that the adoption of a given technology may not depend exclusively on the maximum productivity or profitability of a particular crop.

The understanding of these factors requires more dialogue than what has so far been observed in the TA and the policy prescription of credits for higher yielding coffee; a dialogue which integrates “diverse knowledges and ways of knowing” (Anderson et al. (2015: 3) as cited in Gliessman (2018)). It requires a better match to the context-specific socio-institutional dynamics, while avoiding the exclusive adoption of a standard solution. This technical assistance and the promoted technical approach indeed became the standard approach of FDL, as they made technical assistance compulsory for all clients who received coffee-related loans (Romero et al., 2016) on the basis of a positive evaluation of its role in higher yields and in the containment of *roya* (Marin et al., 2015).

### **3. STANDARD SOLUTIONS, UNAVOIDABLE UNCERTAINTY**

In the previous section it became apparent that CAMBio was somehow recuperated as a response mechanism to *roya* through the renovation of coffee plantations with the resistant *catimor* varietal. Regardless of how attractive the new coffee production approach may seem (to both the MFI and its clients) in light of the sanitary crisis, how sustainable is this widespread shift to a new coffee varietal? The increased use of agro-fertilisers and new varieties offers promises of higher yields, but in light of the intrinsic uncertainty related to sanitary crises, price fluctuations and climatic events, an increasingly input-intensive mono-culture approach could be a dangerous bet (Rasmussen et al., 2018). In this sense, this quote by McCook (2017: 14) about coffee modernisation in Brazil in the 70s could provide a valuable warning:

[W]hile in the short term, technification did significantly boost production, in the longer term it made coffee farms more vulnerable to economic and ecological shocks.

Recent reports of coffee leaf rust affecting the supposedly more resistant *catimor* plantations are alarming (Martinez, 2017). This adds up to a number of other diseases by which these plants remain plagued, such as leaf spot (*Mycena citricolor*) or blackrot (*Pellicularia koleroga*), especially seen as particular responses to some diseases, such as reducing shade in response to *roya*, can increase problems with other diseases (Heinze, 2013, Staver et al., 2001). In addition to the remaining vulnerability to pests, the lesser cupping quality of the *catimor* varietal arguably jeopardises opportunities to obtaining better, differentiated coffee prices (Boot, 2006: 4).

Regardless of sanitary crises and price issues, the future of coffee production in certain (lower) areas is increasingly questioned altogether because of an expected increase in temperature related to climate change (Läderach et al., 2017, Läderach et al., 2012); hence the need to consider a more integrated and diverse approach (Bacon et al., 2017). The initial response to the *roya* crisis –whether or not in the context of a ‘green’ microfinance product– might thus represent a classical example of the “‘clos[ing] down’ too rapidly to a small set of decision alternatives by reconfiguring uncertainty into more manageable, but inappropriately narrow, calculations of risk and cost-benefit equations” (Wise et al., 2014: 327). In light of a particular sanitary crisis and in light of the main cash crop of the credit portfolio, the promotion of a change of varietal may indeed seem like a sensible solution, yet the analysis shows that other uncertainties, processes and perspectives are to be taken into account. It hence also makes an excellent case for the need to ‘open up’ policy processes to also look at the preferred/de facto practices of smaller subsistence and coffee farmers, which gain relevance in this context.

With increasing concerns over low altitude coffee, FDL and Nitlapan-UCA are increasingly conscious of the risks that an exclusive dependence on coffee engenders for their clients, their social mission and their own financial sustainability. Currently, FDL is therefore opening up space in its portfolio for diversification strategies and is trying to discern changes needed in terms of financial products and practices. For instance, cocoa

production now receives increasing attention as an alternative adaptation strategy. However, there is a risk of falling into the trap of thinking about this strategy with the same monoculture logic, pretending that cocoa will become the coffee substitute in areas where it will not be possible to continue producing coffee. Instead, it could be wiser to 'open up' perspectives for different views on 'pathways to sustainability' which would go beyond thinking about a single *rubro pagador* and an individualised focus on production systems.

At the beginning of this section, I noted how Proyecto CAMBIO received a particular meaning in terms of its support to combatting *roya*. I then indicated that there are doubts about whether this is an appropriate 'adaptation' strategy. Yet what does it mean in terms of its focus on biodiversity? What particular practices does it reward and how does this relate to the local perceptions of environment? I turn to these questions in the following section.

#### **4. THE MALLEABLE OBJECTIVE OF BIODIVERSITY**

The key stated objective of the project was to "secure *global* biodiversity benefits" (GEF, 2005) (emphasis added). To 'translate' the objective of the project to the field, FDL discursively tended to refer to 'the environment' more broadly and named the credit 'the green credit'; or sometimes recycled the name of their previous green product '*paquete verde*'. Depending on the context or interlocutor, the main environmental goal was sometimes further re-packaged. For instance, a report on Proyecto CAMBIO in Nitlapan-UCA talks about adaptation to climate change (Mendoza et al., 2012). Adaptation to climate change also became a key message when Proyecto CAMBIO was promoted among farmers in the dry North-Western part of Nicaragua. The project promotor of that region believed this framing to be most adequate to attract the clients' interest and that "it could be of interest to the mayors" (Nitlapan-UCA team meeting Chinandega, 01/12/2013). Thus, in addition to the practical and material re-orientation of the credit targeting to more credit-worthy and long-term clients in line with financial considerations ("the idea of

connectivity between farms was lost at the time of the credit crisis", Nitlapan staff 12/01/2013; see also Chapter 4) and the loss of the complexity of 'biodiversity' in its translation into workable environmental indicators (Büscher, 2013, Crane et al., 2016), the project was further tailored to the discourses and interests of participating farmers, the local government and the own priorities of Nitlapan-UCA. A similar thing happened in the research region, where –as explored above– the focus was increasingly put on the renovation of coffee plantations in light of the *roya* crisis.

