

Livelihood in the Living Eden

Costa Rica's Stimulation of Landowners to Become Agents of Forest Conservation and its Impacts on Sustainable Rural Livelihoods



Figure 1. La Fortuna Waterfall: a popular ecotourism destination in Alajuela, Costa Rica (FAO, 2020).

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Abbreviations

FCP	Forest Conservation Policy
PES	Payment for Environmental Services
SL	Sustainable Livelihoods
SRL	Sustainable Rural Livelihoods
PA	Protected Area
CBT	Community Based tourism
CES	Certificates for Environmental Services
CST	Certification for Sustainable Tourism

Institutions

MINAE	Ministry of Environment and Energy
MIDEPLAN	Ministry of National Planning and Economic Policy
ICT	Ministry of Tourism (Costa Rican Tourism Board)
SINAC	National System of Conservation Areas
FONAFIFO	National Forestry Financing Fund
ONF	National Forest Office
CONAGEBIO	The National Commission for the Management of Biodiversity
CATIE	Tropical Agricultural Research and Higher Education Center
GEF	Global Environmental Fund
FCPF	Forest Carbon Partnership Facility
IMF	International Monetary Fund

Laws

7554	Environment Law 1995
7575	Forest Law 1996
7788	Biodiversity law 1998
PNB	National Biodiversity Policy (2015-2030)
NBSAP-ENB2	National Biodiversity Strategy and Action Plan: 2016-2025
NFDP	National Forestry Development Plan 2011-2020
NPST	National Plan for Sustainable Tourism

Abstract

Costa Rica is the first country to have created a significant forest transition in which deforestation was halted and forest-biodiversity restored. This transition was facilitated through institutions that stimulated landowners to move from farming to practices that conserved forests. With a neoliberal approach rural landowners were aimed to provide forest protection within a proactive forests sector and market that provides benefits for conservation. This research analyzes the issues of adaptation landowners had due to this approach of landowner-stimulation, and how this approach has impacted rural inhabitants. It does so from a bottom up perspective, using the sustainable livelihoods framework. This framework provides a perspective on rural inhabitants access to resources, their strategies of living and working, and the outcomes of these strategies. The framework is holistic and comprehensive because it looks at these dimensions but also incorporates context and transforming processes such as government policy. This research thus analyzes how specific policy, the stimulation of landowners to conserve, relates to the dimensions of resource, strategies and outcomes for rural inhabitants, while considering the specific context of Costa Rica. It focuses particularly on the issues for sustainable rural livelihoods that have arisen, in an attempt to provide constructive criticism for improvement of policy and further research. This research is a desk research that makes use of case studies and academic literature, but also has an empirical angle using interviews with actors who have different perspectives on forest conservation in Costa Rica.

First socioeconomic context and the development history of the country are summarized, as well as forest conservation policies of recent decades. Then specific policy measures and implementation through several institutions are analyzed: This has given an overview of a diverse array of measures that have stimulated landowners to participate in conservation. In the central chapter of this research interviews and case studies are analyzed for perspectives and data on how these measures have impacted the dimensions of rural livelihood resources, strategies and outcomes. In the discussion these findings are reflected upon and suggestions are given for further research and policy improvement. Results show that adaptation has been difficult for many landowners: The rural poor struggle with barriers and regulations and could be better included and protected. New strategies like agroforestry, forest plantations and (eco)tourism have changed the rural economy and created opportunities, but also impacts and livelihood insecurity. Market-based incentives have led to limited success, but also created new inequalities.

This research was written for my parents, for their unconditional love and support in the worst of times.

Zonder jullie was ik nooit zo ver gekomen.

Introduction

Biodiversity in the global South

In December 2022 governments from around the world came together to discuss global action to reverse the global loss of natural habitat (WBS, 2022 ; UNEP, 2022). As a result of this World Biodiversity Summit (or COP15), organized by the UNEP, agreements and goals were set in an accord to preserve biodiversity (UNEP-CBD, 2022): In 2030 30% of all land and sea area must be protected. To do so, global changes in consumption and production were discussed. Agriculture must be reorganized so that ecosystems will not be harmed. And business and development must be responsible for its footprint, like resulting deforestation (UNEP-CBD, 2022).

The COP15 shows an increasing political interest in biodiversity preservation. It is a late acknowledgement of the academic consensus on the strong connection between ecosystems functioning and development and welfare: Either direct through the broad provision of ecosystem services, like agriculture, fishing, etc., or indirect (Cardinale et al., 2012 ; Hooper et al., 2005 ; Cardinale et al., 2006 ; Balvanera et al., 2006 ; Maier, 2012 ; Naeem et al., 2012 ; Vellend, 2014). Biodiversity loss will have strong but uncertain implications for future human activity, as nature's systematics are in many ways a precondition for its individual parts (species), whether human or not (Leek, 2019 ; Rands et al., 2010).

The places on earth where biodiversity is most concentrated, so called 'biodiversity hotspots', are most often dense tropical (rain)forests found in the Global South. They contain half of all biodiversity, regulate global climate, and because of their critical role in the global ecosystem must be 'conservation priorities' (Mittermeier et al., 2011 ; Brondizio et al., 2020 ; Gibson et al., 2011 ; Eken et al., 2004 ; Brooks et al., 2002 ; Brooks et al., 2006 ; Brandon, 2014). One of the most biodiverse places on earth is Costa Rica: Representing only 0.03% of the earth's surface, it contains an estimated 4.5% of global biodiversity, mostly in its tropical rainforests (Kohlmann, 2011 ; Obando, 2007).

Forest exploitation and export-economies

Biodiverse forests have been shadowed by other uses of its land whenever there were resources or other developmental opportunities present (NASA, 2007 ; De Sy et al. 2019, Lambin et al. 2001). Biodiversity hotspots are under threat of agricultural expansion, overexploitation and other pressures like infrastructure or urbanization (UNEP-CBD, 2022 ; Millennium Ecosystem Assessment, 2005 ; Wake & Vredenburg, 2008 ; NASA, 2007). Particularly in the South, where elevation of problems such as poverty, inequality or food scarcity is necessary, deforestation to create arable or resource-rich land has been an important tool to strive for development (NASA, 2007).

To preserve the South's most biodiverse forests we must understand how development, deforestation and forest-conservation have been related, and *can* be related in the future. While there is a historic tradeoff between development and conservation, there perhaps does not have to be one: Policymakers must find opportunities to organize sustainable use of forests that results in both development and biodiversity. Such opportunities however are not simple standalone measures, but connected to the ideas governments have on what development is and how it can become 'sustainable'. Since the post-war era the South has been transformed under Western development narratives like structural adjustment, creating export-economies that can grow and better fit the modern global economy (Haslam et al., 2017). Developing countries started to structurally exploit their (forest)land for resources for the global market to keep manufacturing and business running. But decades later, we find a deforested South deprived of its biodiversity that is still economically weak and underdeveloped (see *Theory*).

The question is what effective alternative ways are there to create substantial development without misusing forests? The alternative is hard to imagine, for both academia and policy-makers: Cheap consumption from cheap production and cheap resource exploitation are a dominant aspect of our growth-focused economies. But that doesn't mean that every country has treated deforestation in a uniform

traditional way. While most countries have remained within the narrative of resource exploitation, there are examples of alternative approaches to the use of forest-land. Costa Rica, an on the outside quite normal neoliberal country in Central America, has an impressive history of forest conservation and lack of exploitation over the past 4 decades: Protective conservation policy to preserve its biodiversity has made it the first tropical country in the world to have reversed deforestation (World Bank, 2022).

Costa Rica's forest transition

After a long period of deforestation for agricultural exploitation, Costa Rica's rainforests had decreased to a landcover of only 25% in 1985 (Brondizio et al., 2020). Then, in the 1990s, an implementation of environmental protection policies reversed this and restored forest cover to 60% (World Bank, 2022 ; Brondizio et al., 2020). The policies included the PES-system (payment for ecosystem services), sustainable forest management standards and an overall stronger focus on sustainable production like agroforestry (Wallbott et al., 2019 ; Pagiola, 2008). 25% of the country has become protected area, where only strongly restricted use of forest is allowed (Stan & Sanchez-Azofeifa, 2018). Additionally, new directions were taken on development and economy such as an emphasis on ecotourism to combine conservation and local development (Stan & Sanchez-Azofeifa, 2018). Harmful exploitative uses of forest regions have been limited or banned, like open-pit mining (Broad and Fischer-Mackey, 2017) and logging. Expansion of agriculture through deforestation is forbidden, and much agricultural land has been changed back to forests since the 1980s (Galt, 2020 ; Fagan et al., 2013). Having now one of the most biodiverse-intensive forests on earth, Costa Rica has branded itself as 'a green destination' and is often called the 'Ecolaboratory' (Fletcher et al., 2020).

As a neoliberal country, Costa Rica's government has focused on making its rural population voluntary participants in conservation through the use of markets and incentives (see *Chapter 2.*). In Costa Rica landowners, mainly (former) farmers, are 'agents of conservation'. With the PES-system for example they are supported and compensated if they protect forests (Pagiola, 2008 ; Fisher, 2007). Such a system could integrate conservation and development, since direct payments for biodiversity conservation can benefit the poor by "improving cash flows, providing fungible store of wealth and diversifying sources of household income" (Ferraro & Kiss, 2002 ; Fisher & Christopher, 2007). PES-systems can help diversify rural livelihood strategies while providing conservation success (Rosa et al., 2004). In Costa Rica, the PES-system was accompanied by reformations of the economy towards tourism, export-agriculture and sustainable forestry, instead of more traditional small scale farming (see *Chapter 1.*). Creating the right economic environment has been an important development in stimulating markets that make conservation profitable and harmful use of forests more difficult. Farmers had to look for alternatives to farming and were presented with opportunities in these (sustainable) markets. As further chapters will show, a very large part of the strongly increased forest cover in Costa Rica is privately owned (by landowners), and has been protected by them. From a neoliberal perspective, this approach of making landowners agents of conservation could be an interesting alternative to more exploitative forest uses.

Costa Rica has gone through an impressive forest transition. Due to (conservation) policies, incentives and a globalized economy, rural areas in Costa Rica have gone through rapid development and changes: There are new uses of forests, (eco)tourism, flows of people, businesses and money. The traditionally agricultural rural economy has been strongly reduced and new sectors have risen (see *Chapter 1.*). People living in rural areas will have to adapt to these new conditions: their traditional farming livelihoods may become compromised. Giving the owners of the land the tools and benefits needed to conserve, could help them adapt to and participate in a forest transition. But the actual (developmental) success of such a transition, particularly from the bottom-down perspective of poor individuals and communities, remains to be seen.

Research aim and questions

This research aims to analyze how Costa Rica has stimulated landowners to become agents of conservation: to transition from farming to practices that conserved forests, and what the impacts of this is on the lives of the rural population. The research has two parts: The first part explains the various ways in which landowners have been stimulated by forest conservation policy (hereafter called FCP) to either reforest or conserve already existing forest on their land. To understand this, not only literature and policy documents are used but also policymakers are interviewed. The PES-system is discussed, but there are more ways in which landowners have been stimulated beyond this system: Understanding of these ways requires a more broad understanding of Costa Rica's FCP, development history, narrative and context. This broad analysis is necessary because Costa Rica has stimulated sustainable forest use throughout the economy and because of its ideas and challenges of development. Understanding context is also important for the second part.

The second part analyzes how this stimulation of landowners has changed rural Costa Rica: The transition from farm to forest has meant that many farmers had to adapt to new conditions and opportunities, which changed the ways they had to live. But it also inevitably altered the rural economy as a whole, and with it the livelihoods of all inhabitants. This research analyzes this impact on farmers and other inhabitants livelihoods using the concept of sustainable rural livelihoods (SRL) and a sustainable livelihoods framework: It does so by making an holistic but in depth analysis, based on case studies, literature and interviews. To obtain a comprehensive perspective in the second part, the first part of this research is important and instrumental: The sustainable livelihoods framework that is used requires understanding of more broad development context and policy.

The goal of this research is a constructive one: It acknowledges the environmental success of Costa Rica's forest transition and the need for effective biodiversity protection and use that differs from more traditional exploitative relations. Costa Rica's approach is promising in its success of gaining forest cover, but needs to be critically analyzed on side-impacts on rural development and (new) inequalities too. A thorough comprehension of how the countries' policies have affected the lives of (adapting) rural people can help improve these policies so that biodiversity protection can be realized without (social) costs for rural development. This research aims to provide further academic backbone to this task and suggest how FCP can be improved, so that further research can be pursued and policymakers can be informed.

The **research question** is: *How did Costa Rica stimulate landowners to transition from farming to practices that conserved forests, and how did this impact sustainable rural livelihoods of landowners and other rural inhabitants?*

Each sub question corresponds to a chapter in the *Results* or *Discussion* section of the thesis (table 1.). In the *methods* sections is further explained how the questions will be answered per chapter, and what data will be used.

Sub Questions:	Chapter/Section
1. What is Costa Rica's history and narrative on sustainable development in forest regions and what is the context and origin of its forest conservation policy?	Chapter 1./ Results
2. What are the general strategies, laws and measures of Costa Rica's forest conservation policy?	Chapter 2./ Results
3. Which policy-measures have stimulated Costa Rican landowners to transition from farming to practices that conserved forests and how?	Chapter 3./ Results
4. Have Costa Rican landowners been able to adapt to these stimulation-measures and how did these measures impact sustainable rural livelihoods in forest regions?	Chapter 4./ Results
5. Have Costa Rica's stimulation-measures been successful from a SRL-perspective, how can they be improved and how applicable are they for forest conservation in the South?	Discussion

Table 1. Sub questions and chapters.

Relevance

The research is meant to solidify the academic background of a case of unique, alternative and (seemingly) successful FCP in a Southern biodiversity hotspot. There are not many governments in the South that move beyond traditional exploitative forests uses, and end up with an successful forest transition like Costa Rica. The country puts stimulating people (landowners) as agents of conservation on the forefront of its policies, which is a different approach from traditional enforcement through protected areas and environmental legislation. A critical analysis of the effect of this approach on development, particularly livelihoods, is relevant because effective conservation and development must go hand in hand to reach a state of sustainable development. Furthermore, the actual impact might differ from the intended impact. Critical analyses are necessary to understand and improve policies, and prevent unwanted negative side effects.

Much has already been written about conservation in Costa Rica, for example on the PES-system. This research aims to complement these writings in three ways. Firstly, it looks at the measures that stimulate landowners to conserve forests also beyond the PES, within policy, development and economy. This provides a more comprehensive perspective. Secondly, it aims to provide a critical bottom-up perspective by focusing on sustainable rural livelihoods: a dimension often overlooked by top-down (centralized) policies. This goes further than looking simply at poverty, because it looks at the conditions, resources and strategies in which people live. Thirdly, the research uses a comprehensive holistic perspective by structurally analyzing context, history and narrative of development with the SRL-framework.

Theory

In this section theoretic backbone is given to guide the research with theories, concepts and a framework. Important concepts are written in *italic*. The section starts broad with some explanation of development in the global South and the importance of (use of) forests for both local and national development. Then conservation in tropical forests in the South is discussed, to give an idea of how conservation has been approached and what measures are commonly suggested. The focus is on market-mechanisms, because they are central in Costa Rica's approach to forest conservation. To give structure to the diversity in policies, a categorization of interventions is used. Lastly, the central concept of this research, sustainable rural livelihoods, is explained along with theory on how to asses it. This is aided by the use of a 'sustainable livelihoods framework', which is modified for this thesis.

Global South development narratives

The South has been reformed since the 1970s by predominantly Western development narratives of *neoliberalism* and *modernization theory*: Developing countries could 'catch up' to the global economy by reforming their economies towards *free markets* and *export-production* of mainly primary goods (Haslam et al., 2017, 58). The IMF and World Bank lend money (*foreign direct investment*) in return of strict *structural adjustment programs* that could create the revenues to pay them back (Haslam et al., 2017, 58; Mohan, 2009; Veldmeyer, 2012). Much criticism has pointed to the lack of success and negative impact of these programs: an increase in inequality and vulnerabilities, unemployment, rising prices, ecological marginalization etc. (Reed, 1996; Mohan, 2009). *Dependency theory* and *World System theory* counter modernization narratives by claiming that Western *neo-colonial* interference in developing economies made them only more dependent and weak, *underdeveloped*, performing as *periphery*, as indebted raw material suppliers for the industrialized West (Wallerstein, 1971; Haslam et al., 2017, 54; Palma, 1981; Rodney et al., 1981).

In Latin America, that suffered from economic imbalance, inflation and large debts in the 1980s, structural adjustment too shaped the economic landscape (Agarwal & Sengupta, 1999; Barbier, 2014; Blomström & Lipsey, 1993). Countries focused on exploiting and exporting natural resources that were abundant:

natural resource development (Veldmeyer, 2012). It led to high economic growth but also dependency on commodity prices, and other issues like environmental (Campodonico et al., 2017). Latin American leaders and scholars started thinking about alternative ways to develop that focused less on growth, export and exploitation and more on qualitative developments for people and environment, of which *Buen Vivir* is the most famous (Campodonico et al., 2017 ; Gudynas, 2011 ; Acosta, 2009). A central (indigenous) idea here is on the relationship with nature, which should not be instrumental or exploitative but one of connection and spirituality (Gudynas, 2011). These ideas coincide with *post-development: Alternative development* theories such as *Ecological Swaraj* or *Degrowth* (Haslam et al., 2017, Escobar, 1995 ; Kothari et al., 2014).

Forest use and extraction

Deforestation is a problem of *conflicting land uses* (Grainger, 1993). As mentioned, deforestation (*land use change*) is caused by multiple types of economic activity that go against conservation efforts: timber extraction, settlement and infrastructure, mining and agriculture (UNEP-CBD, 2022 ; Sunderlin et al., 2005 ; De Sy et al. 2019, Lambin et al. 2001, Rudel 2017). Forests, as often *open-access resource*, are easily turned to agriculture by small scale farmers due to impoverishment and population growth, or by larger investment driven projects (Hanley et al., 2013, 197-199 ; Rudel & Roper, 1997). In developing countries, conserved tropical rainforests can reduce poverty due to their services, particularly for traditional/*indigenous people*. But deforestation can also benefit development due to increased agricultural land which provides income and food (Sunderlin et al., 2005 ; Hanley et al., 2013, 202). Domestic food production can increase food availability and reduce food prices, thereby improving food security. Export-oriented agriculture creates GDP increase and government revenues. Timber extraction provides affordable construction material and energy (fuelwood). Other important causes for deforestation are mining and hydroelectric power projects, which create revenues, employment and energy (Grainger, 1993). Where large scale extractive use of forest land for *natural resource development* (see *last paragraph*) and export purposes is concerned, this is called *extractivism*. Extractivism as method is still expanding and the dominant global approach to reach (Southern) development (Svampa, 2013 ; Pellegrini, 2016).

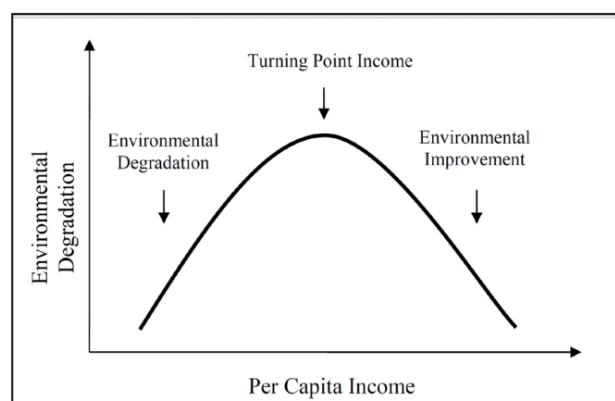


Figure 2. Environmental Kuznets Curve (Yandle et al., 2004).

Traditional economic theory claims that deforestation is a necessary consequence of developing economies. But after significant GDP increase wealth increases and a demand for forest protection emerges, while capital has become available to governments to be able to conserve forests. This is called the *environmental Kuznets curve* (EKC)(Hanley et al., 2013 ; Stern, 2018 ; Sunderlin et al., 2005 ; figure 2.). Along this line of thought *Forest Transitions Theory* (FTT), which focuses on historical case studies, observes that forests are abundant before development, then degrade, and then re-emerge in high-income-countries (Meyfroidt, 2015 ; Mather & Fairbairn, 2000). In other words, exploitation and deforestation is needed to create development and development then results in conservation and (new) biodiversity. The strong relation between EKC and FTT suggests that financial incentives for forest cover can be successfully tied to policies that try to promote economic development, a win-win for conservation and development (Culas, 2012 ; Allen & Vasquez, 2017). However, sufficient empirical evidence for this is lacking, and the

relation between development, deforestation and conservation is a complex one of many tradeoffs (Dietz et al., 2012 ; Stern, 2004). As deforestation can create issues for local users of forests, reforestation (the increase in forest cover) can also have impacts for development: Issues of food security under forest recovery for example, due to lack of agricultural land, have been suggested (Lambin & Meyfroidt, 2010 ; Allen & Vasquez, 2017). Both theories (EKC and FTT) strongly connect to *decoupling* and *green growth*: The idea that under the right development countries can grow (GDP) and this does not result in environmental impact (UNEP, 2011). When in a country or particular region a trend of deforestation is reversed into a trend of net forest regrowth, we call this a *forest transition* (FT). A FT is not about the specific threshold of change, but the gradual pathway towards an increase in forests (Redo et al., 2012).

In Latin America, a wave of natural resource extraction has emerged during the commodity price boom between 1990 and 2011 (McNeish, 2018 ; De Castro et al., 2016 ; Haarstad, 2012). During this wave, forest land has been *commodified* by *global capitalism* and regions have become linked to large powers and interests that compete with local ones (McNeish, 2018 ; Gudynas, 2018). The capital of these large powers, mostly foreign corporations, can flow into developing countries as revenues and income (Ludenia, 2012 ; Brown, 2020). Commodification of land thus creates *foreign direct investment* (FDI). Especially in Latin America, where in forest grounds much minerals and fossil fuels can be found, open-pit mining is important: foreign companies provide the financial resources and other means for resource extraction (Purdy & Castillo, 2022).

The ‘commodity-boom-period’ coincides with the so called ‘Pink Tide’ or ‘Left Turn’ in politics of the region. In this period predominantly left governments placed *extractivism* at the heart of development (Murat et al., 2016). Traditional extractivism has been criticized by indigenous and social movements of creating unequal and not-inclusive development, environmental degradation and conflict (Svampa, 2019). But now governments aimed to reach more ‘fair’ developmental goals by creating revenues from a *productivist vision of development*, extraction of forest regions, and use these for social programs and public spending (Murat et al., 2016 ; Gudynas 2010 ; Gudynas 2012 ; Dangl, 2014). This compromise is called the *commodities consensus* and the new approach was called *neo-extractivism* (Svampa, 2019 ; Gudynas, 2013). It is strongly connected to the ideas of *capitalism* and *neoliberalism*, and follows the idea that extraction and global demand for resources are necessary to create the funding to reduce poverty and empower countries (Fuentes, 2014 ; Fitz, 2014).

In response to neo-extractivism much theoretical critique has been written: *Post-extractivism* (or *anti-extractivism*) sees (neo)extractivism as one of the structural causes of poverty- and environmental crises (Hollender, 2015, 86). It emphasizes on ‘*the resource curse*’, which refers to evidence that poverty in developing countries relates to the existence of natural resource wealth in those countries (Acosta, 2012 ; Humphreys et al., 2007). This wealth is being exploited with large social and environmental costs which are *externalized*, while the extractive industries offer only limited benefits like employment, mostly for elites, and create economies that are dependent on globalization and foreign demand (Gudynas, 2012). Extractivism has resulted in GDP growth, but has led to *commodification* of local communities’ land and labor, and excluded them from qualitative improvements and benefits (d’Alisa et al., 2015, 176). Forest-commodification is essentially arrogating services and commons (for markets) and the peoples basic needs that are derived from them (d’Alisa et al., 2015, 217). What previously were *commons* leave as low-value exported raw materials: Most value is added in developed manufacturing countries who gain the benefits. Resources will run out, which leaves exploited regions barren and with an inability to sustainably reproduce livelihoods (Ye et al., 2019). Resources should be used domestically for basic needs (Acosta, 2012). Additionally, economies should focus on other sectors that create income without resource export and with more inclusive and sustainable development (Brand et al., 2017). This is (sustainable) *economic diversification* (Campodónico et al., 2017 ; Larrea, 2013 ; Fitz, 2014).

Forest valuation and ecosystem services

In the last paragraph competing theory was discussed on how deforestation, resource extraction and development are connected. But protection of biodiversity ultimately also depends on its *valuation*. The (economic) value, beyond *carbon storage*, is often described with *ecosystem services*: “The capacity of an ecosystem to provide goods and services that satisfy human needs” (de Vries, 2013). Such services are categorized as *supporting*, *provisioning*, *regulating* and *cultural* (MEA, 2005). Forest conservation can sustain some these services for future use, such as forestry products and food (provisioning), *erosion* and *natural hazard prevention*, climate/weather-control (regulating) and *soil formation* (supporting)(Brandon, 2014 ; MEA, 2005). The regulation of precipitation and temperature by forests for example is essential for both local and global agriculture (*teleconnection*) (Brandon, 2014). There are also cultural services: e.g. the *cultural heritage* and *spiritual* and *educational* value for local and indigenous communities, and the socio-economic value of *recreation* and *ecotourism*. (MEA, 2005 ; de Vries, 2013 ; FAO, 2022a). These services are particularly important for poorer rural households who can use forests as *open-access resource* or *commons*, and access basic needs (Mutoko, 2015 ; Delgado-Aguilar, 2017). Deforestation harms ecosystem services everywhere in the economy: from small scale farmers to larger economic activity that relies on water or soil quality, climate, pest control etc. (Brandon, 2014)

Tropical forest conservation

On the global scale there are *global policy mechanisms and agreements* that have the potential to preserve tropical forest biodiversity (Muthee, 2022). *REDD+* is a United Nations framework or policy instrument to guide activities in the forest sector, in order to reduce emission from deforestation and create sustainable management of forests in developing countries (Corbera, 2010 ; Muthee, 2022 ; FAO, 2022b ; Duchelle et al., 2018). It is an attempt to create a *global forest governance system* (Bayrak & Marafa, 2016). Other important international agreements are the *debt-for-nature-swaps*: In these swaps developing countries debts are forgiven in exchange of local investments in conservation (Sheikh, 2018 ; Sommer, 2018). This has happened many times in Latin America, where national debts are large, like in Brazil (BBC, 2010). They are interesting initiatives because they decrease *dependency* (through decrease of debt), and increase biodiversity instead of increasing debt and harmful reformations like structural adjustment did.

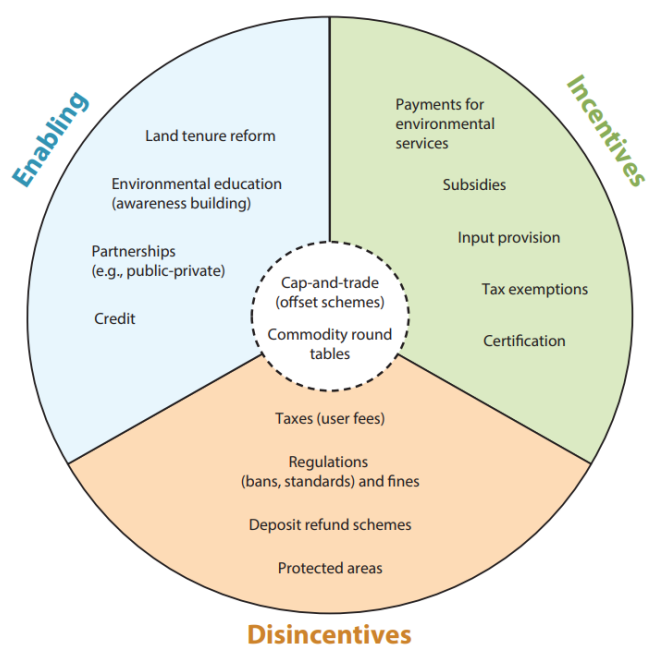


Figure 3. A categorization of conservation interventions (Börner et al., 2020).

On the national or local scale there are many suggested options for tropical forest conservation policies. Many of these options are *market-mechanisms*, using incentives like monetary benefits or costs for actors.

Börner et al. (2020) give a categorization of these options with three types: Enabling policies, incentives and disincentives (figure 3. ; Börner & Vosti, 2013). This categorization will be used here: *Disincentives* restrict environmentally harmful action (*polluter-pays-principle*), through taxes, bans, enforcement and protected areas (PAs), and effectiveness depends on monitoring, sanctions and compliance (Robinson et al. 2010). *Incentives* reward environmentally desirable action, like *subsidizing* sustainable land use and *environmental certification* (Börner et al, 2020 ; Blackman et al., 2018). *Enabling* measures are less directly linked to action but help enable better conservation eventually, like *environmental education*. In the next paragraphs the options most important for this research are summarized.

Disincentives

A straightforward forest conservation measure is *Protected Areas* (PA): They are clearly defined spaces that are actively managed for conservation purposes, with regulations to prevent forest-misuse (UNEP, 2020 ; Oldekop et al., 2016, ; Börner et al., 2020). As Joppa et al. (2008) explain though, the success of these areas depends on strong control and monitoring, which is difficult in large areas. There are many PA's that are 'paper parks': areas that are administered as protected, but provide hardly any sufficient protection (Joppa et al, 2008). In developing countries, PAs are not always viable due to the large funding requirements of control and monitoring, and sometimes corruption.

For forests outside of PAs there is regulation on unsustainable land uses: *Bans* forbid harmful (economic) activity, such as (open-pit) *mining bans* (Broad & Fischer-Mackey, 2017 ; Börner et al., 2020). A more broad ban is the *land-use-change ban*, which forbids any change of land use: if for example land is forest, it can never be used other than as conserved forest (Wallbott et al., 2019). They are effective measures to decrease harmful action, as long as they are enforced and no illegal use of forests happens. Other regulation can forbid specific methods of activity: *Selective logging* for example allows logging but only in a limited way, often by certain quota, logging of only mature trees or replanting (Putz et al., 2019 ; Bicknell et al., 2014). *Agroforestry* is a type of agriculture where *sustainable practices* and biodiversity are included in the economic activity (Bhagwat et al., 2008). All these measures, PAs, bans and regulations, restrict freedom of land use and *land availability* for people.

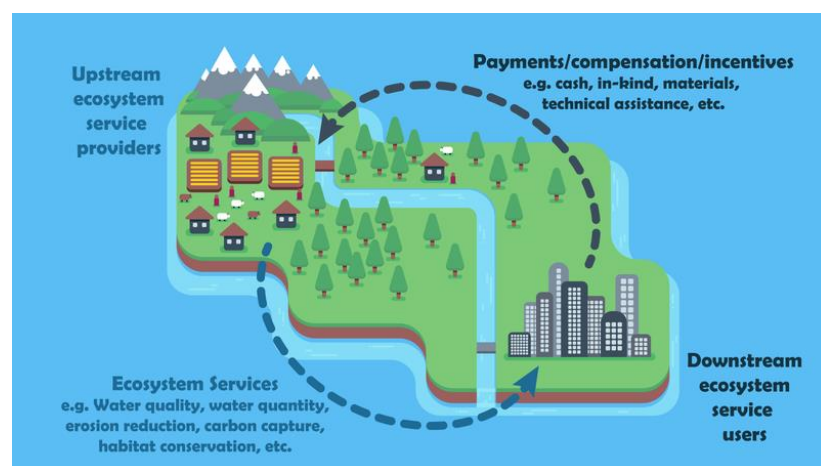


Figure 4. PES can help elevate the developmental cost of conservation (less economic use of forests) by subsidizing local actors (image source: Wikipedia, 2020).

Incentives

Subsidizing (by governments) is important because often conservation comes at a price for local inhabitants and users of forests, and follows the *beneficiary-pays-principle*. They are *direct payments for conserving biodiversity*, of which the most established initiative is (Costa Rica's) PES-system (Fisher & Christopher, 2007). *Payments for Environmental Services* (PES) is an important market mechanism and form of subsidizing: They are payments to farmers or landowners who have agreed to sustainably manage their land, and thereby maintain the ecosystem services that this land (forests) provide (IIED, 2022 ; Pagiola,

2008). PES recognizes the need to address difficult trade-offs of forest conservation (Wunder, 2007 ; see also figure 4.): Local communities work and live in forest areas and are dependent on their resources, so they have to be compensated for conserving it. Because there is high spatial overlap of biodiversity and poor vulnerable populations in the tropics, PES has been discussed as a mechanism that can promote rural development (Ingram et al., 2014 ; Greiner & Stanley, 2013 ; Ferraro & Kiss, 2002). However, there are relatively few empirical studies that assess the socio-economic impact of PES. (Arriagada et al., 2015). Nevertheless, it is a form of an *integrated conservation and development project* (ICDP), which means that it aims to reach protection of ecosystems while simultaneously creating livelihoods for local peoples. It is connected to projects that create further benefits for livelihoods, such as *ecotourism* and *community forestry* programs (Fisher & Christopher, 2007). Such projects have generally been expensive, slow with showing results, and very dependent on local politics (Adams et al., 2004). At the same time however, ‘straight’ conservation projects (that do not incorporate development goals) have often hindered economic development of local people (Naidoo & Adamowicz, 2005).

PES is effective only when forests are mismanaged because their (conservation) benefits are externalized: PES can help direct the benefits towards conservation actors, but only if these actors (local communities) are in need of these benefits (poor) (Engel et al., 2009). PES is connected to the importance of *community participation* in conservation, and the traditional (nature-oriented) lifestyles of *indigenous peoples*: Local communities are most able and willing to conserve. But this also creates issues for PES: Many poor people cannot participate due to insecure land and resource tenure (IIED, 2022). Communities must have *legal ownership* (of land and resources) and indigenous must have *rights* (Lofts et al., 2021). A last issue is of course that subsidizing is expensive for governments, and thus requires sufficient funding.

Enabling

Conservation depends on motivation, and for motivation *education* is very important. Governments can improve awareness and knowledge on the protection of forests, like on sustainable practices so that forest can be more sustainably used (Pawar & Rothkar, 2015 ; Tilbury, 1995 ; Börner et al., 2020 ; Lucrecio, 2003). This creates also long term benefits for local livelihoods since new skills and knowledge can help better long term use of forests. An essential part of education is stimulation of (international) academic research: scientists studying biodiversity can help increase its value and protection.

Another way governments can help enable better conservation is already shortly discussed, by *diversification* of the economy and stimulating more sustainable sectors in forest regions. The best example of this is the growing sector of *ecotourism*: a form of tourism that facilitates responsible travel to natural areas, conservation and improving the livelihoods of local people (Buckley, 2009 ; Buckley, 2010 ; Honey, 2008). It is a way for developing countries to generate revenue for preserving their forest, and helps increase the value of forests (Gösling, 1999 ; Hill & Gale, 2016 ; Menkhaus & Lober, 1996). Ecotourism creates a financial inflow into the country, much like FDI, that can compensate for lost FDI from exploitation. Literature suggests that ecotourism has much conservation potential, but can lead to deforestation if it is not accompanied by the right enforcement, monitoring, education and other conservation mechanisms (Brandt & Buckley, 2018 ; Gösling, 1999).

Assessing impacts for sustainable livelihoods

It is important to understand what is meant when *sustainable rural livelihoods* are discussed. *Livelihood* consist of the capabilities, assets and activities that are needed as a means of living by an individual, household or community (Ellis, 2000a ; Serrat, 2008 ; Xaxa et al., 2017). *Sustainable Livelihoods* (SL) are about how these capabilities, assets and activities can be maintained to realize future means of living (Xaxa et al., 2017). The *Sustainable Livelihoods Approach* is a people-centered type of thinking about development by looking at how the poor or vulnerable can live their lives (Serrat, 2008 ; Su et al., 2015). While in traditional theory development is reviewed top-down, and often reduced to economic growth, SL starts bottom-up with the people who need development the most. As Tao and Wall (2009) argue, “livelihood” is a more tangible concept than “development”: it is easier to observe and describe. Of course

it is also a more narrow concept because its perspective is on living conditions and means of people, and less on the whole system of interconnected factors that determine development.

SL is connected to several factors like policies, institutions and context, which depend on locality or circumstances. Such factors present itself to people as (positive or negative) conditions with which they have to cope with different strategies. These connections have been defined with *sustainable development frameworks*. Most of these come from an initial framework developed by the UK’s Department of International Development (DFID, 1999). For the purpose of clarity and compatibility for this study a similar framework is explained from Su et al. (2015): This framework is derived from DFID (1999), Scoones (1998) and Tao and Wall (2009), and slightly more adapted towards rural livelihoods in the context of conservation (protected forest) and (eco)tourism (Su et al., 2015 ; see figure 5.).

As visualized in the framework, macro conditions and context have a direct influence on the livelihood resources people have. Context can be environmental, economic, historical, etc. *Livelihood resources* consists of the capital people have to secure their livelihood: For example access to natural resources (natural capital) or skills and knowledge (human capital) (Niehof, 2004). The access to all these resources is related to the *livelihood strategies* people have to maintain quality of life: Ways of working and living, like farming or doing ecotourism activities. The success of livelihood strategies, dependent on resources and context, gives a certain *sustainable livelihood outcome*: An change of people’s ability to live qualitative lives. The framework distinguishes outcomes that directly are about livelihoods, such as poverty and food security, and outcomes that define sustainability: the future possibilities for good livelihoods. Such a future depends on the sustainability of natural resources and culture.