This 'bricolage' of meanings becomes important as they entwine with the explicitly rewarding character of the project, as it entail a particular valuation in terms of what and who to support. When colleagues and I discussed this notion of shifting objectives regarding Payments for Ecosystem Services (Van Hecken et al., 2015a: 64), we pointed to the way in which it can interact with 'accepted' and 'desirable' practices and how it provides opportunities for 'surfaces of engagement':

As argued by Cleaver (2002) and Long (2001), people always possess some agency in devising their own project strategies. Hence, the local adoption of PES discourses and initiatives might also indicate that local actors value at least certain aspects of PES. A growing body of critical literature acknowledges how PES can provide opportunities for revaluing marginalised countryside and may create useful 'surfaces of engagement' (McAfee and Shapiro, 2010, Fletcher and Breitling, 2012, Higgins et al., 2012, McElwee, 2012). In the Nicaraguan rural context, for example, the compensation logic underlying PES might transmit the important message to farmers that environmental protection is highly valued by outsiders; it might signal that the hard conservation-development trade-offs they face are explicitly recognised as a shared societal responsibility (see also Corbera (2015)). This notion could induce change in local perceptions, values and norms regarding 'accepted' and 'desirable' agricultural practices, and break away from strictly conservationist approaches, which are largely insensitive to the societal dependence of rural farmers on resource-extractive activities (Wells and Brandon, 1992). The increasing local adoption of PES discourses might then be framed within a context of new strategies of peasant resistance.

In this sense, the valuation of environmentally-friendly on-farm practices could at first seem to provide avenues for supporting the 'socio-environmental' discourse of small- and medium-sized farmers. It consists

of a narrative which emphasises the environmental efforts of farmers and which is in favour of the “mosaic countryside” (Hecht, 2012). This narrative contrasts with the more strict conservation approach surrounding the nature reserve; the vilification and sanctioning of smaller producers; and the apparent ‘untouchable’ status of larger haciendas. This has also been appreciated by some of the interviewed participants. One farmer said “during the technical assistance, it was as if finally someone was saying that what I was doing was good.” In my field notes I also noted the following observation about an interview with a participant (03/06/2014): *he talked about the project with a big smile, and a level of pride*. Yet the implementation of CAMBio – including the high-profile public distribution of the bio-award to relatively more established and ‘modern’ coffee farmers– arguably simultaneously contributes to legitimising the current dominant pathway of coffee development, with its particular social and environmental outcomes. In its support of more intensified agricultural practices, it appears to be more in line with the ‘neo-nature’ environmentalism which considers land to be “basically a substrate for silvo-industrial, agro-industrial or livestock production into what are essentially monocultures” (Hecht, 2012: 4), as it supports and rewards input-intensive and yield-optimising (sun-exposed) coffee technologies as being ecologically friendly, while implicitly and probably unintentionally denying support for an alternative, diversified and arguably less input-dependent production systems. Recall, in this sense, the questionable link between the provided rewards and the ‘environmental performance’ which became apparent in the survey results (see chapter 4), which unveiled an average (albeit statistically insignificant) tendency to give higher rewards to producers that decreased their environmental value compared to the ones that instead improved it (as measured by the BI of the farm and the amount of trees planted for the project).

Inasmuch as the green package of credits, technical assistance and bio-award was absorbed by the guiding idea of intensified coffee production, Proyecto CAMBio also interacts with different, locally embedded institutions and ideas regarding conservation and development. Valuing biodiversity through credits or payments might offer a semblance of

neutrality and render technical “the more systematic, integrated, holistic dynamics of ecosystems – and the social-ecological relationships through which people live with and shape these” (Fairhead et al., 2012: 253). From this angle, one might also wonder about the indirect effect of CAMBio’s implementation, particularly at a political and cognitive–motivational level. In interviews with project officers, this came up in light of a possible ‘feedback’ effects. Although project officers considered the bio-award to be a useful extra incentive to adopt particular practices, they also recognised that it could be a “double-edged sword” in terms of the image of the MFI and people’s motivation for environmentally-friendly activities:

It’s all positive when the client is implementing the credit and helping the environment, but it also creates a condition ... where they only see the monetary benefit. Now we also have to emphasise the environmental benefits (project officer during presentation of survey results, 29/10/2013)

Another project officer noted that people had “fallen in love” with the award (05/06/2014). It adds to local perceptions of a broader trend of projects which provide monetary benefits for environmental practices (such as a farmer who refers to projects in other places where they ‘buy oxygen’, whereas “here, the benefits of the forest don’t go to the wallet” (15/05/2014)). At a more collective level, project officers were aware that this potentially unintended consequence could also surface between clients:

It was a problem for us to be in a region with two products [with and without the biopremium]; because if to Juan we give the premium and to Pedro not, and if they are from the same community, that was going to be a problem.” (project officer during presentation of survey results, 29/10/2013)

There are a number of farmers who were very interested in the project, for its lower interest rate and the bio-award. Now the project is finished, but some farmers keep asking for the award. They heard about it through their neighbours, and want to participate (FDL local branch manager, 3/06/2014)

These quotes about the farmers’ perception of the bio-award as a new norm, and the way in which this valuation can then also be expected or

hoped-for by other members of the community, is reminiscent of discussion of 'motivation crowding' regarding economic incentives in environmental governance. This discussion deals with how "the use of economic incentives can undermine ("crowd out") or reinforce ("crowd in") people's intrinsic motivations to engage in biodiversity and ecosystem conservation" (Rode et al., 2015: 80, Van Hecken et al., 2017). Whether or not, or to which extent, such shifts in motivations have actually taken place has not been dealt with extensively in the fieldwork or in the above analysis. However, the fundamental point is that the "remarkable reward-or-punish nature" of credit and awards entail the support for a particular view on environment and development –which is an assemblage of guiding ideas and pathways- and the exclusion of others (Gerber, 2014). This is not –in itself- a value judgement about what constitute 'good' or 'bad' practices, but rather points out that a political, value-laden stance is taken through the mere engagement/intervention within the complex social-ecological system of rural development processes (Fabinyi et al., 2014).

## **5. OPPORTUNITIES FOR ALTERNATIVES?**

A political ecology approach to green microfinance does not only entail a "deconstruction of environmental narratives" or the tracing of an intervention's entwinement with the complex social-ecological system. It can also offer avenues to "reconstruct a more epistemologically [critical] realist form of explanation ... of greater assistance to vulnerable people" who currently lose out in the so-called win-win solutions (Forsyth, 2008: 759, Forsyth, 2001). Taking this particular position, the above analysis of Proyecto CAMBio suggests the need of a more decisive priority to actual and potential small-scale coffee farmers in the study region; in light of their current marginalisation in the dominant development pathways and in the context of the opportunities of a diversified productive system. Better support for the farmers who are currently highly vulnerable to different crises could in this sense contribute to avoiding distress sales of land and possible outmigration to other agricultural frontiers in times of crises and due to pressures on access to land (through the expansion of

larger farms) and land use (through the sanctioning of land use change). One could thus argue in favour of policies that more explicitly take as a vantage point the need to strengthen the viability and stability of smaller producers in the face of increasing concentration and promotion of a yield-oriented entrepreneurial coffee production. There might be opportunities to do so by linking them to rewarding markets –among others requiring organisation among farmers and the questioning of current market relations (Westphal, 2008, Bacon, 2004, Valkila, 2009)– as well as to reflect on how to improve opportunities for their diversified farm activities (Bacon et al., 2017).