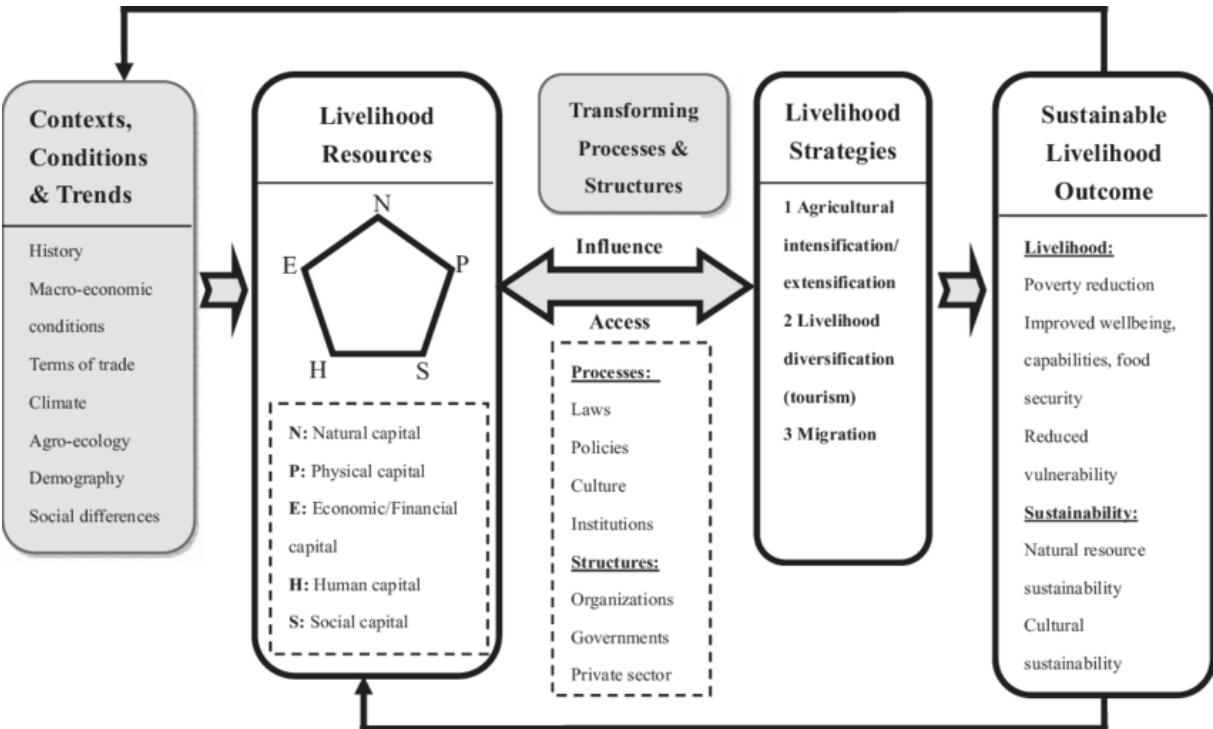


Figure 5. Sustainable livelihood framework (Su et al., 2015 ; derived from DFID (1999), Scoones (1998) and Tao and Wall (2009)).

In the middle of the framework are *transforming processes and structures*. These are developed factors that have the potential to (intentionally or not) transform the above mentioned relations and the outcomes for SL. These are (government) institutions and their policies and laws, but can also be cultural (like customs) and non-governmental (like NGO’s or the private sector). These processes and structures alter the relation between SL-strategies and resources, and thus change the access people have to capital. This

relation, and the processes and structures that impact it, is of central importance to this study: It is about how policy has impacted the ability of people to access forest resources, find successful SL-strategies and have good outcomes. Transforming organizations, like governments, make rules for by whom, how and which resources are accessed (Su et al., 2015). Furthermore, the holistic and multi-sectoral perspective (Lee, 2008) of this framework is important because it helps to comprehensively understand how policy in Costa Rica has impacted people: In Costa Rica, conservation policy has strongly influenced the broader context and macroconditions in which rural livelihoods are shaped, and by these relations altered. Because the framework and concept of SL combines the multiple concepts of capability, security, well-being and resilience, and their connection to natural resource sustainability, it is said to be a useful aid in assessing impact of development policy (Lee, 2008 ; Bhandari & Grant, 2007). It can help to understand the complexity of analyzing livelihoods in communities (Tao & Wall, 2009).

Sustainable rural livelihoods in the South

SL-strategies are about production, jobs and the income they generate for people (Xaxa et al., 2017). In the rural South, about 90% of the population is involved in farming to preserve their livelihoods (Davis et al., 2010). A large part of this population is in a state of poverty (Mphande, 2016). Rural households that diversify their sources of income beyond traditional agriculture (activities like (eco)tourism, artisan work, etc.), decrease their vulnerability and increase their chances of *sustainable* livelihoods (Mphande, 2016 ; figure 6.). Good education and training of skills is often needed in rural areas to improve living conditions, find better strategies, and become *self-reliant* (Mphande, 2016). Other important determinants of SRL are *gender* and *migration* (Ellis, 2000b; Fabusoro et al., 2010; Khatun & Roy, 2012). Livelihoods can be inherited, when ways of living are passed on by family, or emerged when socioeconomic or ecological situation demands a new way of life (Ellis, 2000b; Fabusoro et al., 2010; Khatun & Roy, 2012).

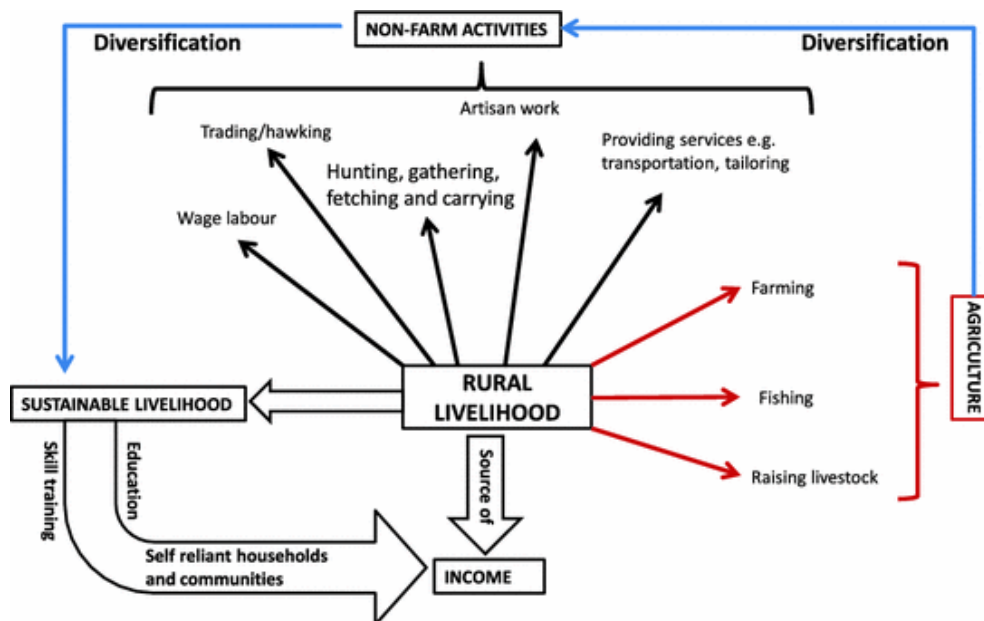


Figure 6. SRLs mostly consist of agricultural activities, but can become more sustainable with diversification into non-farm activities (Mphande, 2016).

In the neoliberal era SL is important especially in the global South. Economies often grow without persistent employment, which creates lack of resilience and inequality (Xaxa et al., 2017). The South has seen strong changes in its rural economies: contributions of the agricultural sectors on GDP have gone down, while the proportion of the workforce involved is (still) high (Kay, 2008). This indicates inequality. Governments have been promoting export of agricultural products, and replaced domestic production with import for growth purposes (Akram-Lodhi, 2007). Growth should (in theory) create employment as a result (Xaxa et al., 2017). But it remains the question whether this actually happens, and what the conditions and

quality of this employment are. Furthermore, lack of domestic production could potentially mean less access to means, like food, to support livelihoods.

Better employment is often found in 'modern' sectors, instead of traditional rural sectors. Rural inhabitants have been drawn into rural-urban migration (Xaxa et al., 2017). This could result in the falling apart of rural communities and regions. These regions have also dealt with incoming flows of people: The growth of urban areas has brought flows of people in search of opportunities. Development and growth have led to (new) markets for goods, commodities and land (Xaxa et al., 2017). It is associated with issues of *land dispossession* and *land alienation*, and loss of resources. Such pressures on resources and thus livelihoods can be worsened due to tourism: Tourism can bring in even more investors and demand for resources like land and forests (Devine & Ojeda, 2017). It is an example for how capitalism's propensity for constant change transforms rural regions and their organization of land, labor and capital (Perkins, 2006).

Conclusion: impact on sustainable rural livelihoods

In developing countries conservation and rural development must be integrated: There must be good land use strategies that recognize the importance of poverty and employment, food production, and secure soil quality and natural ecosystems (Hanks, 1984). Livelihoods must be 'conservation-compatible', which means that they can participate in conservation strategies and gain sufficient livelihood outcomes. To reach this, conservation discourse must go from a top-down type of conservation to a type of 'community conservation', where local rural inhabitants are involved (He & Jiao, 2023). As academics suggest, too little attention has been paid in the past to the social impact of conservation policies (Tacconi, 2000 ; Caplow et al., 2011). The goal should be to find sustainable forest management strategies that equally benefit ecology, economy and social sustainability (Lax & Krug, 2013 ; Cao et al., 2021). The research at hand aims to study how Costa Rica can be more successful in this endeavor.

Reflecting on this theory section, how can this research assess the impacts on SRL that have arisen from FCP (that stimulates landowners to conserve)? It has become clear that impact on SRL depends on how FCP has changed the access to the resources, and the livelihood strategies that adapt to them. Sufficient access provides people with the means to maintain their lives and develop. People in rural (forest) regions in the South generally depend on multiple resources: Land is an important one, because it facilitates agricultural strategies and their benefits. Forests are important sources for construction materials (wood) and energy (fuel), other basic needs and income when resources are collected. Forests can, due to conservation and socioeconomic changes change from being former commons, or open-access-resources, to more limited regulated areas. This can secure the future (sustainable) use of resources, while the commodification of forests can also decrease access to resources.

In Costa Rica, new (forest) land uses have emerged that can change dynamics in which livelihoods are formed: like ecotourism and sustainable land practices like agroforestry. New pressures due to flows of people and investment might have emerged that can create issues of land ownership, migration, inequality, changing communities, etc. Adaptation of people depend on opportunities of participation, education, financial and other resources to find alternative livelihood strategies. This research must analyze the adaptation of people to these changes and issues, in their pursue of good livelihoods.

SRL has multiple dimensions: resources, strategies and the outcomes of livelihoods. These dimensions effect each other: Resources effect the strategies people have, and the strategies effect the outcomes. At the same time outcomes, like poverty, effect (access to) resources. Together these dimensions make up the totality of SRL, and represent the conditions and way in which people make a living. In *Chapter 4*. will be analyzed how the measures that stimulated landowners to conserve have reshaped these dimensions: How have people been able (and aided) to adapt to a new rural landscape with new (more sustainable) livelihoods? And who is excluded and what are the issues? By analyzing the effect of policy on these dimensions, a broad understanding can be achieved of how policy impacted SRL.

Methods

Research and research framework

The research question was: *How did Costa Rica stimulate landowners to transition from farming to practices that conserved forests, and how did this impact sustainable rural livelihoods of landowners and other rural inhabitants?*

In figure 7. a research framework is given for this question. The central boxes with the arrows represent the sub questions (and chapters). In the red boxes the content of the chapters is given, with a description of the analysis and the data they need (see *next paragraph*). In green are the findings shown that are used in the analysis of later chapters: The earlier chapters (1, 2 and 3) are instrumental to the second part (*Chapter 4.* and *Discussion*). They provide the necessary findings and understanding that can facilitate the identification of impacts (*Chapter 4.*) and implications of this impact (*Chapter 5.*).

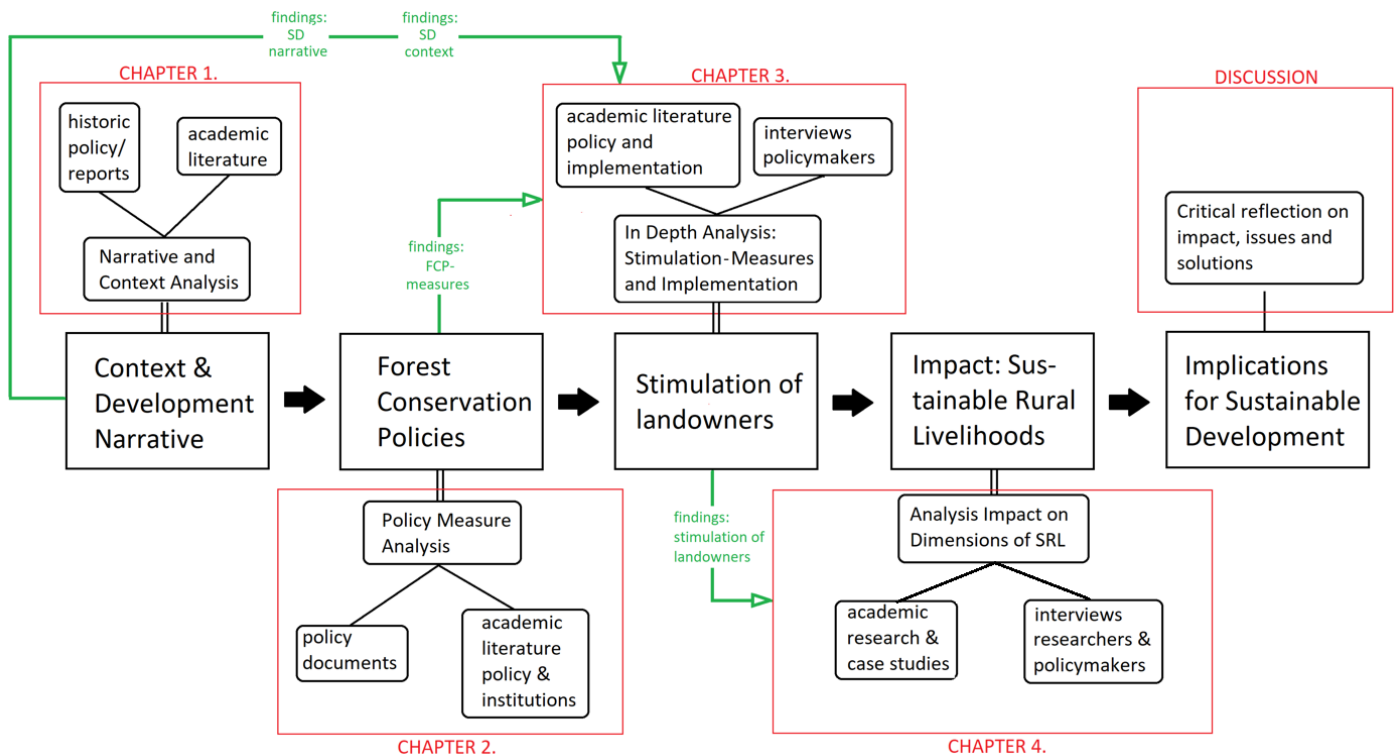


Figure 7. Research Framework.

This research is an ‘informed desk research’. What is meant by ‘informed’ is that it not only uses relevant theory to guide the study, but also history (narrative), context and interviews with actors who have an important connection to the subject. These actors are aimed to help guide what to look for when analyzing for impacts on SRL, and provide understanding of the topic.

To analyze both quantitative and qualitative data are needed. Statistics and numbers are needed to confirm or solidify certain findings or statements. But predominantly a qualitative study of data that can describe and discuss the impact of specific policy (findings from *Chapter 3.*) on SRL is central in this study. The result is a critical qualitative analysis and discussion that reflects on this impact, based on a holistic perspective and a synthesis of multiple researches and interviews. The SRL-framework is used to create this overview, where the 3 dimensions of SRL are discussed. Also suggestions for improvement and solutions are discussed. This overview of impact, and suggestions, aims to solidify academic background on the topic and inform policymakers. The research is intended to give food for thought: to stimulate further research, particularly on improvement of current policies. In the next paragraph the structural analysis of this research will be explained, along with argumentation for the specific approach taken.

Structural analysis of SRL impact

The framework (figure 5.) and *Theory* have made clear that SRL is a comprehensive but complex concept that perceives development from a bottom down perspective of (poor) people. For this reason the concept is used as a central concept in this research. To understand impact on SRL, the multiple dimensions of the concept must be understood: context, resources, transforming processes and structures, strategies and outcomes. Most importantly is the relation between policy/institutions and the access to resources, because this research is an analysis on impact of policy. The structure of this research follows the dimensions of SRL to understand this relation: Dimension 'context' is analyzed in *Chapter 1*, policy and institutions (as part of the more broad dimension transforming processes and structures) are analyzed in *Chapter 2 and 3*. *Chapter 4*. then analyzes the impact of this policy on dimensions resources, strategies and outcomes.

Before the chapters are explained, a few notes have to be made. Firstly, for clarity and readability of the result-chapters paragraphs have been given a number to which is referred (e.g. 4.1.1). Secondly, this research focuses on a specific type of FCP: stimulation of landowners to create or preserve forests. This is chosen because for Costa Rica this type of FCP has been central to its reforestation and conservation success. Also, it is an important (new) conservational tool of neoliberal politics that gives people the ability to be voluntary agents of conservation. This could be essential for conservation in the South, where developing countries governments cannot always mobilize forest protection effectively, since development must also be achieved and funds are limited. Organizing a system in which rural inhabitants benefit could be the key to saving tropical forests. Such a system must therefore be also critically analyzed. Importantly, the research question talks of *stimulation* of landowners instead of *incentivizing* landowners: this is a correction made during the research when was found that some FCP *pushes* or certain behavior or discourages alternatives to stimulate particular behavior, rather than directly incentivizing it.

Secondly, the term forest conservation policy (FCP) has to be understood in a broad sense: The term incorporates the most important policies that have aimed to conserve forests. In *Chapter 3*. specific FCP measures were found that stimulate landowners to conserve forests. These measures are not necessarily exclusively conservation measures: they can also aim for other things at the same time. Measures can e.g. also be state-led socioeconomic changes to the rural economy, which have aimed to create a forest transition among other things such as development. Such changes involve other factors such as globalization: these are not inventions of the Costa Rican state, but have however been introduced by the state into the economy and used to conserve forests. Such measures are also taken into account here.