The above suggestions are not precise prescriptions. Rather, they are avenues for questioning the implicit naturalisation of the currently emerging pathway of change and ‘modernisation’ as the one and only, inevitable way out of the current crisis. Alternative pathways will need to be discovered and created as emergent collective ideational and material collaborations within the on-going dynamics of socio-institutional processes (Leach et al., 2010, Hall et al., 2014). From a public policy perspective, this implies that we cannot –as scientists or whatever other kind of alleged experts- define an objective technocratic answer about what to do for more sustainability (and social justice) (Fabinyi et al., 2014, Leach et al., 2010, Van Hecken et al., 2015b). The answer will inevitably need to involve a political choice and thus some kind of explicit or implicit negotiation among the stakeholders about the desired and feasible directions of development pathways.

These observations stress the need for deliberation in public, private and civic decision-making bodies in order to inform deliberate policies as well as implicit on-the-ground negotiation through the promotion and strengthening of new practices that open-up and produce real avenues for change. Almost by definition, however, the poor will tend to be on the losing side of the different types of explicit and implicit negotiations taking place in these political arenas (Bastiaensen et al., 2005). A really transformative ‘green’ microfinance will therefore have to find appropriate ways to articulate positively with broader change processes towards social

inclusiveness and forms of sustainability that respect the (changing) views and interests of their target groups. The question, however, is whether there is much room to manoeuvre to question the current correlation of forces and guiding ideas, going against the tide of the financialisation of poverty and nature which is enforced through epistemic communities and the prevalent political economic structure (Schwittay, 2014, Van Hecken et al., 2015a, Mader, 2014, Sullivan, 2013, Gowdy et al., 2010, Vira, 2015).

## 6. CONCLUSION

There is a tendency in green microfinance to take a perspective from existing MFIs 'discovering' the environmental challenges as something worth caring about. The emphasis is thus put on an apparently straightforward role that the current form of microfinance is deemed to play; provided MFIs and clients want to engage with it. This was also the case in the project logic of Proyecto CAMBio. The official reports of Proyecto CAMBio perceive and construct it as a success story –especially for having reached the objective of channelling multiple millions of USD to biodiversity-friendly investments. To better understand how such a project turns out in the field –and to learn about the possible role of (green) microfinance in a transformation to sustainability- I assess the project's praised implementation by FDL-Nitlapan in Peñas Blancas. The case study illustrates that the interaction of microfinance with the economic, social-political and ecological dynamics of the targeted territory is key to the way in which green microfinance unfolds in practice.

The contextualisation of the project in the aftermath of the *No Pago* Movement indicated how Proyecto CAMBio became a star product which was used for rewarding long-term, loyal clients. In combination with the structure of project incentives, this led to an overall focus on the relatively larger producers in FDL's portfolio. Hence, Proyecto CAMBio was logically absorbed within the MFIs operational and strategic priorities. Taking a development pathways perspective further indicates how the project was also 'naturally' absorbed by the dominant entrepreneurial coffee

modernisation pathway and therefore defined ecological sustainability within the confines of the associated, emerging collective practices and ideas. Indeed, the supported practices strongly geared towards a focus on a high-yielding approach to coffee production, which was considered especially interesting in light of the *roya* crisis. More generally, this production mode forms part of the local guiding idea of the successful farmer and the 'modern' way to engage with coffee production. This also means that other practices –such as the diversified production systems and coping strategies of smaller farmers– are either de facto excluded from such financial and technical support or are presented with a standard prescription which might not fit the farmer's overall production logic. Furthermore, the inherent uncertainty regarding the evolution of sanitary crises (with instances of *roya* being reported on *catimor*) and rising temperatures, the choice of an arguably myopic and technical renovation strategy might not be such an interesting option in terms of reducing farmers' exposure to (coffee) crises.

As such, it is clear that the monetary and public rewarding of externally designed but locally re-defined 'environmentally-friendly' practices touches on several contentious issues, especially in the context of the local contrasting environmentalisms. The social and ecological effect of microfinance (plus) intervention (both at material and discursive level) thus depends critically upon this complex, 'difficult to predict' and 'impossible to control' interaction with the contextual socio-institutional dynamics. It is hence unpredictable how an isolated microfinance approach, merely focused on financial inclusion and with a questionable definition of environmental objectives, will contribute to the challenges of local transformation towards sustainability.

The aim of the description and analysis of Proyecto CAMBio's implementation by FDL-Nitlapan in Peñas Blancas was not to be an evaluation of its 'environmental impact' per se; i.e. to directly attribute particular outcomes to the project's workings or to suggest some specific, technical changes in its design to improve its implementation. Instead, the analysis emphasised the project's inevitable interaction with the local

social-ecological system and the conclusion that its ultimate social and environmental impact can only be judged at the pathway level. It highlights reasons to more deeply engage with how green microfinance projects are defined, framed and implemented in the field and to recognise that this entails particular –but difficult to predict- (un)intended results as well as contentious political choices.

Although the analysis might at times appear critical of the practices of project designers, implementers and participants, no value judgement is intended regarding their particular intentions and efforts. I want to stress this, and recognise FDL as being an innovative and promising case. FDL seems to be on a genuine and engaged mission to ‘greening’ its portfolio and it is willing to learn from past experiences herein. Additionally, FDL adopts a microfinance ‘plus’ approach which is already in itself a counter-movement to the more mainstream ‘finance only’ approach (Lensink et al., 2018); and it maintains a strong position in the often difficult rural and agricultural context. Yet this does not mean that it can or should be uncritically promoted as a ‘success story’ (Van Hecken et al., 2015a, Büscher, 2014). Rather, the analysis argues for a critical-constructive engagement with this incipient microfinance practice, with both the ‘hatchet’ (exploring shortcomings in the –current– workings and underpinnings of green microfinance) and the ‘seed’ (contribute to avenues for an alternative approach) (Robbins, 2012, Cavanagh and Benjaminsen, 2017).