Thirdly, of course, not only policy impacts the forest transition and SRL, and this research does not claim this in any way. The factor globalization for example is very important, but goes beyond policies as an external factor. This complicates the way in which a research can analyze causal relations of (conservation) policy and impact. This is the most important reason why this research is no calculated list or quantifiable (cost/benefit) evaluation of all impacts of policy: it does not claim that all impacts discussed are fully determined by the policies discussed. This research is an analysis of how FCP relates to different dimensions that makeup SRL-impact: It is about understanding the issues that arise (for SRL). This gives a better idea of how to improve policy. Factors that are facilitated by FCP or introduced by the state, but at the same time are external or beyond all control of the state, are important too for the research question and are discussed. Such factors can complicate the endeavor of the state to stimulate landowners to conserve because they lead to negative impact and issues.

Lastly, this research analyzes the stimulation of landowners to conserve and its impact on SRL. 'Landowners' refers to those people in rural areas who have land ownership or tenure, whether this is officially or informal. These people have been predominantly farmers, which is the focus on this research. Stimulation-measures however have also influenced the behavior (strategies) of non-farmers, e.g. people that have recently migrated to rural areas or invested in land. 'SRL' refers to the livelihoods of rural inhabitants that have lived in forest regions for a while (or forever): the locals. They are both farmers who had to adapt and other rural locals who were perhaps not stimulated landowners but nevertheless impacted.

Analysis per chapter

The first chapter explains development narrative and context. For this it uses policy documents, reports and academic literature about the history of Costa Rica’s development narrative, and the conditions in which it changed. After giving a description of its history in 3 periods, narrative of the last decades is explained: ideas and goals about sustainable development that are strongly connected to recent FCP. This also helps to understand the context-dimension of SRL (figure 5,8).

The second chapter gives an overview of FCP: It explains the laws and other policy documents that state these policies. Academic literature and institutional reports that discuss these policies are also referred to. First an analysis is given of all relevant institutions that implemented these policies. Then FCP itself is discussed by explaining the contents of policy documents that were created. The analysis begins with four ‘foundational policies’ that marked a new era of FCP. Then more recent policies are discussed. Some policies are explained by their laws, others more based on how they were stated in national plans and strategies. Naturally, all policies about the use and protection of forests were discussed. Also two policies that are not about forests but directly relate to them are explained, about ecotourism and mining. They were found to be essential for answering the second sub question, based on the findings of *Chapter 1.* and *Theory.* The policies found in this chapter will be analyzed further in *Chapter 3.* (see figure 7.) to determine which of these policies have stimulated landowners to conserve forests. The overview on all policy is necessary because multiple policy measures have (directly or indirectly) created the conditions that made landowners agents of conservation and a forest transition possible.

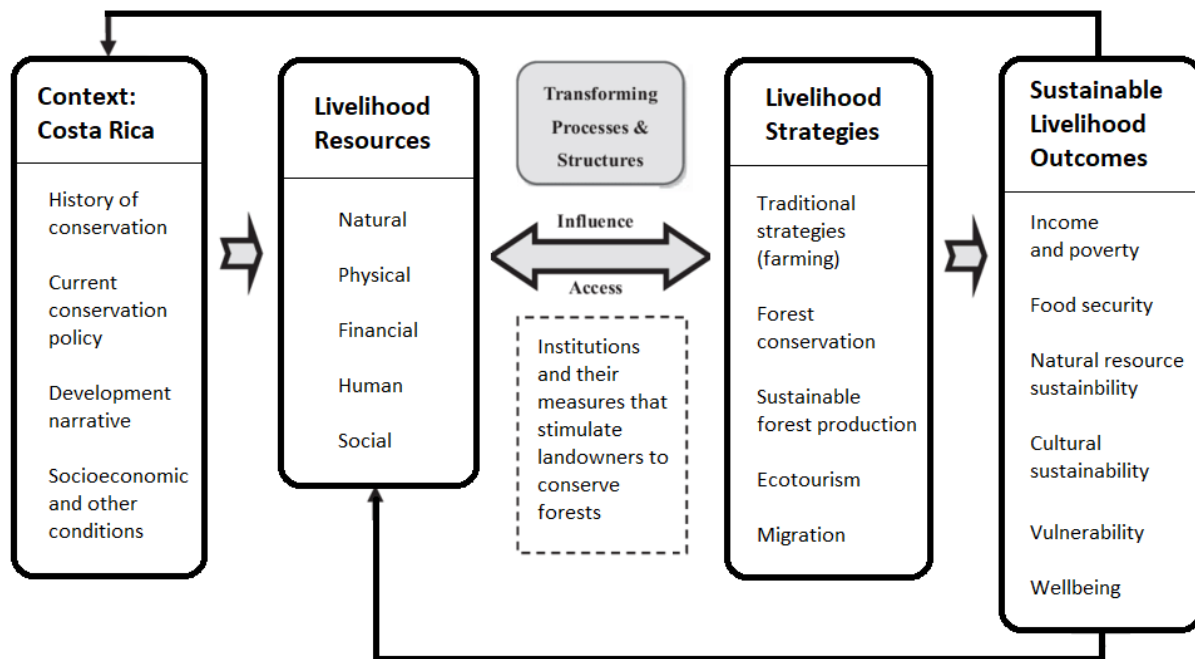


Figure 8. SRL-framework adapted for this research.

The third chapter goes more into depth on how policy measures have stimulated landowners to transition from farming to practices that conserve forests, and how these policies were implemented. The PES-system will of course be discussed, but also other measures: For example the importance of facilitating new livelihood strategies and disincentivizing traditional (harmful) strategies. The comprehension of context and sustainable development in the first chapter will help understand how policy plays out in the Costa Rican economy, and what the outcomes will be for landowners. Also a focus on the institutions that implement is necessary. Lastly, interviews with people from these institutions will aid in understanding how they operate, and how landowners have been stimulated to conserve. After every paragraph in the chapter, conclusive implications are given towards the next chapter: These implications mention topics that need to be discussed to analyze how the measures could lead to impact on SRL.

Based on what was found in the first 3 chapters of this research, the framework of figure 5. has been modified to be a framework for this research that shows the relationship between stimulation-measures and the dimensions of sustainable rural livelihoods in forest regions in Costa Rica. It is this framework that will be used for Chapter 4. and 5. (figure 8.).

In the fourth chapter the impact of the stimulation-measures (of *Chapter 3.*) on SRLs will be analyzed using the SRL-framework of figure 8. This is done by discussing the 3 dimensions separately in relation to these measures. For example, when dimension 'livelihood resources' is discussed, the chapter analyzes what type of resources are important for the case of rural Costa Rica. Then is discussed how they have changed due to the stimulation-measures, and how this impacts SRL both for adapting landowners and other rural inhabitants. Case studies and other researches are used for this analysis, as well as interviews with actors that are knowledgeable to the case. These interviews will perform as a guide through the analysis, and to identify issues with policy and possible solutions. Different actors that have different perspectives will be interviewed: Policymakers, researchers and conservationists, who have different experiences and opinions. Because of the large amount of findings in this chapter, there will be no short conclusion: Instead, the *Discussion* will summarize these findings and answer the 4th research question.

In the fifth chapter the meaning of the previous findings will be discussed: What does the impact on SRLs say about the successfulness of Costa Rica's measures and approach to forest conservation? And most importantly: how can these measures be improved to reduce adaptation issues and negative impact? Secondly, some implications of the research are given for sustainable development and FCP in the South in general: is Costa Rica's approach applicable elsewhere? The discussion of this chapter is critical, but constructive: Suggestions are given particularly on how Costa Rica can find solutions to the (social) problems its policies create. The research suggests further research to work further on these solutions.

Data collection

In this paragraph some specific information is given on the data used in this research: what data is used and where it has been found. Every chapter uses a different composition of data, which was summarized in the research framework (figure 7.).

Academic literature, case studies and policy documents

General literature on the topic is important to understand theories and concepts, and to give an idea of how to discuss impact (using a SRL framework). More specific literature about conservation and development in Costa Rica is used for *Chapters 1, 2 and 3.* To be able to further analyze the impact on SRL that has been hinted on by previous chapters and interviews, in *Chapter 4.* case studies will be used: Research that can confirm trends and issues, and give an understanding of how people's lives are effected by policy. This data is mainly about areas or cases in Costa Rica where a specific topic or question is answered. For all these types of literature the source is either the internet or books. Also some of the actors who were interviewed provided some articles, sometimes of own research.

Particularly for *Chapter 2. and 3,* policy documents have been analyzed. These are either laws or documents where specific strategies, policies and goals have been explained of different ministries in Costa Rica. Of course these documents have been selected on relevance and year, and some have been updates of older documents. The documents have been found online, mostly through governmental websites and databases. Most of the documents were in English, while some were in Spanish.

Interviews

This research has interviewed actors: They are researchers from universities or research institutions, or people from Costa Rica's main governmental bodies that create or implement policy. The interviews are used both for guiding the process of analyzing impact on SRL and for answering some specific question that were left unanswered. These actors can provide better understanding because they are in direct contact

with the case. They have also provided data sources and information that would otherwise perhaps be not found, particularly Spanish studies.

The actors were found in multiple ways: Important governmental organizations and other non-governmental institutions were approached. This is how the research got into contact with actors from SINAC and the former minister of the MINAE. Via contacts from the university (UU) also some actors were found, for example at NGO Tropenbos International. Lastly, interviewed people also helped by providing further contacts to interview. Most interviews were done with Microsoft Teams. Language was an issue for communicating with some actors. Some actors from Costa Rica only spoke Spanish, and required written and translated communication. The interviews with these actors were done through email, using Google Translate. Some Spanish actors explained however they preferred a face to face meeting, and therefore were not willing to participate. There were also interviews with Dutch actors: They were interviewed in Dutch.

The interviews are unstructured interviews with open questions. The questions are all specified to the actor and his/her expertise, and it was important that the actors were free to answer and give their perspective in their own way. The questions were prepared beforehand, but during the interview adapted to react to whatever the actor was saying and asking further on these topics. This helped identifying issues and implications for the case. Some researches or statistics were asked about to get the actors opinion on them. Sometimes a problem or impact was hinted upon in the question, which is not optimal but necessary to direct the interview towards the topic at hand. Written interviews were in general shorter, and gave less information. Face to face interviews generally were 40-60 minutes.

In *Appendix 4*, an overview for reference is given of all the interviewed actors, along with their relevance for the case. The interviews themselves are given a number and can also be found in *Appendix 2*. There have been eleven actors interviewed in 9 different interviews. One interview was done in written form with three actors from SINAC (Interview 4.): they were given the same questions and answered them in the same email. These three actors were colleagues (although they did not have the same function within SINAC). One of them was mentioned, while the other two preferred to remain anonymous. Interviews are referred to as (Interview X: Y, with X as interview number and Y as question).

Limitations, reliability, validity and ethical issues

Limitations and validity of analysis

This research is an intentionally broad analysis, because this way it can give an understanding of the most important issues (for SRL) that have resulted from Costa Rica's conservation approach. At the same time however this is a limitation: It required not only a large amount of information to gather, it also meant that some data/impacts might have been missed, although this could also have happened because of a lack of studies/data on them. Additionally, SRL is a complex topic where causal relations are not simply found and stated, but have multiple layers and must be holistically understood and discussed. Because of this, it is important to review this research for what it can and cannot do: The research is not a calculated or quantitative analysis of (every) impact, or an evaluation of all causal relations between FCP and SRL. What it can provide however is an understanding of Costa Rica's conservation approach, and what issues this creates (impact) on the livelihoods of people who have to adapt to it. The SRL-framework helps identifying such issues. This research thus is meant to find weak points of policy, and then give suggestions on how to improve them.

There are however some limitations to the SRL-framework: While it provides structure it remains an abstraction of reality and is not always fully applicable to every case. Some aspects of the framework might have been less relevant, while the framework might also have missed some impacts or issues. The framework is also meant to explain many factors (transforming processes), while this research mainly looks at one direction in forest conservation. Another issue is that in *Chapter 4*, some topics (aspects of dimensions of SRL) overlap. Repetition of topics was aimed to be prevented by cannot be completely.

Nevertheless, this research believes the SRL-framework is a good way of understanding how people adapt their living and working to new (policy induced) conditions: It gives a good look in what these people need, what they lack, how they can adapt and with what outcomes.

Changes in SRL have certainly not been completely caused by the ways in which policy has stimulated landowners to conserve: The research has tried to make clear that other factors are also of importance to both impact and development success. Some of these factors are still state-led or introduced by the state, while often also beyond the full control of the state and external. But the state has to have effective strategies of how to deal with these factors, like globalization, markets, and foreign flows of people. Understanding the issues that are not completely caused by but nevertheless strongly related to policy, can still give essential suggestions and solutions for governmental institutions to reduce (negative) impact on people.

Reliability of findings and conclusions

The identification of issues (of policy) for SRL has been based on a search for consensus in multiple sources of data, like studies. If multiple sources stated a particular issue or impact, the reliability of this finding was higher and it has been emphasized more as practical knowledge from which conclusions were drawn. But of course findings from studies and interviews are subject to personal experience of the authors/actors. Particularly interviews show different perspectives of actors that have different motivations and knowledge. While this give interesting subject for discussion, it also made some results/conclusions uncertain. But it is the debate found on several topics here that makes this research interesting. It is obviously possible that data used, such as case studies, has been incorrect or only applicable for the case. The generalization of such findings by discussing conservation policy on a nationwide scale makes findings less reliable, but it is necessary to discuss general improvements of policy.

Chapter: Discussion presents several statements and solutions that are valuable as suggestions, and reliable to an extend that they represent impacts and issues found in data, but do require further research. The suggestions are not facts, and they are also prone to the perspective of the author of this research: The aim has been to remain objective, but connections and reflections on a large array of findings is always at least a little subjective. The academic world can take up these suggestions and investigate how viable they are for the Costa Rican case or elsewhere.

Limitations of interviews and data

One limitation for the use of different types of data was language. Even though the researcher possesses some Spanish skill, it is not on an academic level. There is much English literature on the topic, but when relevant Spanish literature was found it was translated using Google Translate. The same goes for interviews, which were done in written form and then translated. A big limitation however was that face to face interviews were not possible in Spanish.

Impact on SRL is a topic that discusses multiple facets or layers that make up (rural) peoples livelihoods. So to fully understand what this impact was, much data was needed on many different topics. While much data was used, not every aspect of the topic had abundant literature, and not all literature was recent. The interviews were aimed to give further understanding and fill these gaps. However, finding interviews has not been easy. Hundreds of emails were needed to approach people and most people, even those who responded and agreed to answer some questions, were not heard from again. Some interviews were delayed a long time, or cancelled.

Ethical issues

Lastly, all data from non-open sources, like interviews, will be only presented with consent of people involved. Before doing interviews, actors were made aware of the content and goal of the research. They were asked if the interviews could be recorded, and if they and their answers could be referred to in the research as a source of information/data. Some actors wanted to stay anonymous, which has been honored.

Chapter 1. History and Context of a Dynamic Development Narrative

What is Costa Rica's history and narrative on sustainable development in forest regions and what is the context and origin of its forest conservation policy?

Analyzing Costa Rica's stimulation of landowners to conserve and its impact on SRL requires some general understanding of country's history of development and the context in which forest conservation policies were created. Costa Rica's development narrative has been dynamic and changed its focus from economic growth and modernization towards sustainability since world war II. This chapter analyses this specific timeline, starting in the 1950s. Firstly, this chapter analyzes development narrative focusing on three periods in Costa Rica's history. These periods have been carefully chosen based on literature: They connect to specific development and conservation ideas with different results for forest cover. As Brockett and Gottfried (2002) explain, different patterns of de or re-forestation during these periods indicate different conservation policy directions. These patterns are confirmed by other studies on historic deforestation trends (Stan & Sanchez-Azofeifa, 2018, p592 ; MINAE & FONAFIFO, 2012, p8 ; Evans, 1999, p52). The periods are named "laissez-faire period", "interventionist period" and "hybrid period" (Brockett and Gottfried, 2002). The conservation policy directions of these periods relate to more broad development narratives that form the foundation of such policy.

This chapter also analyzes the connection between this history of development (3 periods) and Costa Rica's more recent development strategy of the last two decades. It also discusses the role of forest conservation in this strategy, providing a connection to the next chapter. Additionally, this chapter explains the most relevant context in which development narratives and FCP were formed within these three periods. This context is important because it partly explains why narratives were formed, and what needs to be taken into account in this larger research when it analyzes policy. Policy can change because of changing context, and the other way around.

1.1 3 Eras of development narrative

The laissez-faire period (1950-1970)

In the 1950s Costa Rica's economy was primarily agricultural: Agriculture was the largest source of employment, mainly with the cultivation of bananas and coffee for export (Seligson, 2018 ; Evans, 1999 ; Campbell, 2002). After the 1948 civil war, a period of political stability followed, which was characterized by more democratic institutions, political and economic reforms (Booth, 2008 ; Seligson, 2018). The economic reforms aimed to diversify the economy and stimulate industrialization, following the international example of modernization theory (see *Theory*, Molina & Palmer, 2007). However Costa Rica's development had a strong social focus: it experimented with 'a welfare state' and social reformism (Carriere, 1991 ; Fletcher et al., 2020 ; see also *Interview 3:3* & *Interview 6:2*). The state provided social security, like healthcare and education, and land reforms to create development for small farmers and the rural poor (Oviedo et al., 2015 ; Deneulin, 2006 ; Campbell, 2002). In a period of twenty years, the economy industrialized and grew, and foreign direct investment (see *Theory*) was strongly stimulated.

Development of an industrial economy happened alongside expansions in agriculture. Particularly the cattle-industry grew, which resulted in forestland to be converted to pasture-land: Deforestation rates were one of the highest globally (Evans, 1999 ; Stan & Sanchez-Azofeifa, 2018 ; Sanchez-Azofeifa, 2001 ; Rodricks, 2010). Pasture was an easy practice for local small scale employment, and provided people with income and property (cattle) (Rodricks, 2010). In the 1960s pasture land expanded by 62%, mostly for export to the US (McDade, 1994). It shows how the development narrative was starting to look outward to the global market. This market was an opportunity for economic growth and poverty elevation. The World Bank calls this the agro-exports model (de Camino et al., 2000, 87). Forest lands were not considered valuable, and were unprotected: They were seen as a limitless source for resources like

agricultural land (soils) (Brockett & Gottfried, 2002). The forests (ecosystem) ‘services’ were unnoticed (Segura et al., 1996 ; see *Theory*). The state stimulated this mentality: Deforested land was rewarded with lower taxation compared to forest ownership to increase ‘productive use’ (Brockett & Gottfried, 2002).

The development narrative can be described as a typical productivist vision and natural-resource-development (see *Theory*). The commodification of (forest)land however remained relatively small scale due to the country’s focus on social development. Due to the countries’ industrial outward focus the economy had high rates of economic growth (GDP and GNP, Fletcher et al., 2020). It also led to high rates of deforestation (figure 9 ; see also *Interview 3:3*). In figure 10. GNP and forest cover rates are compared. Geographically, it has to be noted that virtually all of Costa Rica was originally forest. Due to inarable or mountainous land, 60% of the land surface is suitable only for non-intensive use, and not for agriculture (Centro Científico Tropical, 1992, p14). This explains why pasture, which is possible on non-arable land, was such a threat to (mountainous) forests and why later reforestation was possible without the threat of agricultural use in a large part of the country.

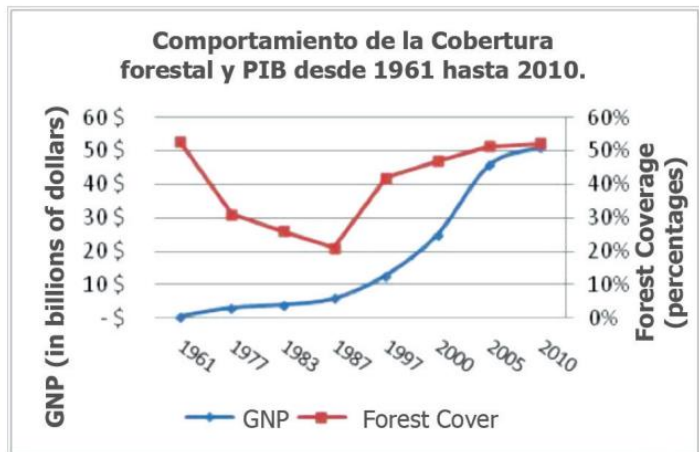
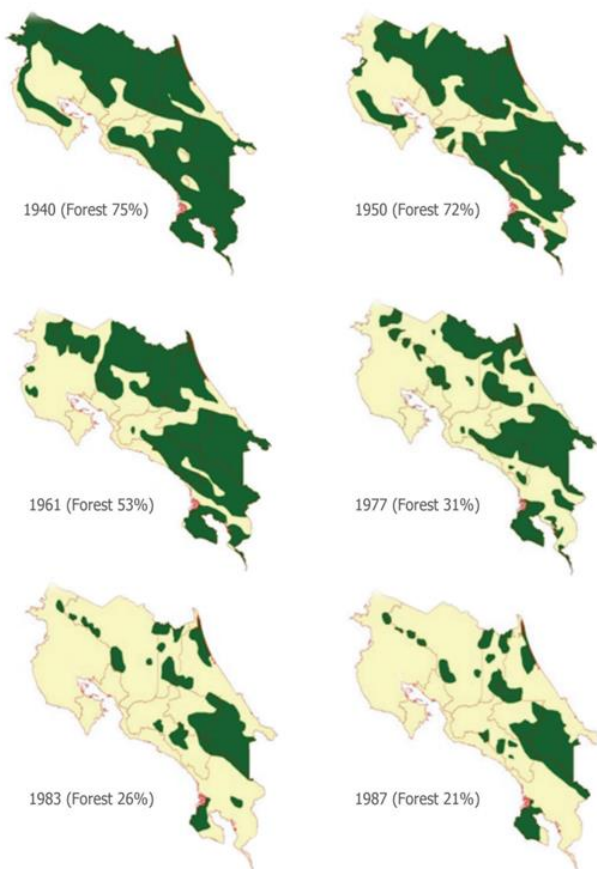


Figure 9. (left) Deforestation decline of dense forest in Costa Rica between 1940 and 1987 (MINAE & FONAFIFO, 2012).

Figure 10. (right) Costa Rica’s GNP and Forest Coverage compared during 1961-2010. (MINAE & FONAFIFO, 2012).

The interventionist period (1970-1990)

The interventionist period starts around 1970 when the government acknowledged the deforestation rates of the past decades and a new conservation approach appeared. It was a period when the government tried to protect forest and intensively used them at the same time.

The national parks system was created, along with regulations for governing forestry and financial incentives for reforestation (Brockett & Gottfried, 2002 ; Evans, 1999). The cutting of trees for example now required a permit. Laws were created and the proper institutions were organized so that they were implemented and controlled (MINAE & FONAFIFO, 2012). There was however much criticism on this new ambitious approach: The government did not have the means to provide effective control, and the strict regulation of forest land found resistance and created disincentives for sustainable use of forests (Evans, 1999). Costa Rica’s new conservation approach was what we call a ‘traditional conservation narrative’: A narrative often created in times of crisis, which involves protection of biodiversity in areas,

while separating them from (harmful) economic human activity (Campbell, 2002). This also resulted in the displacement of local communities, and disturbance of the traditional ways in which communities previously used the forests to create livelihoods (Utting, 1994). Small farmers often paid the price of this type of conservation, and local support for this 'exclusive approach' was low (Utting, 1994 ; Anger, 1989 ; Kutay, 1991).

While the government was starting to protect its forests, it further expanded and modernized its development. In 1970, the economy was still agricultural, but was further directed outwards towards a dynamic export sector (OECD, 2017 ; Ferreira & Harrison, 2012). It produced a diversity of non-traditional products that the country could produce with a comparative advantage, such as pineapples (OECD, 2017 ; de Camino et al., 2000). Because of this deforestation was still high in Costa Rica in the 1970s, even though there was conservation (Edelman 1995 ; Fletcher et al., 2020 ; figure 9.). In the 1980s, following the debt crisis and falling commodity prices, Costa Rica fell into economic collapse (Fletcher et al., 2020 ; Molina & Palmer, 2007). Costa Rica fell under IMF structural adjustment: Protective regulation for the domestic market was halted, and exports in free markets stimulated (Borges-Méndez, 2008 ; Edelman, 1999 ; Campbell, 2002). It started Costa Rica's neoliberal turn (Fletcher et al., 2020 ; see also *Interview 6:2*).

As Molina & Palmer (2007) note, Costa Rica's period of economic growth had its costs: Small scale farmers were displaced by large scale agriculture and wage-laborers became unemployed or worked under bad circumstances. Deforestation rates reached their peak because of agricultural expansion (Fletcher et al., 2020). Furthermore, Costa Rica had now enormous debt and more difficult international relations. This convergence of 3 crises (geopolitical, economic and ecologic ; Lansing, 2014) is a good example of earlier mentioned critical theory (see *Theory*): Austerity and its focus on capitalism can create costs in the form of loss of employment, jobs and biodiversity. Costa Rica's outward focus did create dependency on commodity prices and the external global economy.

The hybrid period (1990-2000)

In the period that followed Costa Rica tried to solve many of the issues of its initial conservation approach: To change the exclusive and unequal nature of the old narrative, the country came with a counter-narrative (Campbell, 2002 ; Brockett & Gottfried, 2002). The government realized that, while forests needed protection, local communities depended on them as well and could play an important role in conserving them while obtaining sustainable livelihoods. Now market-oriented measures were used to include landowners and communities in conservation by letting them benefit from it (subsidizing), and with more sustainable practices of forest use (Brockett & Gottfried, 2002 ; MINAE & FONAFIFO, 2012 ; Rodricks, 2010). An example of this is the famous PES-system.

Instead of fighting two separate (but seemingly competing) battles for both conservation and economic growth, the government adapted its development strategy to reach growth with(in) forest conservation and sustainable forest use (MINAE & FONAFIFO, 2012 ; Campbell, 2002). It saw now large (economic) value in its forests, that could be used to reach both goals (Rodricks, 2010). This happened through sustainable practices of logging and agriculture, and ecotourism: Local people and communities could help provide this service to tourists to obtain income, and give foreign financial flows and growth to the economy (Evans, 1999 ; MINAE & FONAFIFO, 2012 ; de Camino et al., 2000). Thus the forests became a proactive sector, with organizations and actors that desire reforestation and forest management (de Camino et al., 2000). Activities that were traditionally associated with deforestation, like cattle industry, were no longer central for Costa Rica's development (de Camino et al., 2000). Instead, the country focused on other sectors that were relatively non-harmful to the environment: Most importantly the high-tech and services sector. (MINAE & FONAFIFO, 2012 ; Ferreira & Harrison, 2012).

1.2 Recent development: statistics

The three historic periods aided Costa Rica in reaching some impressive achievements in the last two decades. It has higher levels of social and economic development than elsewhere in Central America (Seligson, 2018, 369). Human Development, facilitating healthcare, education and access to basic needs, have been important since the 1950s (MIDEPLAN, 2017, 19). Life expectancy is around 79 years, higher than for example the USA (World Bank, 2022a ; Seligson, 2018, 369). Costa Rica has relatively inclusive social security, with most people having social security and access to pensions (Oviedo et al., 2015, 2). Costa Rica invested in education, which led to a literacy rate for adults of 97% (Oviedo et al., 2015, 2). Louman explained in *Interview 3*. that this education of the people helped facilitating the change to more sustainable uses of forest (*Interview 3:3*). These factors contributed to a ‘very high’ HDI value of 0,809 (UNDP, 2021). The country is a middle-income country now, with GDP a little above the Latin American average (OECD, 2017, 49). Poverty levels are relatively low compared to the Latin American region, based on its Multidimensional Poverty Index (MPI)(UNDP, 2022). Politically, Costa Rica has the longest democratic governance of Latin America (Seligson, 2018). Its political stability has influenced its economic success (OECD, 2017): Economic growth has been positive on average (above the Latin American average), but unemployment has been an issue (OECD, 2017, 49). Inequality (based on Gini coefficient) is average to low for Latin America, but it increased in the last 3 decades (WDI, 2016 ; OECD, 2017, 53).

The former agricultural economy saw the share of the agricultural sector in both its GDP and employment fall significantly (OECD, 2017, 55). The agricultural sector has become dualistic: There is more traditional small scale production for domestic markets, and a (large scale) export sector (OECD, 2017, 57). Industrialization, as well as services and tourism sectors, have increased strongly. This has been paralleled by late with significant urbanization: in 2021, 81% of the population was urban, compared to 50% in 1990 (FAO, 2023). The population is currently about 5 million, and is aging because of declining fertility rates (OECD, 2017, 51 ; MIDEPLAN, 2017).

1.3 Recent development: narrative

Probably the best person to explain Costa Rica’s development and conservation ideas is Carlos Rodriguez, former minister of Environment and Energy (MINAE). He has completed 3 terms as minister, during which the country’s current policies developed (1990-1994, 1998-2002, 2002-2006). He has been interviewed for this research. Near the end of his last term he explained that after the deforestation period the government’s goal was to achieve both conservation and development (Rodriguez, 2005). The government used a market-based approach: Compensation for environmental services, which created benefits for local people and indigenous communities, and charging the use of environmental services, through taxation (Rodriguez, 2005). Economic opportunity became incorporated in conservation and the other way around. Costa Rica has, according to the MINAE (2012), ‘a new model for development’. In this model, biodiversity is an important value and tropical forests are seen as ‘a motor for green growth’(MINAE & FONAFIFO, 2012): They are, when maintained, valuable on the long term for development. This is clearly a narrative of green growth, with decoupling as a central idea (see *Theory*). It is also a choice of long term benefits (of forests) over short term gain by economic activity that causes deforestation (MINAE & FONAFIFO, 2012, 5), and thus for economic stability and sustainability for the future.

Costa Rica’s development strategy is summarized short term with National Development Plans, and long term with its ‘National Strategic Plan 2050’ (MIDEPLAN, 2022). The goal of this plan, sustainable development, implies: to “promote socially inclusive economic growth, promote the preservation of the environment, advance in the construction of a more resilient country, and contribute to achieving the global goals to face the climate change.” (MIDEPLAN, 2022, 8). The word ‘resilient’ is key here: I means the government aims to achieve an economy that is (long term) sustainable and stable, by both protecting its natural value and including all people in its development. As stated in the National Development Plan (2011-2014), environment and land-use planning are national priorities (Wallbott et al., 2019, 2). Where

before people could freely use forests and change its land use in the quest for development, now land use is strongly regulated and reflected upon. Sustainable management of the land-use sector now has two objectives: conservation and sustainable production (Wallbott et al., 2019). The idea of forests as motor for green growth goes further with Costa Rica's focus on tourism: The country realized (eco)tourism was a source of economic growth and benefits that could use forests in a sustainable way, if properly managed. It regulated the sector, while advertising it around the world by building a 'green trademark' (Oviedo et al., 2015 ; see also *Interview 6:2*): Showing the world how Costa Rica conserved its biodiversity and reforested made it a popular destination for nature loving tourists (Miller, 2012 ; see also *Chapter 2.*).

A last development priority, important for FCP, is Costa Rica's commitment to face climate change (MIDEPLAN, 2022, 8). With its National Climate Change Strategy (2009) it set the goal to become fully carbon neutral in 2021 (MINAE, 2009). This goal was not reached, but much progress was made in the last decades. In the first place Costa Rica stimulated carbon neutrality following the REDD+-initiative (see *Chapter 2.*) by storing carbon with its forest protection and reforestation. It emphasizes the strong connection between climate goals and forest protection. Secondly it made use of its landscape and geology to invest heavily in renewable energy: In 2014 99% of all its energy was derived from renewable energy sources (ITA, 2021).

Conclusion

The question of this chapter was: *What is Costa Rica's history and narrative on sustainable development in forest regions and what is the context and origin of its forest conservation policy?* Costa Rica's has a unique history of development that shaped the country and its policies to its current form. This chapter has analyzed three periods of development: In the 1st period the economy started industrializing and looking outward towards the global economy, while agricultural production expanded. In 2nd period deforestation rates were acknowledged, but continued. FCP started with the national park service and other measures. But conservation and economic development were pursued separately and conflicted. In the 3rd period such issues were tackled in a different way: Economic opportunity was incorporated in conservation by facilitating and stimulating sustainable use of forest (as proactive sector) and include local communities. A new approach of FCP started with the focus on ecotourism and the PES-system.

The economy transformed from an agricultural one to one based on services, high-tech industry and (eco)tourism. The sustainable development narrative since 2000 follows in the footsteps of the 3rd period: In the recent model forests are a motor for green growth, and market-mechanisms and incentives for landowners are instrumental to this endeavor. To ensure long term economic and developmental stability, socially inclusive regulations were made on land use and sustainable use of forests. People who lived on forestland were intended to participate in such sustainable use and gain benefits that would develop their (rural) society. From the perspective of biodiversity conservation, the country has been highly successful: The process of rapid deforestation of the earlier decades was reversed dramatically. While in 1985 the forest cover was 24.4% it increased to over 50% by 2011 (Brondizio et al., 2020). Costa Rica's narrative is unique, and its forest-cover-increase stands out in a global South dominated by deforestation. The next chapters will further analyze and evaluate this progress by looking at specific measures and how they impacted SRL.

Chapter 2. Forest Conservation Policy

What are the general strategies, laws and measures of Costa Rica's forest conservation policy?

This chapter gives a general overview of the most important FCP in Costa Rica. It does so by looking at the policies (documents) that were relevant for the current state (and narrative) of sustainable development in the country. Policy documents are the main data source, but academic literature is used to review their role and relevance. The scope of this chapter is limited to the essential: The answering of the second research question is instrumental to the analysis in further chapters. Giving a structured and comprehensive analysis in the rest of the research requires an overview of FCP, not an extensive list of every single policy measure.

To obtain this overview of relevant FCP, the structure of this research is based on the logical and temporal order of the policies themselves. There are two parts (see Table 2.): firstly the, what this research calls 'foundational policies', are discussed. These are policies that still stand, and are fundamental for the countries conservation approach. Secondly the policy documents that build further upon these foundational laws are discussed. They were introduced in more recent years and either go in more depth on regulation or implementation, or take new changes or developments into account. These policies complement the foundational laws, and together create an overview of Costa Rica's FCP. First however, the origin and characteristics of the (environmental) institutions that connect to them are discussed.

Foundational FCP's
PA-system Environment Law 7554 (1995) Forest Law 7575 (1996) Biodiversity Law 7788 (1998)
Recent FCP's
National Policy for Biodiversity (2015-30) National Biodiversity Strategy (2016-25) National Plan for Forestry Development (2011-20) National REDD+ Strategy: 2015 National Plan for Sustainable Tourism (2010-16) Debt for nature swaps

Table 2. Relevant Forest Conservation Policies.

2.1 Institutions

According to former Minister of Environment and Energy (for 3 terms) Carlos Rodriguez, who has been interviewed for this research, the creation of the right institutions is one of the two most important reasons why Costa Rica was able to facilitate a forest transition (Interview 9:1). The central institution is the ministry of Environment and Energy (MINAE). While previously there was only a forest service a another ministry, in 1990 a separate ministry was created for conservation and natural resources (Interview 9:1 ; OECD, 2017, 96 ; Fletcher et al., 2020). The laws of 1995 and 1996 (see *next paragraph*) define the new role of the MINAE, as institution in charge of the forestry sector (FAO, 2001).

The National System of Conservation Areas (SINAC, originated in 1994) is a department of the MINAE that implements FCP through a system of PAs (see *Theory* ; FAO, 2001). First there was a centralized National Park Service, but now this was replaced by a decentralized system: The SINAC was organized in eleven dispersed areas that implemented FCP locally (Fletcher et al., 2020 ; Heindrichs, 1997). This was a way to make conservation implementation more connected to the local context, and to realize more local participation and democratization (Brockett & Gottfried, 2002, 26). After all, forests needed to become a (conserved) proactive sector, of which local development needed to benefit (see *1.1*). Regional environmental councils, where actors from multiple sectors were present, had an advisory role in the SINAC (Brockett, 2002, 26).

The National Forest Office (ONF) is an advisory institution that proposes policies and advises the Regional Environment Councils. The main board of the ONF has members that represent forest users and ecologist groups and associations (FAO, 2001). Thus stakeholders are introduced in the decision process, although only in an advisory role. Multiple influential NGOs and research institutions are also involved: These organizations have often cooperated with the government (FAO, 2001 ; Brockett & Gottfried, 2002). One of these research institutions is the CATIE, which has had large influence on scientific and conservation leadership in the country (Evans, 1999 ; CATIE, 2023).