The ‘seed’ is the recognition that the ideas underlying specific interventions are necessarily politically informed and that their outcomes are highly dependent on local interactions. Indeed, this ought not to be taken as a pessimistic message. On the contrary, it wishes to encourage a more thorough engagement with the realities of local territories and their actors, in order to have a more socially-informed and power-sensitive view on what problems and solutions might be (Hall et al., 2014, Van Hecken et al., 2015b). Changing directions of the current development pathway inevitably requires a change in the correlation of forces; a shift in favour of (collective) actions or coalitions of relevant actors to support alternative

pathways. In this, I support the call for an engagement with a 'territorial' approach to rural development –promoting joint-action among the involved agents and coordination between different sector policies and levels of government– which might have the potential to deal in a more integrated way with a wider set of actors and interests (Ambrosio-Albalá and Bastiaensen, 2010). A transformative microfinance can be part of such an approach, as an instrument among others to support processes which take into account the voice of different actors and possible alternative pathways. On the basis of a socially-informed understanding of the local development dynamics, ideas of possible instruments and interventions can grow, of which 'green microfinance plus' can be part; without assuming that it is *a priori* the desirable solution.

## CONCLUSION

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## **SITUATING THE MAIN CONCLUSIONS**

The incipient practice of 'green microfinance' aims for the inclusion of a third, environmental bottom line in addition to microfinance's financial and social goals. Most of today's green microfinance practice evolves around MFIs 'discovering' environmental challenges as something worth caring about; or refers to the use of microfinance as a channel for conservation and adaptation finance. Either way, the emphasis is often put on an apparently straightforward role that microfinance could play regarding these concerns of sustainability if and when MFIs decide to engage with it. From this angle, the main issues are the underlying motivations to engage with green microfinance (including the business case); and the question of whether MFIs and their clients should be 'burdened' with these new concerns.

As green microfinance approaches are based on particular definitions and interpretations of the environmental problems and the required solutions, they inevitably engage in contentious processes of environmental governance. A given rationality (such as the provision of financial services as a way to support specific environmentally-friendly practices of targeted clients) thereby constitutes a particular way of framing the issue. In microfinance, the concomitant simplification of the underlying complex processes of poverty and environmental degradation resonates with what Bastiaensen et al. (2013: 882) call "microfinance narcissism", meaning an overly narrow focus on the individual financial transactions and "the tendency to view microfinance as disconnected from its broader structural and political environment." In order to better understand how microfinance interacts with this broader environment, I conceptualised rural areas as complex social-ecological systems and operationalised it through the idea of development pathways. Overall, this builds on a political ecology approach, recognising how an understanding of green microfinance needs to engage with "the social and political condition surrounding the causes, experiences and management of environmental problems" (Forsyth, 2003: 2). This is what I engage with throughout the

analysis of the particular case of Proyecto CAMBio –a green microfinance project which combined credits for biodiversity-friendly practices with technical assistance and conditional monetary rewards– of which I analyse the implementation by the MFI Fondo de Desarrollo Local in northern-central Nicaragua.

The application of the analysis in terms of development pathways to the study region, the Macizo de Peñas Blancas in northern-Central Nicaragua, indeed indicated the relational and emergent nature of processes of economic, social and environmental change. It depicted the emergence of a dominant development pathway, where small-scale farmers face pressures from both an exclusionary ‘modern’ and entrepreneurial approach to coffee production and an increasingly strict approach to nature conservation. On the basis of the alternative production systems of smaller farmers and their related environmentalisms, I argued that in this socio-institutional context one could also opt, for instance, for supporting a diversified agroforestry and specialty coffee pathway. It is not possible, however, to scientifically arbitrate between these two options, and additional pathways might actually be imagined. In line with political ecologists like Leach et al. (2010: 42), I indeed believe that

[I]t is useful to distinguish between different normative views of sustainability, recognizing that there are multiple sustainabilities which need to be defined quite precisely for particular issues and groups [...] we need to specify versions of sustainability in terms of the particular properties and flows of goods and services valued by particular social groups in the pursuit of particular goals.

When recognising this multiplicity of ‘sustainabilities’, it is clear that the support of a particular development pathway is not a neutral position. Adopting a development pathways perspective thus informs the recognition and emphasis of the inherently political nature of defining particular intervention rationales and supporting particular productive practices and perceptions on human-nature interactions over others. The political ecology aspect of it is unavoidable, namely that the choice in objective and participants involve some kind of valuation and a particular stance in terms of the distribution of costs and benefits. These choices are

not necessarily deliberate or intentional, yet they will always be embedded in development pathways which are themselves the emergent result of a power-laden historical trajectory with particular configurations of rules in use, guiding ideas, value chains and support mechanisms.

## **SUPPORTING (DOMINANT) DEVELOPMENT PATHWAYS**

The case study pointed out that Proyecto CAMBio was seemingly absorbed by the dominant coffee modernisation pathway. In a post-repayment-crisis period, the implementing MFI had an operational bias towards rewarding long-term loyal clients. For other than environmental reasons, it targeted the project mainly to relatively larger producers and thereby implicitly also excluded support for smaller producers. The project further supported a push towards the adoption of high-yielding coffee practices, in light of a sanitary crisis in coffee production as well as a more general tendency to consider this type of coffee production as the most successful agricultural activity in the region. The choices which were made by FDL were logical and sensible in light of particular pieces of the puzzle –such as the operational considerations of repayment capacity in light of a non-payment crisis; the need to recover TA costs through larger credit amounts; the provision of particular solutions to a sanitary crisis– yet the ensuing practices have both intended and unintended consequences in light of the interaction with the broader context (Beck, 2016, Jabeen, 2016).

Building on the findings from the case study and on the theoretical perspectives, I show how a supposedly ‘apolitical’ or technical microfinance approach risks ‘naturally’ supporting dominant development pathways. Concerns regarding financial returns –which are arguably increasingly central as microfinance enters more into the world of global finance and financial inclusion (Aitken, 2013, Johnson, 2009, Aitken, 2010, Mader, 2014)– can indeed inform a tendency to target the most rewarding economic practices within the prevalent socio-economic structure. It could then risk maintaining or even intensifying the relations and conditions that shape processes of social exclusion and environmental

degradation/governance; even when applied in the name of striving for the third bottom line.

In this sense, it is important to stress that these findings reverberate beyond particular *green* microfinance practices. On the basis of a worldview of complex social-ecological systems, any intervention – including ‘regular’ microfinance– intervenes with (dominant) development pathways and their ensuing social and ecological conditions. A particular microfinance product or approach can then be part of either reproducing or challenging a particular view on the types of productive and environmental practices that can be considered feasible, successful and desirable. The way in which interest rates and conditions are used to support or sanction particular activities entwines with other rules in use and together form an institutional assemblage which echoes through the social-ecological system (Gerber, 2014).

## **DEFINING ENVIRONMENTAL CONCERNS**

As microfinance ‘turns green’ it starts to consider, define and engage with particular environmental concerns. In the case study, Proyecto CAMBio had an *a priori* focus on ‘biodiversity; in line with a central objective of the main funder of the project, the Global Environment Facility. There was no particular link to local considerations or perceptions of how to define key environmental issues. Nevertheless, the goal of biodiversity turned out to be malleable in the field, as it was reinterpreted or translated in line with particular needs and interests; such as discourses of climate change adaptation. The rewards for combining agricultural activities with environmental conservation were intended as a positive recognition of farmers’ conservation efforts. Simultaneously, however, these rewards were linked to the move towards high-yielding coffee practices, which could be a questionable choice in light of supporting (or not) biodiversity-friendly practices.

Regarding the process of defining environmental concerns, it is important to reiterate that the interpretation of what nature is and what it means

depends on the observer, the underlying values, and the context in which people apply or enhance their knowledge about it (Neumann, 2005, Cleaver, 2012). In line with the broader consideration of how a finance-centred approach might be inclined towards supporting the current dominant socio-economic relations, the question of how environmental concerns are defined also resonates with other situations where the definition of the problem is guided by funding- and business opportunities. When dependent on particular donor funds or market-based approaches, the definition of what is worth supporting in terms of nature or environmental practices lies either in the hands of the funder or is directed by the underlying business opportunities. This is reminiscent of issues related to the 'ecosystem services' framework and Payments for Ecosystem Services, where the economic exchange model offers questionable bargaining rights to the most marginalised (McAfee, 1999, Farrell, 2014, Daw et al., 2011).

I hence identified two crucial challenges and tensions for microfinance to meaningfully engage with addressing environmental issues in the local and global complex social-ecological system. First, there is a possible tension with the focus on financial returns which, without questioning the prevailing socio-economic context, might naturally support the prevalent relations and conditions that shape processes of social exclusion and environmental degradation/governance. A second considerable challenge in terms of a more socially-informed approach to green microfinance is the issue of defining and addressing particular environmental concerns on the basis of a particular market-based approach or business case, as a way to 'make nature investible' (Sullivan, 2017a, Dempsey and Suarez, 2016). Aware of these challenges, the following section explores avenues to transformative microfinance; a practice with a more deliberate embeddedness in pathways and a more conscious political engagement.

## **AVENUES FOR TRANSFORMATIVE MICROFINANCE**

The overall findings illustrated how the interaction between microfinance and underlying economic, social and ecological dynamics in determinate territories is key to the way in which green microfinance interventions play out in the field; potentially leading to different outcomes in different locations for similar interventions. The true meaning and role of microfinance hence critically depends on its assemblage with other actions and policies, and its interaction with the ensuing societal processes that will guide the course of development, opening up or closing down avenues for desired livelihood trajectories of different groups. This entails high levels of uncertainty and low levels of control. Even well-intended interventions might be absorbed and re-worked by the dominant socio-economic context; and eventually support practices which are actually counter to their initial objectives.

Once these inevitable contextualised interactions are recognised, it does not make much sense either try to purely attribute (social, environmental or economic) impact or results to the 'microfinance treatment' in itself (Banerjee et al., 2015), or to a priori dismiss microfinance as a neoliberal 'Trojan horse' (Bateman, 2010, Weber, 2004, Roy, 2010). This recognition can entail different reactions. A rather evasive conclusion could be for microfinance to fully withdraw from any particular social or environmental ambition and to mainly focus on the provision of financial services. However, as I indicated, the provision of microfinance services inevitably entails particular social and environmental consequences; hence this approach could be seen as boiling down to deliberately ignoring these. Another reaction could be to instead engage more actively with the how and why of the relation between particular financing activities and social-environmental change. This strand would combine more humility regarding the controllability and predictability of intentional interventions with more ambition and political engagement regarding the process of defining and striving for particular objectives. Either way, the 'in-between' reaction –i.e. to state the environment as a key objective/priority without engaging more actively with questions of (un)intended consequences and the

relevance of the socio-institutional context– is less tenable in light of the above findings and risks falling into the trap of “false piety” (Jabeen, 2016: 144).

In other words, regarding the question of whether MFIs have a responsibility to involve with social and environmental concerns, a first aspect is the inevitable effect or engagement of microfinancial practices with the complex social and ecological context. The issue of whether MFIs actually have to take responsibility herein is open to debate. Yet any institution that has the intention to actively contribute to ‘sustainable development’ has to be more actively aware of and engaged with the type of processes described here. In this sense, my research not only aims to contribute to a better understanding of how to analyse the complex ways in which green microfinance works out on the ground; it also calls for further research and action. Some might advise against ‘falling into the trap’ of linking critical-political assessments of a particular (development) intervention to suggestions of alternatives and practical implications; especially when these remain strongly linked to or constrained by the current (international and economic) power relations (Lohmann, 2014, Fletcher and Buscher, 2017). I believe, however, that it is important to explore alternative possibilities for a meaningful and transformative marriage between microfinance and ‘sustainable development’. In this sense, I want to engage with what Gibson-Graham (2008: 614) called the “new responsibility on the shoulders of scholars”, namely as facilitators who should “recognize their constitutive role in the worlds that exist, and their power to bring new worlds into being.”

One of the key consequences of the above analysis is that an MFI engaging with more socially inclusive and environmentally responsible financial practices cannot avoid engaging in the political struggles over the nature of development pathways. The question on what pathways to support in view of the desired livelihoods and associated ideas about social and ecological goals does not have one single true answer (Leach et al., 2010, Hall et al., 2014). As the goal of ‘sustainable development’ cannot be unilaterally defined or imposed, it involves careful and preferably

inclusive deliberation, in an “attempt to identify leverage points for meaningful change” (Castree and Christophers, 2015: 378).