The last important organization to mention is the National Forest Financing Fund (FONAFIFO, originated in 1996). They are a department of the MINAE. The institution has become ‘the bank of the forest sector’(de Camino et al., 2000, 42). It finances forest activities like forest management and (sustainable) forest use (GRICCE, 2023). Furthermore, it channels financial resources to (small scale) producers via the PES-system (FAO, 2001 ; OECD, 2017 ; Brockett & Gottfried, 2002, 25 ; Zúñiga, 2003). Because of the market-based approach of Costa Rica’s FCP the FONAFIFO became a driving force of the forestry industry and promotor of sustainable development (MINAE & FONAFIFO, 2005).

Essential to note is that FONAFIFO, and basically all conservation in Costa Rica, is for a large part dependent on external funding. Since the 2000s, when the state realized it needed additional funding for its costly conservation policies (particularly PES), it began negotiations with the private sector and international agencies and banks: More than half of FONAFIFO’s budget comes now from loans and grants from international agreements (MINAE & FONAFIFO, 2005, 27). This is of course an issue because it makes FCP dependent on external factors. Important sources of funding have been the World Bank, USAID and the Global Environment Facility (GEF)(Zúñiga, 2003 ; Sanchez-Afofeifa et al., 2007 ; Fletcher et al., 2020, 17 ; Brockett & Gottfried, 2002 ; MINAE & FONAFIFO, 2005, 28-29). In recent years the UN also became an important funding source through the REDD+-initiative and the Green Climate Fund (UNDP, 2020). Another important funding source is the sale of carbon credits (World Bank, 2013).



Figure 11. The institutions that create, implement and evaluate Costa Rica’s FCP.

2.2 Foundational policies

In this paragraph 3 foundational laws are analyzed: They will be referred to as (law ..., art ...), with ‘law’ showing the title (number) and ‘art’ showing the article. In the reference list the full reference is shown.

National System of Protected Areas

The Convention on Biological Diversity (CBD) has set the target of increasing protected land surface globally to 30% by 2030 (see *introduction*, UNEP-CBD, 2022). Costa Rica started the National System of Protected areas already in the 70s, and reached 27% of protected land surface in 2011 (MINAE, 2012 ; Oviedo et al., 2015, 20). The system of PAs forms the beginning and center of Costa Rica’s current day FCP (Fletcher et al., 2020). With the manifestation of the SINAC, this system became more structured as a form of local governance in 11 conservation areas (Oviedo et al., 2015, 20). For a recent map of these areas see *Appendix 1*. The SINAC divided each PA and surrounding region in 3 types of land-use categories: Core protection areas (parks), buffer zones with multiple use areas, and intensive extraction zones (Brandon, 2004, 301). This protected the surrounding areas of parks with buffer zones and extraction happened more centralized in isolated areas.

Environment Law 7554 (1995)

The first important law is the Environment Law of 1995 (LARCR, 2012). It gives a framework for PAs, land-use planning, forest management, public participation, water and air quality, and environmental impact assessment (OECD, 2020). It transformed the institutional structure of conservation, by formation of the MINAE and by introducing the regional environmental council to inform the SINAC.

A number of points in the document are important: (1) The law introduces a few principles, such as the right to enjoy a healthy environment as common heritage. Those who damage the environment are responsible for this, and have to pay (polluter-pays-principle, law 7554, art. 2.). (2) The laws intentions are to encourage harmony between humans and their environment, and satisfy basic needs without compromising future basic needs (law, 7554, art. 4.). (3) Citizen participation, both in decision-making and conservation activities, will be encouraged. (law 7554, art. 6-11). (4) Human activities that might alter or damage the environment will now require an environmental impact assessment (a sustainable management plan)(law 7554, art. 17). This was an important step because it meant now all forest-use was regulated by assessments that evaluated the environmental damage and developmental benefits. (5) Biodiversity is the state's natural heritage, and the state holds sovereignty over it: Conservation is a public interest, as is sustainable use (law 7554, art. 46). The points give an idea of the motivations and principles behind the country's FCP, but it has to be noted that this law does not state how to implement these principles.

Forest Law 7575 (1996)

With the Forest Law of 1996 (LARCR, 1996), implementation became more clear (de Camino et al., 2000, 33). The law secures moderate use of natural (forest) resources instead of exploitation, and tries to improve rural living conditions (Oviedo et al., 2015 ; GRICCE, 2023). The law stipulates the right of (local) participation in conservation by creating a framework for subsidies to landowners for their protection of ecosystem services: The PES-system (Payment for Environmental Services, law 7575, art. 22-27 ; MINAE, 2012, 16 ; Oviedo et al., 2015, 19). The law explicitly recognizes four types of services: carbon mitigation, biodiversity conservation, hydrological services and scenic beauty (Pagiola, 2008 ; Engel et al., 2009 ; Rodricks, 2010). If a landowner has forest-land, he/she can be compensated for the services the forest provides (GRICCE, 2023 ; de Camino et al., 2000, 33). The requirement is that specific (sustainable) land-use practices are adopted (Engel et al., 2009). Additionally, the law introduced incentives to assure property rights and property tax exemptions so that landowners would have more security and incentive to start conserving and sustainably using forests (law 7575, art. 28 ; de Camino et al., 2000, 33). The PES-system was financed by the FONAFIFO (law 7575, art. 46-51). The system is the most important expense of the fund. Its budget comes from a fossil fuel tax international (conservation) loans and grants, and from forest users: Forest activities and the private firms that depend on services have to pay taxes, fines and revenues (GRICCE, 2023 ; Engel et al., 2009), partly through a certificate-mechanism in which they pay for certificates that represent forest use (Oviedo et al., 2015 ; FAO, 2001).

What the law did was it redefined responsibility for forests: Those who protect gain benefit, and those who damage are restricted or have to pay. Land use change for private forest land (deforestation) is strictly prohibited from this point on (law 7575, art. 2 and 19): a land-use-change ban (see *Theory*). Any type of forest harvesting requires an approved management plan (FAO, 2001). However, as Brockett & Gottfried (2002, 24) note, this legislation might also form a barrier for smallholders who will cut trees illegally. Specifically for timber harvesting a number of control measures were taken. Forest owners must do a timber harvesting request, which have to be accepted by local offices of the SINAC (Navarro & Thiel, 2007). Under the forest law selective logging (see *Theory*) is stimulated as a sustainable practice and rewarded with PES-subsidizing (Lobo et al., 2007). According to the management plans: 1) The trees of the forest area under concern have to be monitored. 2) Areas with slopes and near water have to remain unharmed. 3) Only about 50% of mature trees may be cut, so that forests can regenerate. 4) Typically a cutting cycle of 15 years is given. (Lobo et al., 2007 ; Alice-Guier et al., 2019).

Biodiversity Law 7788 (1998)

This law (LARCR, 1998) focuses specifically on the protection of biodiversity, with guiding principles and ideas on the value and use of biodiversity (law 7788, art. 9 ; OECD, 2020). It is mostly meant to define the role of biodiversity for Costa Rica's society and how to protect it. It regulates biodiversity use, management, knowledge and equitable distribution of the benefits and costs of biodiversity use (law 7788, art. 1-3). Equity is a central principle: Of those who use the forest now and deserve benefits (and costs), but also of future generations. The law defines the role of the SINAC and structures the PA-system, as previously mentioned (law 7788, section 2.). It also creates a new department of the MINAE: The National Commission for the Management of Biodiversity (CONAGEBIO, 2023a). This commission formulates national policies for biodiversity use and conservation in 'national strategies for biodiversity' (see *next paragraph*, law 7788, art. 14.). These strategies define policy for adequate scientific knowledge on biodiversity, sustainable use in all sectors, access to biodiversity and distribution of benefits and watch over public and private actions relating to biodiversity (law 7788, art. 14.).

Education and research became essential components of FCP: The institutions implementing the law were required to provide academic backbone to understand how ecological processes were managed and benefits equally distributed. Firstly, this requires both national and international research to obtain information on how to make development sustainable. Secondly, it requires that practitioners of conservation, as well as the general public, obtain this information. The result of the law was a strong governmental emphasis on biodiversity education and public awareness (law 7788, art. 86.). On a national scale, people were educated on the value of biodiversity. This create public awareness that could increase participation. Another result of the law was that, with the encouragement of research programs (law 7788, art. 89.), Costa Rica became an 'eco laboratory': A biodiversity hotspot with many (institutional) research facilities where biodiversity was researched, and the possibilities of sustainable development were studied (Fletcher et al., 2020).

2.3 Recent policies

FCP after the foundational laws has not essentially changed, though it has been further defined. Implementing and perfecting the laws that were created was a task that required many years.

National Biodiversity Strategy and Action Plan (NBSAP): 2016-2025 (ENB2)

At the center of recent FCP are the earlier mentioned National Biodiversity Strategies (NBSAPs) given by the CONAGEBIO. The Convention on Biological Diversity (UNEP) required the country to develop these strategies as part of their global commitment to preserve biodiversity (UNEP, 2018). The latest (and second) NBSAP (2016-2025 (ENB2)) (CONAGEBIO, 2016) is complementary to the National Biodiversity Policy (2015-2030)(PNB). While the PNB gives a broad vision of biodiversity's place in its development narrative, the ENB2 identifies specific actions (policy) that have to be taken within a 10 year period to reach this vision. It does so by setting 23 goals, and 98 targets that belong to these goals for a specific time period. The targets are set with particular indicators, baselines and responsible institutions, and connected to specific SDGs (CONAGEBIO, 2023b). The progress of these targets can be found on the ENB2 website (CONAGEBIO, 2023b). The ENB2 thus focuses on the implementation of FCP by setting targets for institutions to realize, and by monitoring progress with specific indicators. It is then up to the responsible institutions to further execute the necessary measures. Many of the targets have, according to CONAGEBIO, been 100% achieved (CONAGEBIO, 2023b). It shows the countries (and the CBDs) commitment to correct implementation of the earlier created (foundational) laws.

National Forestry Development Plan 2011-2020

Specifically for the Forestry Sector, the MINAE created the National Forestry Development Plan 2011-2020 (NFDP) to establish agreements, coordination and concrete commitments to make the sector more sustainable (MINAE, 2011). This document emphasizes on the (societal) value of Costa Rica's forests, by providing employment, income, biodiversity, water storage and soil stability, and their connection to other development agendas, such as clean energy production, agriculture and tourism (MINAET, 2011, 4). An

important addition to the foundational laws is the focus on reforestation, agroforestry and forest plantations (MINAE, 2011, 7): The government developed more financial instruments to stimulate establishment of agroforestry systems and forest plantations from non-forest land (MINAET, 2011, 11). The goods of these systems/plantations were aimed create more benefits: employment, economic added value to the economy, and the prevention of importing materials and negative financial flows (MINAET, 2011, 10). The MINAE claims that the forest-sector generates production chains with much integration across the population (MINAET, 2011, 10).

National REDD+ Strategy: 2015

The REDD+-initiative has been very important for the funding of FCP. REDD+, as global initiative to decrease deforestation with international support (see *Theory*), became a logical priority for the country: It could provide international funding for the forest conservation it was already practicing for years, like PES (Wallbott & Florian-Rivero, 2018, 501). Costa Rica finished a National REDD+ strategy (MINAE, 2015), along with further measures to monitor forests and emission levels and understand the drivers of deforestation (World Bank, 2022b). In *Interview 3*, became clear that the government uses the support of for example the institution CATIE to research the effect and impacts of the strategy (*Interview 3:2*). Costa Rica became the first Latin American country to receive a REDD+ payment through the Forest Carbon Partnership Facility (FCPF) of the World Bank (World Bank, 2022b).

Currently the country is a leader in REDD+-initiative (REDD+, 2023). Costa Rica created an inclusive benefit sharing plan that was aimed to direct this funding to local communities that conserve forests (MINAE & REDD+, 2022). It includes funds that distributes benefits to landowners, or non-owners that play a conservation role. Also vulnerable groups: women, youth and indigenous, are aimed to be included (MINAE & REDD+, 2022). Hereby the country tries to create economic resilience with actions that promote both climate change mitigation and forest ecosystem adaptation (World Bank, 2022b).

Debt-for-nature swaps

Costa Rica participated more than any country in initiatives that exchanged their efforts to preserve nature (biodiversity) for a reduction in state debt (Sheikh, 2018). Some of the funding for these swaps came from countries, like the Netherlands (Sheikh, 2018) and the USA. Costa Rica got its debt (to the USA) for example reduced by \$26 million, following the U.S. Tropical Forest Conservation Act (TFCA, 2017 ; Sheikh, 2018). This remission opened up funds for Costa Rica to support conservation in six tropical forest areas in the country. The importance of such international funding is clear when realized that the annual budget for conservation is limited. In 2019 for example, the entire conservation budget of the MINAE was about 50 million (MINAE, 2019). Furthermore, reduction of debts makes a country less dependent and economically stronger.

National Plans for Sustainable Tourism (2010-16 ; 2017-21 ; 2022-27)

The importance of sustainable (or eco) tourism for the countries development and FCP is clear from its National Plans for Sustainable Tourism (NPSTs). They are an essential for FCP because (eco)tourism is an important way to both conserve and create benefits from forests. The 2010-16 version defines tourism as one of the main drivers of the country's economy and well-distributed and human development:

"The sustainable management of tourism is the means par excellence that the country has to efficiently use its natural and cultural heritage with the aim of generating wealth that translates into real benefits for the whole Costa Rican society."(ICT, 2010, 3).

As the Tourism Board (Costa Rica's central tourism institution, ICT) notes, tourism's success largely depends on the "tourism brand" (ICT, 2010, 3). As discussed in *Chapter 1*, the 'Green Trademark' is what draws people and financial flows towards the country. Since Costa Rica's reforestation, foundational policies and introduction of environmental research and education, the 'Green Trademark' and tourism sector have grown. Policy on (eco)tourism of the last two decades focuses on maintaining this growth and its benefits while keeping impacts for forests minimal. The NPST(2010-16) gives policies, objective

strategies and actions to realize this. The growth of the tourist sector might provide risks for environmental impact. Even eco-tourism has its impacts and, as theory has suggested, commercialization of forests could result in exploitation (see *Theory*). The ICT however claims to also take measures on ‘the appropriate demand profiles’: With better knowledge on potential emitters in the sector, it aims to identify what demand is ‘desired’ and where the sector should be commercialized (ICT, 2010, 10).

In the later NPST (2017-21) the same policies are explained, with the addition of a stronger focus on inclusion of vulnerable groups (ICT, 2017, 73-74). Also more distant regions need to become accessible to the sector (ICT, 2017). The tourism sector is aimed to be the leading sector of foreign currency (ICT, 2017, 74). In the latest NPST (2022-27) the message has become somewhat different: The Covid Pandemic has shown the vulnerabilities of the sector: The sector has taken the place as sustainable alternative of the traditional agricultural economy (see *Chapter 1.*), but was strongly disturbed by the lack of tourists during the pandemic. It has provided the country with economic instability and uncertainty. Therefore this document focuses more on tourist recovery, debt, loss of employment, poverty and inequality (ICT, 2022, 8, 11-18). Costa Rica’s new focus on recovery of the economic damage of the pandemic might prove to be a departure of its focus on biodiversity protection.

Conclusion

The question of this chapter was: *What are the general strategies, laws and measures of Costa Rica’s forest conservation policy?* This chapter has shown that there are several policies that aim for protection of Costa Rica’s forest biodiversity: They are policies that have introduced disincentives, like bans and prohibitions, incentives, such as subsidizing, financial and other support, and enabling measures such as environmental education (see *Theory*). These policies are created and implemented by several institutions. Later in this research actors from some of these institutions will be asked to shed light on the ways they have stimulated landowners to conserve and how this has impacted SRL. This chapter has shown that the change in conservation narrative that was explained in *Chapter 1.* has been enforced before the 2000s with some strict ‘foundational laws’ and the PA system. These policies regulated forest use and protection.

The PA system protects 25% of the country’s land from any type of harmful use. Land-use-change has been controlled with bans that prohibit deforestation. Forests can be used (in non-PA areas) but only after an environmental impact assessment and management plans for sustainable use. Institutions provide support for people to adopt sustainable practices, with training, education and financial incentives. The PES-system is a subsidizing and market-mechanism that incentivizes landowners to conserve by paying them. In line with the country’s endeavor to realize forests as a motor for green growth (*Chapter 1.*), Costa Rica has put a strong focus on the regulation and expansion of (eco)tourism. Costa Rica’s conservation is an internationally supported project: The country has attracted foreign tourism but also international cooperation and funding through REDD+, debt-for-nature swaps, international agreements and NGOs. These international ties have expanded to a degree where the country’s conservation policy has become dependent on international funding.

For realizing an economy where people are involved in conservation in a proactive forest sector, it is of central importance that there is citizen participation in the practices that need to be pursued to protect forests. In the next chapter, the way in which landowners have been stimulated to participate in these sustainable practice will be further analyzed. It is crucial to mention that, while the in this chapter mentioned FCP is promising in the light of sustainable development and its literature, this does not mean that it has been successful. There might be issues of implementation and negative side effects (impact) that emerged along the way. Not all people will automatically be included in new policies that change their living and working conditions, to which they must adapt. In the next chapters this more critical perspective on implementation, impact, changing rural livelihoods and adaptation will be used.

Chapter 3. Measures to Stimulate Forest Creation and Preservation

Which policy-measures have stimulated Costa Rican landowners to transition from farming to practices that conserved forests and how?

Voorend, researcher of the University of Costa Rica, explains: After a period of pasture expansion and deforestation, state support has been created to make sure there is an alternative route for farmers in which they can choose not to cut forests. Costa Rica has tried to turn deforestation around by creating incentives for farmers to conserve (*Interview 6:2*). This chapter analyzes this process.

Now that in the last chapter a general overview was given of FCP, this chapter can study which of these measures have stimulated landowners to create or preserve forests, and how. This is done by diving deeper in the workings of the measures that, according to the last chapter and taking into account context in Costa Rica, make landowners pursue alternative strategies of land use that benefit forest biodiversity. Landowners can be directly incentivized to do so, or in indirect ways by creating the conditions in which they change practices. Not only literature is used to analyze how measures are implemented, but also interviews will provide information: Actors who have a position in the institutions that facilitate these measures.

The first paragraph of this chapter analyzes the PES-system. PES is strongly connected to regulation and incentives for sustainable forest use, which is the topic of the second paragraph. A third paragraph analyzes ecotourism. Both ecotourism and other sustainable forest uses are introduced to provide benefits for landowners while they conserve. In the fourth paragraph some conditions are discussed that were set up to disincentivize deforestation, or ‘harmful’ land uses, which have stimulated landowners adoption of conservation-practices indirectly. At the end of every paragraph, some conclusive implications are given that connect this chapter to the next chapter where the impact for SRL of the here mentioned measures is analyzed (*Chapter 4*).

3.1 The PES-system

The Payment for Environmental Services system offers financial incentives to landowners who in exchange voluntarily agree to protect and restore forests on their land: PES thus gives performance-based payments (FONAFIFO et al., 2012). Such a system depends on supportive legal and policy frameworks, effective verification and monitoring (FONAFIFO et al., 2012).