The whole idea of politically-laden interventions which interact with the actors and structures that are present, is that they inevitably have to involve alliances and deliberation with (certain) local actors. Microfinance might be part of such an approach, as an instrument among others to support processes which take into account the voice of different actors and possible alternative pathways. From the perspective of microfinance, it requires looking for political and practical alliances, both at the level of defining and at the level of supporting certain practices and processes of change. The focus on complexity should not be taken as implying that there can be no intentional financial interventions or that any level of planning is delusional in itself; rather, it is about dealing with and recognising its uncertainty and opening up the definition of objectives and perspectives in a more socially-informed and power-sensitive way.

For the other actors, including from the public realm, it also requires viewing the MFIs as a potential ally and an additional tool in a broader change process. Whether or not particular political choices and associated strategies to support particular desired pathways will be adopted is then as much a consequence of changing perceptions as it is of the prevailing correlation of forces. Of course, this is dependent on the ‘room to manoeuvre’ in terms of questioning the current power relations and guiding ideas in an increasingly finance-centred microfinance and the dominant way of defining environmental concerns (Schwittay, 2014, Van Hecken et al., 2015a, Sullivan, 2013). It could be seen as a translation to financing practices of Vira’s (2015: 5) description of the current impasse in development studies:

[E]ven where there is recognition that current developmental pathways may be ecologically unsustainable, it does not follow that there is sufficient (political) consensus for fundamentally re-thinking the basic tenets of developmental processes ....

Note that talking about transformative microfinance for rural development is actually supposing that a response to deliberative social and

environmental concerns actually take centre stage; which might well be in tension with the above-described challenges.

## **AVENUES FOR FUTURE RESEARCH**

In addition to these succinct policy recommendations, there are multiple avenues for future research. Green microfinance remains a relatively recent phenomenon on the development studies research agenda. Building on the insights provided in this manuscript, I highlight two strands of research. First, I perceive a need for further analyses of how microfinance plays out in the field, with a focus on different types of (green) microfinance in different contexts. Regardless of whether the third bottom line becomes widely adopted within financial inclusion circles as an ambitious, intentional goal, research is necessary on how (green) financial services currently contribute or not to their envisaged transformation to sustainability. I highlighted how any intervention will inevitably interact with local development processes and the emerging social-ecological pathway, yet much is still to learn about how these complex socio-institutional mechanisms unfold in practice and what lessons can be learned from them.

Whereas the first line of research is more in line with conventional investigation in what is currently being done and how it works out in different settings, a second research line would be of a more pro-active nature, with action-research exploring avenues for transformative microfinance. This type of research could actively seek to contribute to developing or adjusting (non-)financial services in view of supporting positive social and environmental change. Collaborative efforts between practice and research could then strive for a more thorough engagement with the realities of local territories and their actors, in order to have a broader view on possible problems and solutions and to explore what role microfinance can play herein. This could help to identify how a transformative 'green' microfinance could link positively with broader

change processes and forms of sustainability that respect the (changing) views and interests of its target groups.

In this sense, it is noteworthy that FDL and Nitlapan-UCA are strongly inspired by past research activities and are committed to keep learning from them. They currently embark on an action-research project –in collaboration with several research institutes and a local environmental NGO– to learn about how their microfinance activities in the agricultural frontier of Nicaragua can possibly contribute to local institutional change that questions the current unsustainable (cattle) pathway (NORFACE, 2018). Through the participatory analysis of the dynamics that generate the dominant development pathways in the agricultural frontier, possible entry-points for institutional change and political alliances will be identified. This will inform the further design of particular activities for FDL-Nitlapan (with combinations of finance, technical assistance and payments for ecosystem services) in order to contribute to alternative development pathways. This research project is very promising in terms of a gradual learning process towards the potential of ‘transformative’ microfinance and the combined role of research and practice herein.

## **CONCLUDING REMARKS**

Although the above considerations might at times have sounded critical of (green) microfinance, it is not a call for microfinance to retreat from taking these social-ecological issues into account. What is being questioned, however, is how these projects unfold in practice, what possible trade-offs exist, and what the assumptions are in the current configurations. At the same time, it shows the inevitable link between microfinance and the environment –or sustainable development more broadly– through its support (and exclusion) of certain practices and people. Instead of calling for microfinance to retreat from environmental concerns, it can rather be seen as a call for microfinance more broadly to recognise its involvement in (implicitly) rewarding and policing particular activities and processes; with its ensuing ‘hidden’ (Gerber, 2013) and unevenly distributed

economic, social and ecological consequences. Recognising which complex and relational interactions are at play opens the door for more socially-attuned and politically inspired reflections on what and whom to support. Overall, the contribution of this doctoral dissertation is hence to suggest a re-politicisation and re-territorialisation of (green) microfinance in light of the challenge of 'sustainable development' and to provide leads for looking into the potential role of microfinance in meaningful change.



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## **SAMENVATTING (SUMMARY IN DUTCH)**

Microfinanciering gaat over het verlenen van financiële diensten met kleine bedragen aan mensen die voordien geen of weinig toegang kregen tot de klassieke financiële diensten. Traditioneel beoogt microfinanciering daarbij zowel financiële als sociale doelstellingen. Een nieuwe trend van 'groene' microfinanciering voegt daar nu ook milieudoelstellingen aan toe. Dit proefschrift draagt bij tot de verdere verkenning van deze recente en groeiende praktijk. Zowel conceptueel als empirisch gaat dit onderzoek in op de politieke en socio-institutionele rol van groene microfinanciering in lokale praktijken en bestuursprocessen omtrent natuurbeheer. Het onderzoek gaat nader in op de werking van groene microfinanciering in de praktijk en stelt de vraag: welke wisselwerkingen vinden plaats tussen groene microfinanciering en ontwikkelingspaden in complexe, rurale sociaal-ecologische contexten?

In het eerste hoofdstuk leg ik de basis voor de verdere thesis door de huidige stand van zaken omtrent het concept en de praktijk van 'groene microfinanciering' weer te geven. Dit doe ik op basis van een overzicht van de toenemende literatuur over dit thema en op basis van contacten met mensen uit de praktijk die betrokken zijn bij (groene) microfinanciering. Daarbij schets ik de verschillende mogelijke relaties tussen microfinanciering en milieu, alsook de strategieën en beleidsinstrumenten die daaruit voortvloeien. Uit de analyse van de huidige theorie en praktijk van groene microfinanciering blijkt dat deze -vaak impliciet- gebaseerd is op de verwachting dat het louter in beschouwing nemen van bijkomende milieudoelstellingen ook effectief kan leiden tot het bereiken van de drievoudige sociale, economische en ecologische doelstellingen. Gedetailleerde analyses die nagaan hoe groene microfinanciering in de praktijk werkt, met oog voor zowel bedoelde als onbedoelde gevolgen, zijn schaars. Geïnspireerd door voortgaande discussies omtrent de haalbaarheid en de wenselijkheid van de sociale doelstelling van microfinanciering, pleit ik ervoor om de onderliggende verwachtingen van

groene microfinanciering van naderbij te bekijken en om dieper in te gaan op hoe deze zich in de praktijk ontvouwen.

Hoofdstuk twee gaat vervolgens theoretisch in op processen van rurale ontwikkeling en beschrijft hoe groene microfinanciering daarbij kan gezien worden als een bepaalde interventie in lokale processen van rurale ontwikkeling en natuurbeheer. Het vastleggen van een interventie-logica (zoals in dit geval het aanbieden van financiële diensten als een manier om bij te dragen aan milieuvriendelijke praktijken) houdt een zeker waardeoordeel in, door de wijze waarop problemen en oplossingen voorgesteld worden. Een bepaald idee of een bepaalde praktijk wordt echter niet volledig extern opgelegd, maar is afhankelijk van de wisselwerking met andere actoren en ideeën 'in het veld'. Om deze interacties in de context van plattelandsontwikkeling te analyseren, kijk ik naar rurale gebieden als 'complexe sociaal-ecologische systemen'. Daarbij verwijst ik naar het onvoorspelbare en 'emergente' karakter van ontwikkelingsprocessen en interacties tussen mens en natuur. De erkenning van deze karakteristieken heeft implicaties voor de manieren waarop de realiteit kan worden 'gekend' en bestudeerd, en de manier waarop hierop kan worden ingespeeld. Het concept van 'ontwikkelingspaden' blijkt daar een goede heuristiek voor te zijn. Het beschrijft en onderzoekt rurale ontwikkeling als het resultaat van de dynamische wisselwerking tussen personen en collectieve structuren, met bijhorende formele en informele maatschappelijke spelregels. Op basis van deze theoretische beschouwingen stel ik voor om groene microfinanciering te benaderen vanuit politieke ecologie. Daarbij gaat men na welke praktijken en ideeën met dergelijke projecten worden ondersteund en hoe dat kan bijdragen tot het openen of sluiten van bepaalde ontwikkelingspaden.

Hoofdstuk 3 introduceert het empirische gedeelte van het doctoraat door mijn gevalstudie voor te stellen. Proyecto CAMBio (waarbij CAMBio staat voor Centraal-Amerikaanse Markten voor Biodiversiteit) is een specifiek geval van groene microfinanciering. Het project beoogde de promotie van biodiversiteitsvriendelijke investeringen en praktijken via een combinatie

van (micro) kredieten, voorwaardelijke betalingen voor milieudiensten en technische assistentie. De analyse in dit proefschrift richt zich tot de uitvoering van het project door de microfinancieringsinstelling *Fondo de Desarrollo Local* in het noorden van Nicaragua. Na een inleiding tot Proyecto CAMBio gaat hoofdstuk 3 verder met het voorstellen van de onderzoeksvragen die in de empirische hoofdstukken aan bod komen. Het geeft ook een beknopt overzicht van het onderzoeksgebied –het gebied rond de *Macizo de Peñas Blancas* – en geeft toelichting bij de overwegend kwalitatieve methodologie en de gegevensverzameling op basis van uitgebreid veldwerk met interviews, observatie en een enquête.

In hoofdstuk 4 begin ik met de analyse van de implementatie van Proyecto CAMBio in de context van *Peñas Blancas*, met een verkennende onderzoek dat voornamelijk steunt op de resultaten van een enquête. Het onderzoek is specifiek gericht op de ontwikkelingen inzake de ‘milieuprestaties’ van zowel landbouwers die hebben deelgenomen aan het project als van niet-deelnemende landbouwers. De enquête maakte het mogelijk om voor elk perceel een biodiversiteitsindex samen te stellen, en ze polste naar de ervaringen van deelnemers ten aanzien van de landbouwpraktijken die door het project gepromoot werden. De bevindingen werpen een licht op het twijfelachtige innovatieve karakter van de ondersteunde praktijken en op het feit dat de kredieten van het project voornamelijk aangeboden werden aan relatief meer gegoede landbouwers. De resultaten nodigen uit om verder onderzoek te doen naar de evolutie van landgebruiken in het bredere kader van de lokale ontwikkelingspaden om de evolutie en de definitie van bepaalde landbouwpraktijken en milieudoelstellingen beter te begrijpen.

Hoofdstuk 5 gaat daarom dieper in op de complexe ontwikkelingsprocessen op lokale schaal. Het geeft een uitgebreide weergave van het gebied rond de *Macizo de Peñas Blancas* door deze te beschrijven in termen van ontwikkelingspaden en in te gaan op de lokale percepties op mens-natuur interacties. Op basis van kwalitatief onderzoek en een benadering in termen van ‘agrarische systemen’ beschrijf ik de historische evolutie van de ontwikkelingspaden in Peñas Blancas. Door een

typologie van producenten te construeren en door de verschillende, contrasterende visies weer te geven over de relatie tussen mensen en natuur, benadruk ik de diversiteit van verschillende lokale actoren en percepties. De analyse geeft een dominant ontwikkelingspad weer van intensieve koffieteelt die de nadruk legt op hoge productiviteit. Het geeft ook een context weer van stijgende druk inzake natuurbehoud. In deze situatie komen kleinere landbouwers onder druk te staan. Daarbij dreigen ze aan de verliezende kant van het dominante ontwikkelingspad te blijven.