Carlos Rodriguez, former minister of the MINAE who developed the PES-system, explained the origin of PES: It is the second generation of forest incentives in Costa Rica, that was introduced because earlier measures were found to be financially unsustainable: PES does not depend on state funding, but on fuel taxes and other ways in which users of environmental services were charged in a market system (*Interview 9:1*). The system is connected with and created along the earlier mentioned CES-system (Certificates for Environmental Services)(Oviedo et al., 2015 ; FAO, 2001). Activities that rely on environmental services require payment for a certificate that guarantees the protection of these services. The FONAFIFO, who manages CES, has secured agreements with mostly water uses, such as hydro-energy-plants, who pay for watershed conservation (Pagiola, 2008, 713 ; Sanchez-Azofeifa et al., 2007). Other users of environmental services can for example be agribusinesses or tourism companies (Pagiola, 2008, 714). The payments were redirected by FONAFIFO to the providers of these services (Russo & Candela, 2010 ; Sanchez-Afofeifa et al., 2007 ; MINAE & FONAFIFO, 2005, 30): landowners who conserve forests (Pagiola, 2008 ; Engel et al., 2009 ; Rodricks, 2010, see also *Chapter 2*). In the beginning of PES the CES-system provided an important part of the funding for PES, while in later years international funding became also necessary.

Costa Rica aimed to create environmental considerations as ‘economically rational option’ for owners of land outside of the PA-system, so that everywhere in Costa Rica forests could be restored and maintained.

The FONAFIFO is the intermediary of the economic relationships between ecosystem users and providers (Matulis & Fletcher, 2020; Wallbott et al., 2019). (Private) Landowners who are interested can be contracted by FONAFIFO, who has regional offices where applications are handled (Pagiola, 2008). To participate landowners must adopt specific practices in the earlier mentioned sustainable forest management plans (Engel et al., 2009 ; Brownson et al., 2020). These plans include information about how biodiversity is protected: information on for example soils, drainage, harvesting, forest fire prevention, etc. (Pagiola, 2008). The execution of the management plan practices is checked during with monitoring, done mostly by SINAC (Sanchez-Azofeifa et al., 2007).

Initially, there were two types of contracts for PES: contracts for reforestation (for forest plantations) and conservation (preserving forest-land without production)(Bennett & Henniger, 2009). Two more contracts were introduced since then: Firstly, an agroforestry contract (2002) that creates incentive for landowners to plant trees on their farmland (Pagiola, 2008). Carlos Rodriguez (Interview 9) explains that with the agroforestry-contracts he intended to let PES go ‘outside of the forest’: PES could now engage with the agricultural sector in best practices that increased biodiversity on farmland (Interview 9:4). Secondly, an assisted natural forest regeneration contract was introduced (2007) that creates incentive to plant trees more naturally (not as forest plantations) with reseeding and other methods (Bennett & Henniger, 2009). This contract also has less obligations for management plans and lowers transaction costs, so that landowners are more incentivized to participate (Bennett & Henniger, 2009). Nevertheless, the original conservation contracts have been mostly issued: in 2009 they were 90% of all contracts (Engel, 2009).

PES is accessible to any private landowner who has a formal land title, as long as they have a land area of at least 1 hectare (Porras et al., 2013 ; Brownson et al., 2020). There are four main categories of private landowners that can participate: Individuals, indigenous communities (who often share a claim to land), development or conservation cooperatives and so called ‘legal entities’ (Porras, 2010). Legal entities can a diversity of groups of people who have a claim to land, like family businesses and enterprises (Porras et al., 2013). The amount and terms of PES-payments depends on the contract, but for each contract-type the amount is the same throughout the country (Pagiola, 2008 ; Sanchez-Azofeifa et al., 2007). Some payment is made right after signing, because investment is often needed to comply with the provisions of the management plans (Pagiola, 2008). The contracts are set for a specific amount of years. After this, the contract expires, unless they are renewed by FONAFIFO. After signing the contract the landowner transfers the rights of the greenhouse-gas-mitigation potential to the state, which means that Costa Rica can sell this potential internationally for funding (Sanchez-Azofeifa et al., 2007). This became particularly important when REDD+ became a key source of funding for PES (Wallbott et al., 2019).

PES competes with other practices: As Arroyo-Mora et al. (2005) show, the main competing land-use is pasture. Agricultural land-use (pasture) creates in general larger benefits than PES-payments, but is more insecure and dependent on conditions such as location and practices (Brownson et al., 2020 ; Sánchez-Azofeifa et al. ,2007). As Fletcher and Breitling (2012) point out, PES participants often conserve their land and at the same time have off-farm income: So PES gives the option of having free time and making additional income with other work. Land enrolled in PES often is unsuitable for agricultural use (Fletcher and Breitling, 2012 ; Brownson et al., 2020). This means that much land under PES is unused land, either already forest or empty deforested land. PES can create income for these areas that did not sustain livelihoods before.

PES has a connection with Costa Rica’s extensive PA system (*Chapter 2.*): A significant part of PAs is privately owned, according to data from SINAC (SINAC, 2020 ; Fabiano & Ahmed, 2019). Landowners have been stimulated to sign their land up in PAs using the PES-system’s (conservation) contracts, while also following the regulations of the SINAC that come with it (law 7575, art. 2. ; Fabiano & Ahmed, 2019, 3). In this way, PES has resulted in the creation or expansion of many protected forest areas shown in *Appendix 1.*

According to the UN, over 18.000 families (of landowners) have benefitted from the PES Program by an amount of 524 million USD and for an area of 1.3 million hectares, between 1997 and 2019 (UNCC, 2019).

This is over 20% of Costa Rica's territory, and 40% of all forests (MINAE, 2017). These numbers confirm the importance of stimulation of landowners for Costa Rica's forest conservation. FONAFIFO is transparent about its signing of PES-contracts: According to its databases it accepted 10379 new contracts from landowners between 2010 and 2021, for an area of 630.000 hectare (FONAFIFO, 2022). The database also shows competitiveness in the system: Between 2010 and 2020 there have been 21782 requests for contracts. This means that only 48% of the people who want to participate have been able to. Former minister Rodriguez explains that it is mainly the issue of funding that limits the capacity of the program and the issuing of more contracts (Interview 9:8).

Conclusive implications

The fact that there is a surplus demand for PES is an important topic to further analyze in the next chapter. It means that it matters who gets a contact and who is excluded. Additionally, the requirements that are used to select participants can also mean that there are barriers for people to participate. Such barriers could be for example management plans or land ownership. Furthermore it is important to understand the different contracts and their benefits: Do they impact rural landowners positively and can they secure livelihoods? This depends not only on payment-size but also on timing, and other costs of participation. Different contracts could provide different benefits and different shortcomings. Lastly it will be important to analyze how PES has created impacts beyond the participants themselves, within the rural economy or landscape. The program changes the use of forest land and with it can come changes to the communities and regions. 20% of Costa Rica's territory is under PES, but that does not mean that all rural population is included. While over 18.000 families have been participating in the program, there is about a million people living in rural areas. So it is essential to learn how the lives of these people have been impacted.

3.2 Support for sustainable forest use

The Environment law (7554) makes the state responsible for the sustainable use and employment and quality of life for forestry activities (law 7554, art. 48). The MINAE has put more focus in the last two decades on forest use other than just conservation (forest plantations and agroforestry), partly with more (financial) instruments to stimulate such sustainable use (MINAE, 2011). In a forest transition like Costa Rica's, agricultural livelihoods change into new (sustainable) livelihood strategies (employment) that must be beneficial (improve quality of life). Landowners who move to these strategies must adapt, and such adaptation requires some (external) support. This counts for PES contracts, as well as practices outside of the program like (non-PES) agroforestry and forest plantations. Sustainable forest use does not require PES, just an approved management plan (*Chapter 2*). Louman stated in *Interview 3* that it is disputable how much influence PES has had on sustainable forest use: The financial incentives is not large and, at least for a significant part, it is the support of organizations that make new practices possible (*Interview 3: 3&5*). Such organizations can be research institutions, like CATIE, or NGOs, who give technical or other support and provide information from research (*Interview 3:3&5*). This paragraph analyzes how institutions have stimulated sustainable forest use and how policies on sustainable use are implemented.

State support

The stimulation of sustainable forest use starts with the sustainable management plans (FAO, 2001). Any type of (sustainable) use of forests must be confirmed with such a plan. This could be seen as a barrier for landowners. But it is important to note that it is at the same time a necessity: Firstly because some monitoring and control over 'what is sustainable' is needed. But secondly also because landowners do not necessarily know how to use land sustainably and the management plans are a way for to help landowners in learning the necessary requirements, skills and knowledge for sustainable practices. In *Chapter 2* it has been explained how important education for sustainable use has been for Costa Rica (law 7788 ; see also *Interview 3:3*). The MINAE aimed to learn people about these practices with training programs (law 7788, art. 99).

Next to educational support, local communities have also gotten financial or technical support (law 7788, art. 101-103). The transition from farming to sustainable practices can be a radical change of not only skills and knowhow, but also means for (forest) production: like financial resources and tools. Taxes on equipment and materials needed for sustainable use, have also been exonerated. And, when investments were needed, credit was aimed to be available for micro-businesses (law 7788, art. 100). Such aims however were written down (by the MINAE) in the foundational laws, which doesn't necessarily mean they have been implemented (successfully) by the more local institutions that are meant to do this, like FONAFIFO and SINAC. While FONAFIFO manages PES and provides financial support, SINAC implements policies on a local scale and plays a role in other types of support (*Chapter 2.*, Interview 4:2)

Four actors from SINAC were interviewed about this support (*Interview 2 and 4*). A few important types of support were mentioned: Firstly, SINAC provides training for landowners to learn the necessary knowledge and skills of conservation and sustainable forest use. They work closely with communities to teach them specific knowledge and practices (*Interview 4:1*). Secondly, they give technical advice for landowners to understand the necessities of sustainable management plans (*Interview 4:2*). This is thus also administrative and legislative support that looks into the (legal) requirements of practices and programs. Thirdly, they provide knowledge on conservation and sustainable use for the whole country, with research and education to distribute this knowledge (*Interview 4:1*). According to one respondent this research is an important stimulus for landowners to use their forest more sustainably (*Interview 4:3*). It was explained that SINAC is limited financially, and does not have the authority (by law) to give financial support and funding for programs: "We provide support when requested, because due to the difficult institutional budgetary situation, we (SINAC) cannot formulate and develop projects as important as your questions frame it." (*Interview 4:2*). SINAC is a coordinator of (conservation) activities, but projects for this are supported by other institutions: NGOs, international institutions, producer/ forestry organizations (*Interview 4: 2,3,4*). These institutions fill the gaps of support, such as funding (*Interview 2:1*). Molina confirmed this point in *Interview 2*: As local institution to ensure protection of forest areas, it is not the main role of SINAC to support sustainable use of land (*Interview 2*). SINAC does let landowners participate in its decision making at various levels and gives some degree of technical support (*Interview 2: 2&4*). But SINAC's priority is to set and control management standards, to protect forests, and landowners must look for other institutions to find further support for (sustainable) use of (forest) land (*Interview 2:4*). So it is important to understand that most support for sustainable use is outsourced to other institutions that are non-governmental but work in collaboration with the state.

Support from non-governmental institutions

The implementation of these types of stimulation/support for sustainable use (educational, financial, technical, administrative) has been performed by multiple institutions. As discussed in *Chapter 2.*, NGOs and research institutes that provide research and education is an important part of the country's FCP. These supporting organizations are present in different localities throughout the country. FUNDECOR for example is an NGO that promotes sustainable agriculture and forestry practices: It works together with local communities to give them the skills and resources they need to improve their livelihoods with sustainable practices. FUNDECOR provides technical and administrative support and supervision to landowners, so that they can participate in the programs of SINAC and FONAFIFO (Wallbot, 2019). So institutions are middleman between fund providers and participants (Wallbot, 2019).

A full explanation of all NGOs and institutions is an entire research by itself. However one very important other one will be discussed: Bas Louman from the institution CATIE has been interviewed. CATIE is a research institution that informs people on sustainable use of agriculture and forest protection. They do research on sustainable practices and their impact, and give advice (for policymakers) and education for landowners with training (*Interview 3*). The CATIE has strong contact with farmers and how they create new (sustainable) livelihoods, and this information is presented as advice to policymakers (*Interview 3*). Louman and the CATIE have done research on the effect of CES and PES on forest conservation (Louman, 2017 ; Louman et al., 2005). The research showed that financial incentives are effective in combination

with the presence of supporting NGOs. Such support could help landowners adapt to new livelihood strategies: For example there was one NGO who mediated in wood selling so that landowners could sell their (timber) products (*Interview 3: 7*).

Conclusive implications

For landowners who have traditional livelihoods, a transition to new livelihood strategies is not easy without support. Sustainable use of forests requires new practices, skills, tools, knowledge, administrative work and financial resources. Costa Rica provides much of this support through several institutions, both governmental (SINAC, FONAFIFO) and other institutions that fill in the gap of support that the state cannot provide. There is a network of NGOs and research institutions that do research, education and give support to landowners. In *Chapter 4*, livelihood resources, strategies and outcomes will be analyzed. It will become clear that there are many barriers, inaccessible resources, for landowners to participate in new livelihood strategies. The types of support indicated in this paragraph shed light on what it is landowners need to sustainably use and conserve forests: Resources like information and skills, financial resources, legal and administrative capacities, and so on. So it is essential to look at these types of institutional support and livelihood resources in the next chapter to analyze if landowners have access to them, and how this impacts their livelihood.

3.3 Ecotourism as new income source

Costa Rica's has had strong (economic) focus on (eco)tourism (*Chapter 1. and 2. ; Miller, 2012*). As was discussed in *3: the PES-system*, PES as incentive for landowners is not necessarily a hugely beneficial one. But it creates the opportunity for landowners to not use their land (forests) with labor intensive farming and still get some income and freedom to try alternative work. Ecotourism has been one such source of work that has become very important, both with and without PES (conservation-contract) and both as on-farm and off-farm income source (Miranda, 2003). Ecotourism has changed the rural landscape and added new flows of people and money, as this paragraph will explain. The new opportunities of these flows and changes have been an important opportunity for landowners to change their livelihoods and participate in conservation: ecotourism is an incentive for landowner forest conservation (Owens, 2007).

There is no mechanism for direct governmental (financial) support for ecotourism: nearly all investments have been from the private sector (Bien, 2010). The measures that expanded the ecotourism sector have mostly been *enabling* conservation measures (see *Theory*). With policies that created the right environment for ecotourism to grow in, ecotourism became a source of foreign currency and a booming business (*Chapter 1. and 2. ; Horton, 2009 ; Miller, 2012 ; Oviedo et al., 2015*). This created the incentive for landowners to participate in this business. Many small farmers and indigenous communities have turned to ecotourism as a means of extra income, or as alternative of traditional income, which in turn allows them to protect their forests (Owens, 2007 ; Howitt & Mason, 2018 ; Howitt, 2012 ; Bien, 2010).

Tourism needs to follow the same direction as sustainable forestry: a balance between financial, natural, human and social capital and a promotion of sustainable use of resources and equitable distribution of benefits (ICT, 2010, 7). This direction is very similar to the perspective of the SRL-framework. The Costa Rican Tourism Board (ICT) needs to ensure this balance is maintained, by facilitating tourism activities and monitoring sustainability. The ICT gives a Certification for Sustainable Tourism (CST): a label for (eco)tourism activities to ensure their competitiveness based on their sustainability (ICT, 2023a ; Koens et al., 2009). Thus landowners can start with (eco)tourism activities, obtain a certificate, and based on this certificate obtain a better position on the tourism market: Tourists check this certificate and decide to come based on the sustainability level (ICT, 2023b). This way sustainability is incorporated into markets and basically commodified. The ICT also provides training and research and advice on sustainable ecotourism activities and its regulations (ICT, 2023a ; ICT, 2023c). There are tourism incentives, such as tax incentives, that can be obtained after gaining a certificate and complying with regulations (see also ICT, 2023d). There are lastly some measures to reach more equitable and local tourism development: Stimulation of tourism-businesses with micro-credit and other financial incentives, and training and

knowledge sharing so that people can expand the sector and earn benefits (ICT, 2010, 8-10). Such measures can improve inclusiveness of the sector.

Landowners and tourism opportunities

Most measures however are about keeping the sector competitive: Commercialization and better marketing, tourist attractions and product innovation (ICT, 2010, 8-10). The governmental focus on tourism competitiveness leaves questions about the position of rural landowners and their ability to participate. How have they been able to compete against larger businesses and investors from elsewhere? At the heart of the tourism boom are the private nature reserves, where rural inhabitants (landowners) now conserve because of their tourism value (Bien, 2010). Where previously forests were seen as a lowering of economic value, now they are seen as economic potential (Bien, 2010). How do rural landowners participate in this potential on and off their land?

Landowners could provide ecotourism accommodation: Small lodges are for example all over Costa Rica, run by local families (McNall et al., 2016). Small landowners can rent out accommodation to different kinds of people (*Interview 5:7*). Tourists could get local guides, and observe nature with minimal environmental impact (McNall et al., 2016). Landowners can thus create accommodation on a some land, conserve the rest (and get PES payments), and make a living of the additional income tourism provides. Because (state owned) national parks do not generally provide lodging, nearly all (overnight) forest tourism in Costa Rica is on private lands (of landowners)(Bien, 2010). Landowners can also provide tours and activities without overnight stays: Tours can be on their property, or surrounding areas, and could include hikes, wildlife spotting or more adventurous activities (Rutter, 2009 ; *Interview 5:5*). People can start a restaurant, all kinds of employment are possible (*Interview 5:5*). Also the conservation efforts they practice themselves on their forests can educate and be an experience to tourists (Rutter, 2009). Another option for landowners (farmers) is to keep practicing their agricultural livelihoods and at the same time learn visitors about its practices: agrotourism (Little & Blau, 2020). This of course only aids conservation purposes when also (forest) biodiversity is increased on this land: For example if the farm is an agroforestry business or under a PES-contract.

Community-based tourism (CBT) provides a possibility for particularly small landowners to participate in tourism. With CBT the control and benefits of tourism activities must be in the hands of members of local communities (Trejos et al., 2008). This is important for landowners because often they have found difficulty in participating in rural tourism, for example due to the dominance of mass tourism operators (Trejos et al., 2008). Tourists are interested in this type of tourism because it offers a visit to real local communities, of which these communities themselves benefit (Mannon & Glass-Coffin, 2019). Costa Rica has been promoting this type of tourism with the ICT, as a response to mainstream tourism policy in Costa Rica that favored competition (Trejos & Chiang, 2009). CBT has mostly been promoted however by non-state organizations, like grassroots organizations (Mannon & Glass-Coffin, 2019).