Het is in die context dat –in hoofdstuk 6- het groene microfinancieringsproject CAMBio verder onderzocht wordt. Het project blijkt op natuurlijke wijze geabsorbeerd te zijn binnen het beschreven dominante ontwikkelingspad. Via de uitgifte van het pakket van kredieten, premies en technische assistentie beloont en ondersteunt het project inderdaad verder de ‘moderne’ benadering tot hoog-productieve koffieteelt, terwijl daarbij impliciet –en tot op zeker hoogte onbedoeld- minder steun werd verleend aan alternatieve en meer gediversifieerde productiesystemen. Verder illustreer ik hoe de betekenis van wat ‘biodiversiteitsvriendelijke’ praktijken zijn, kneedbaar is naargelang de specifieke context en dat het geconstrueerd wordt door discursieve interacties met bestaande (formele en informele) regels en percepties op milieukwesties. De financiële en publieke steun voor bepaalde vooropgestelde praktijken mengt zich dus onvermijdelijk in controversiële kwesties aangaande lokale rurale ontwikkeling. Een sociaal geïnformeerde, participatieve overweging rond de vragen ‘wie/wat wordt er ondersteund?’ en ‘welke alternatieve ontwikkelingspaden zijn er mogelijk?’ dringt zich dus op. Deze vormen essentiële vraagstukken omtrent de mogelijkheid voor transformatieve microfinanciering in een zoektocht naar het definiëren en het behalen van de driedubbele economisch, sociale en ecologisch doelstellingen.

De theoretische en empirische bijdragen van deze doctoraatsthesis geven weer hoe (groene) microfinanciering op onvermijdelijke en onvoorspelbare wijze interageert met complexe en contentieuze processen van rurale ontwikkeling en beschouwingen over natuurbeheer. De bepaling van de

onderliggende logica en de specifieke milieudoelstelling van een 'interventie' zoals groene microfinanciering houdt een waardeoordeel in, dat zich vertaalt in het specifieke belonen of bestraffen van bepaalde praktijken. Bovendien ontstaat er een wisselwerking tussen dergelijke nieuwe institutionele regelingen op lokaal niveau en andere, bestaande regels, praktijken en percepties. Deze bevindingen vormen belangrijke aanknopingspunten voor een beter begrip van de bedoelde en onbedoelde effecten van groene microfinancieringsinstrumenten in de praktijk. Daarbij onderbouwen zij een kritischere maar constructieve zoektocht naar de potentiële rol van microfinanciering in haar bijdrage aan rurale, duurzame ontwikkeling.



## CURRICULUM VITAE

Frédéric Huybrechs holds an M.Sc. in Business Engineering from the University of Antwerp (2009, *magna cum laude*) and an M.Sc. in Environment and Development from the University of Manchester (2010, *cum laude*). After his studies, he worked as a research assistant at the University of Antwerp's department of Sociology, where he studied the topic of Fuel Poverty in Belgium.

In October 2011, Frédéric started his PhD studies in Development Studies at the University of Antwerp Institute of Development Policy (IOB), with financial support from the Flemish Inter-University Council for Academic Development Cooperation (VLIR-UOS). For this research on green microfinance and rural development, he conducted fieldwork in Nicaragua where he assessed a project in which microfinance was combined with a premium for good environmental practices and technical assistance. In Nicaragua, he closely worked together with the Microfinance Institution *Fondo de Desarrollo Local*, the Central-American University of Managua (UCA) and Nitlapan, a research institute and development organization.

In the course of his PhD studies, Frédéric presented his research findings at several international conferences and published various articles in international scientific journals such as *Geoforum*, *Ecological Economics*, *Enterprise Development and Microfinance* (for which he guest-edited a special issue on green microfinance) and *Revue Tiers Monde*. He also contributed to a consultancy project for the Inter-American Development Bank on Green Microfinance in Latin America.

Parallel to his PhD studies, Frédéric worked for KOMOSIE (an organisation for environmental entrepreneurs in the social economy in Flanders) from 2016 until 2018. He coordinated a project in which a research centre and social businesses worked together to elaborate business plans to valorise food surpluses into new food products, with the aim of creating social employment. He also supported the functioning of an online platform (the Food Fair Platform) to facilitate the donation of food surplus to social organisations with the aim of redistributing it.

## OVERVIEW OF PUBLICATIONS

The following list provides an overview of the articles, book chapters and policy briefs which have been published in the framework of this dissertation's research process.

### Journal articles

Van Hecken, G., Kolinjivadi, V., Windey, C., McElwee, P., Shapiro-Garza, E., Huybrechs, F., Bastiaensen, J. (2018). Silencing agency in Payments for Ecosystem Services (PES) by essentializing a neoliberal 'monster' into being: A response to Fletcher & B scher's 'PES Conceit', *Ecological Economics*, 144, 314-318.

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Van Hecken, G., Bastiaensen, J. & Huybrechs, F. (2017). Pagos por Servicios Ambientales en Nicaragua:  M s all  del discurso neoliberal?, In D. Ezzine de Blas, J-F Le Coq & A. Guevarra Sangin s (Eds.), *Los pagos por servicios ambientales en Am rica Latina. Gobernanza, impactos y perspectivas* (pp 265-306). Ciudad de M xico: Universidad Iberoamericana. ISBN: 978-607-417-451-9

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Huybrechs, F., Bastiaensen, J., Forcella, D., & Van Hecken, G. (2015). Enfrentando la vía ganadera extensiva: potenciales y limitaciones de los pagos por servicios ambientales y de las microfinanzas verdes. In J. Bastiaensen, P. Merlet & S. Flores (Eds.), *Rutas de desarrollo en territorios humanos: las dinámicas de la Vía Láctea en Nicaragua* (pp.373-402). Managua: UCA Publicaciones.

Bastiaensen, J., Merlet, P., Craps, M., De Herdt, T., Flores, S., Huybrechs, F., Mendoza, R., Steel, G. & Van Hecken, G. (2015). Agencia en territorios humanos rurales: una perspectiva socio-constructivista. In J. Bastiaensen, P. Merlet & S. Flores (Eds.) *Rutas de desarrollo en territorios humanos: las dinámicas de la Vía Láctea en Nicaragua* (pp.21-64). Managua: UCA Publicaciones.

Huybrechs, F., Van Hecken, G. & Bastiaensen, J. (2014). ES-thinking and some of its implications: a critical note from a rural development perspective. In S. Jacobs, N. Dedoncker & H. Keune (Eds.), *Ecosystem Services – Global Issues, Local Practices* (pp. 273-284). Boston: Elsevier.

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## **Reports, Policy Briefs and Discussion Papers**

Forcella, D., Allet, M., Castellani, D. & Huybrechs, F. (2017). *Green Microfinance in Latin America and the Caribbean: an analysis of opportunities*, Inter-American Development Bank: Washington D.C.

Forcella, D. & Huybrechs, F. (2016) *Green Microfinance and Ecosystem Services: A quantitative study on outcomes and effectiveness*, CEB Working Paper n° 16/018, ULB – Solvay Business School of Economics and Management Centre Emile Berkheim, Brussels

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