A last way in which landowners can benefit from tourism is selling their land (Kull et al., 2007). Due to the ecotourism boom, particularly in residential tourism, land prices have dramatically increased (Noorloos, 2017 ; *Interview 5:3*). Real estate markets, particularly in coastal areas, have appeared (Salazar, 2010). Landowners can now earn much more money then before by selling some land for such residential tourism, or other tourism companies. According to Noorloos, who has done research on the topic of property investment in rural Costa Rica, this selling of land by small landowners has happened a lot (*Interview 5:7*).

Conclusive implications

As part of creating a proactive forest sector (*Chapter 1*), ecotourism has been introduced and stimulated as a new livelihood strategy for landowners. The state has mostly aimed to create a competitive and strong market-environment in which ecotourism can ‘boom’. This has enabled landowners to find new opportunities in this sector. They have (in theory) the possibility to diversify or completely alter their

income-sources, with activities both on and off-farm. There are examples of providing accommodation on land, restaurants, tours, tourist activities, agrotourism and so forth.

For the next chapter it is important to analyze two things. Firstly, it must be understood how landowners, particularly poor ones, have been able to participate in this new livelihood strategy: Can they adapt their livelihoods and join the ecotourism boom? Do they for example find barriers in accessing the necessary resources? Do they have the right strategies when they participate? Secondly, it is important to analyze how ecotourism has impacted the landowners that participated in it, and also those that couldn't or didn't. Does it provide good secure livelihoods? And what are the issues (both direct and indirect) for livelihood outcomes, and for the access to livelihood resources? In the next chapter, it remains to be seen if the sector really can take over as sustainable alternative for the traditional agricultural (rural) economy (see *Chapter 1.*), in a way that does not impact SRL negatively.

3.4 Disincentives for traditional use

The move from traditional use land (farming), towards new strategies that include conservation or restoration of forests can be incentivized in various ways. But this move has also been stimulated by measures that make it harder to farm. Policies have disincentivized farming along with global developments that the Costa Rican state nevertheless propagated. These developments are the introduction of globalization in the country and accompanied socioeconomic changes (see also Allen & Vasquez, 2017). This paragraph will explain how such factors have been influential in landowner behavior and conservation, and show that (conservation)policy is clearly not the only factor at play in the (landowners) transition to forest. However, it has to be realized that these factors were introduced into the country with Costa Rica's development and conservation policies, and are *state-led* developments. This is why they will also be discussed among measures that stimulate landowners to conserve forests.

Measures against traditional use

According to arguably the most influential policymaker of Costa Rica's conservation approach, Carlos Rodriguez, one essential reason the state was able to create a forest transition has to do with disincentives (Interview 9:1). They 'faced out perverse incentives and subsidies' that previously existed and promoted deforestation and agricultural production on land. While there were in total 63 laws they changed, he gives one example: There used to be a tax for unproductive (forest) land, which made people deforest and agriculturally use that land for the sake of employment and growth (*Chapter 1.*). The state changed every single one of those 63 laws, so that agricultural production and deforestation were not stimulated anymore (Interview 9:1).

These were removal of existing incentives, but there were also new regulations. There have been several bans: The land-use-change ban is the most important, because it prohibits the deforestation of forest-land in any way (law 7575, art. 2 and 19 ; *Chapter 2.*). Because there is not much land availability for agriculture, this is an important law that eradicates the conversion of forest to farmland (Brockett & Gottfried, 2002, 24 ; Breitling, 2012). So if a landowner want to farm by using forest-land, this is not possible. It is thus a ban that decreases farming potential. In general, the disincentives for harmful uses have been characterized by the polluter-pays-principle (law 7554, art. 2.) and through environmental impact assessments and sustainable management plans. So if a landowner want to adopt a land use that is assessed to have too much impact, it will not be allowed. And even if the activity is allowed, it might be regulated to such extend that it is unprofitable, or that it requires too much investment or adaptation. It appears that many cases conservation is the best remaining opportunity.

State led globalization and socioeconomic changes

Costa Rica has experienced dramatic policy shifts since in the last decades (*Chapter 1*): It opened its economy up to participate in global markets, an international conservation agenda and international tourism. Neoliberal reforms caused (market)freedom in which many things have changed: foreign investors and real estate markets, international tourism, and (international) migration which provided new

strategies for livelihood diversification (Kull et al., 2007). Globalization plays a big role in Costa Rica's rural development. This is in the first place a state-led globalization, a development plan, as *Chapter 1*. has shown. However it is also a product of state-debt, structural adjustment and international institution interference (see *Theory*). It is the fate of many (if not all) countries in Latin-America.

Before the 1980s Costa Rica had many small scale farms that contributed to the country's net food production (Booth et al., 2010). But after the country's structural reforms protectionist measures were removed, such as subsidies that small-scale farming relied upon (Allen & Vasquez, 2017 ; Edelman, 1999 ; Kull et al., 2007). The level of state intervention and protection in markets declined and the country has undertaken major agricultural reforms in favor of a trade liberalization model (OECD, 2017). The elimination of protectionist measures made it less viable for small agricultural producers to keep producing (Rivera, 2010 ; see also Interview 6:2). As Allen and Vasquez (2017) claim: Costa Rica's forest transition can be linked to policies that discouraged small-scale agriculture. Research suggests that even without PES, the transition to more forests would to some degree have happened due to underlying socioeconomic changes: Beef prices have dropped, the rural population has decreased (migration), and tourism has grown (Calvo-Alvarado et al., 2009 ; Breitling, 2012). Additionally there was the coinciding deforestation-ban (Sanchez-Azofeifa et al., 2007; Daniels, 2010 ; Brownson, 2020). So before a farmer would get subsidizing and protection, but later had to deal without, with restrictions, with insecure global markets and was offered the option of alternative strategies (Interview 6:2).

The importance of international trade, as Jadin et al. (2016) explain, for the reforestation of Costa Rica should not be neglected. Costa Rica's focus on export-agriculture changed the spatial organization of the agricultural economy: Land use was intensified by larger scale agriculture and small scale agriculture decreased (Jadin et al., 2016). When the meat exports decreased (due to prices), pastures became less beneficial and pasture land decreased, which freed an area the equivalent of 80% of the reforested area (Jadin et al., 2016). For a small-scale landowner these socioeconomic developments may have created problems: He/she had to scale up and intensify their land use for export-production. Failure made a change to new strategies necessary. Globalization provided landowners with multiple alternatives to farming, such as ecotourism, selling of land, conservation or sustainable use. This was facilitated by the state through the multiple measures that were discussed in this chapter.

Conclusive implications

While the impact of external factors such as trade, or globalization, is not the topic of this research (since it analyzes the impact of the earlier mentioned policy measures), it is important to understand their role. They are drivers of Costa Rica's forest transition. State policy plays a role in the way it deals with such external factors: Costa Rica and its FCP (*Chapter 2.*) have clearly embraced such drivers with its neoliberal approach to forest conservation. The country's development narrative (*Chapter 1.*) has chosen for export and free global markets. In this way the state has provided the measures of diversification of the economy that 'enabled' a forest transition (see *Theory*). As Kull et al. (2007) summarize: Rural areas are becoming reconfigured as suppliers not of traditional products anymore (such as wood), but of environmental services (Kull et al., 2007). These services are effectively sold as export product, to either ecotourists or the global conservation market due to funding like REDD+ (*Chapter 2.*).

Costa Rica's FCP and globalization are thus strongly connected, and together have changed rural areas with consequences for inhabitants. Can these people participate and benefit from the 'new products of ecosystem services'? Disincentives for farming represent important traditional livelihoods, that have changed and become less beneficial. Rural inhabitants have to adapt, which is likely to have impact on SRLs. It is important to look in the next chapter at issues such as loss of employment (on farms), farm abandonment but also connected issues such as food security and import prices.

Conclusion

The question of this chapter was: *Which policy-measures have stimulated Costa Rican landowners to transition from farming to practices that conserved forests and how?* There are several ways in which conservation policy has stimulated landowners to go from farming to other practices that create or preserve forests. The PES-system is a clear form of state incentivization to this goal. But there are other measures that facilitate the forest transition further through landowners behavior, beyond PES. The forest transition means for many landowners that farming is exchanged for alternative sustainable uses of land that provide new livelihoods. This chapter has discussed the stimulation of such sustainable use with different kinds of (institutional) support. The chapter has also discussed the importance of the facilitation of the (eco)tourism sector. Lastly, disincentives for farming were discussed, and the ways in which this traditional strategy has been compromised due to Costa Rica's embracement of globalization.

Every paragraph in this chapter summarized the most important implications for the search for impact of SRL in the next chapter. Now that is clear how Costa Rica has stimulated landowners, we can analyze the impact of this in a structured way by looking at the three dimensions of SRL (see *Theory*). These dimensions will be reflected upon using interviews to understand how they relate to the Costa Rican case and what to analyze in order to answer the research question.

Chapter 4. Landowner Adaptation and SRL

Have Costa Rican landowners been able to adapt to these stimulation-measures and how did these measures impact sustainable rural livelihoods in forest regions?

This chapter analyzes how stimulation-measures of *Chapter 3*. have changed rural Costa Rica looking at SRL. Farming has been (partly) replaced with new ways of living (livelihood strategies) for landowners who had to adapt to realize a forest transition. As was explained in the methods section: it is an attempt to understand the issues have arisen from policy from a bottom up perspective on livelihoods. The goal is to understand and learn from these issues, so that academics and policymakers can be informed. Due to this constructive perspective, the focus is largely on negative impacts and their solutions.

To be able to assess impact on SRL in this chapter in a structured and comprehensive way, the previous chapters have been instrumental: In *Theory* a framework and theory on SRL were discussed, along with theory and concepts on development, importance and use of forests, environmental services and tropical forest conservation. SRL is defined by multiple dimensions of resources, strategies and outcomes. These 3 dimensions provide the basis for this chapter, they make up 3 paragraphs in which they are analyzed: Every paragraph answers the sub question by analyzing how one dimension has been changed for the adapting landowners (farmers) and other rural inhabitants. Because the dimensions are strongly connected, they can overlap and some repetition of topics is unavoidable. *Chapter 1*. has provided important context in which livelihoods are situated, *Chapter 3*. provides information on the 'transforming processes and structures' (see framework figure 8.) this research analyzes for its impact on SRL.

Actors have been interviewed to guide this analysis and provide different perspectives. Their expertise can identify important issues and solutions. Along with these interviews data, mostly case studies, are used. More impacts/findings were found than are discussed in this chapter, which discusses only the most relevant or significant impacts. Not every aspect of every dimension was as important as others. Some impacts or findings with lesser relevance were not further explained in this chapter, but in the appendix. This chapter has a lot of different paragraphs and information. Many paragraphs have been referred to in other sections. For clarity an overview has been made of these paragraphs (*Appendix 5*).

4.1 Livelihood Resources

Livelihood resources consists of the capital people have to secure their livelihood (see *Theory*). This capital, or livelihood assets, have to be understood in a broad sense: They can be natural, physical, human, social and financial. In this paragraph, all five types of capital will be separately discussed. With every type its meaning and importance for the case is firstly briefly discussed. Interviews will help guide which assets are important: Based on this, and earlier findings, specific resources and how they were impacted by stimulation-measures are explained with use of research and case studies. Only those resources are mentioned of which data was available and which this research has found to be important for the connection between stimulation-measures and SRL.

4.1.1 Natural capital

Natural capital are naturally available assets that can be used for livelihood strategies: land and produce, water, wildlife, forest products, biodiversity and environmental services (Serrat, 2017 ; Brocklesby & Fisher & Christopher, 2003). They are assets from natural resource stocks from which resource flows and services (DFID, 1999 ; Shen et al., 2008). In developing countries and the (tropical) South, rural people often depend on forest resources (land for agriculture , water, construction materials like wood, fuelwood, and other forest products)(see *Theory*). In Costa Rica FCP has changed the access to such resources with regulation, like management plans and bans, and conservation.

Several interviews showed that (legal) land ownership is an important resources in connection to PES participation (Interview 1,3,7 and 8). In general, land is logically a requirement for any type of livelihood strategy for landowners, both for farming and new sustainable strategies that have been stimulated. Data confirmed that there were issues of participation and exclusion. Interview 5. also showed that access to land is changed due to (eco)tourism and new flows of people and money. Interviews also discussed how conservation regulations might have influenced access forest resources and basic needs (Interview 1, 3, 7). And earlier chapters showed the importance of biodiversity and ecosystem services as newly available (and commodified) types of capital. So *land ownership, forest resources and basic needs* and *biodiversity and ecosystem services* are discussed in this paragraph.

Land ownership

According to Schuurman, who did comparative research on land tenure security in Costa Rica and Guatemala, land ownership is relatively well established. There are regulations for land (in)security and a certain amount of legal certainty (*Interview 1:1*). There is not the large distinction between large landowners and small farm-owners. Family-agriculture has a more secure place in agriculture, particularly in coffee production (*Interview 1:4*). This is confirmed by Louman, who mentions the same thing: This has shaped development and decision making in rural Costa Rica, where small farms and family businesses were dominant (*Interview 3:3*). *Chapter 1., 2. & 3.* have confirmed this: Particularly in conservation policy and forestry (small) landowners play an essential role, for example in PES. Schuurman also indicated that there are some land conflicts among indigenous and the state, in relation to PAs (for further explanation see Appendix 3.1). While land ownership seems 'secure' in Costa Rica, what matters are the issues of lack of access to it, inequality and issues of participation in livelihood strategies. There is a difference between certified land ownership and secure land tenure: The former means the possession of land is official and legal, while the latter means that the (work/living) relation of the user and the land is acknowledged and the claim on this land is (relatively) secure. For indigenous people in Costa Rica for example, who often lack land titles, their tenure often secure (Karousakis, 2007). Now secure tenure can mean that people (in Costa Rica) have a relatively certain claim on land, but they might not be able to participate in PES because they have no legal claim. Land ownership and PES participation is first discussed.

Land ownership and PES participation

How has legal land possession created difficulties for people to participate in PES? Of course PES (by necessity) does not include the landless (Bennet & Henniger, 2009). Payments for conservation on forests is difficult to regulate if the conservationists are not tied to the land. This does mean that PES excludes the poorest of the poor, those without any type of land (Bennet & Henniger, 2009). This is important because 3/4th of all people employed in agriculture are (most likely) landless (OECD, 2017 ; see also 4.2.1).

When Meza-Picado and Ramirez (Interview 7. & 8.) were asked about participation issues in PES due to (lack of) land ownership, they gave a similar answer. Meza-Picado, who facilitated forest management projects for the National University, explains that producers without property title have been excluded: There have been cases where producers have reforested their land for PES, but could not take advantage of the benefits because they did not have a property title (Interview 7: 7,8). Ramirez, who studied cases of PES-participation, said property rights were one of the limitations for small farmers to participate: You need a government certificate that confirms that the land is yours (Interview 8:8 ; see also 3.1). He adds that this is also a problem because many people's land rights are in a 'grey space': There have been programs for agrarian reform set up by INDER (Rural Development Institute of Costa Rica), which made it possible for farmers to cultivate land. But these farmers do not have official certificates (it is 'governmented private property' ; Interview 8:8). So these people have not been able to participate, which is also what Meza-Picado confirms (Interview 7:9).

In the past studies confirmed that there is an issue of lack of land titles for PES participation (see Pagiola, 2008 ; Bennet & Henniger, 2009). Since then, the state has improved by allowing participation of landowners without certified titles in PES, and by giving more land titles to people (McLennan, 2012). But the ownership of people, particularly the poor and indigenous, remains vague. Porrás et al. (2013) explain that there is the problem of 'uncontested land titles': Claims on land that are not contested by some factor or actor. A cadastre project uncovered that there are many inconsistencies between the cadastral maps in Costa Rica (official property register maps) and the actually registered properties (title deeds) (Porrás et al., 2013). Louman confirms this point when he stated that about 20 or 30% of farmers do not have clear borders for their land (Interview 3:8). Furthermore, Porrás et al. (2013) states that the rights of land ownership have been accepted on and off during the PES program. It is difficult for landowners to give evidence that their possession rights are uncontested: that there is no other person or factor that states anything else (also concerning the borders)(Porrás et al., 2013). So the vagueness of the system and the difficulty of people to demonstrate ownership asks for reflection on the country's requirements for participation: Why is it made so complicated for individuals to participate when they have worked and lived on their land a long time?

Large vs small landowners

Another important issue found in multiple studies is the unequal participation of large landowners. Large landowners here means relatively large owners, who approach the maximum amount of land for PES participation (300 hectares, see Karousakis, 2007).

Particularly in the beginning of PES, different types of capital (like human and financial) and farm size influenced the ability of people to participate. This resulted in large landowners being overrepresented in PES (Sanchez-azofeifa et al., 2007 ; Zbinden & Lee, 2005 ; Miranda et al., 2003). If certain types of capital are needed for participation there is going to be inequality. In a research of Allen & Colson (2019) semi-structured interviews indicated the drivers of participation in PES. When asked about the program, farmers tended to voice that PES was good for large landowners who did not plan to cultivate their land (Allen & Colson, 2019). The problem is, that if you have a small farm and you are dependent on agricultural income, PES does not provide enough payment (for that amount of land) to change strategy (see 4.3.1). So PES is not effective for small landowners. Large landowners can use part of their land for agriculture, and another part (forest) for PES as additional income. Legrand et al. (2013) have confirmed this 'exclusion of small landowners'. Ramirez explains in Interview 8. that PES is mostly useful under the condition that you

already have some forest land that you cannot cut down, to obtain at least some income from this land (Interview 8:4). Large landowners often have some empty land with forest, but small landowners need to use all they can, so often do not have this.

Porras et al. (2013) have used FONAFIFO-data to visualize the participation of small landowners and large landowners from the beginning of the program until 2012 (figure 12.). The lower graph shows the relation between land size and the proportion of contracts issued per period. The upper graph shows the relation between land size and proportion of total PES budget (payments) made. What is clear is that Costa Rica has made improvements in the participation of small landowners over time, but that still large landowners participate more in PES and get more payments. Of course the latter also depends on farm size (more forest gives more payment), but it nevertheless shows that small landowners are excluded. The improvements (in small land participation) are most likely due to better institutional support (see *Chapter 3.*), improved access to (other) capital (see next paragraphs) and attempts of the state to include the poor (see 4.3.1). The last point also has to do with the introduction of agroforestry contracts which make participation more beneficial for the poor (see 4.2.2). Porras et al. (2013) partly confirm this when they state that most payments for small farms (less than 5 hectares) are for agroforestry contracts.

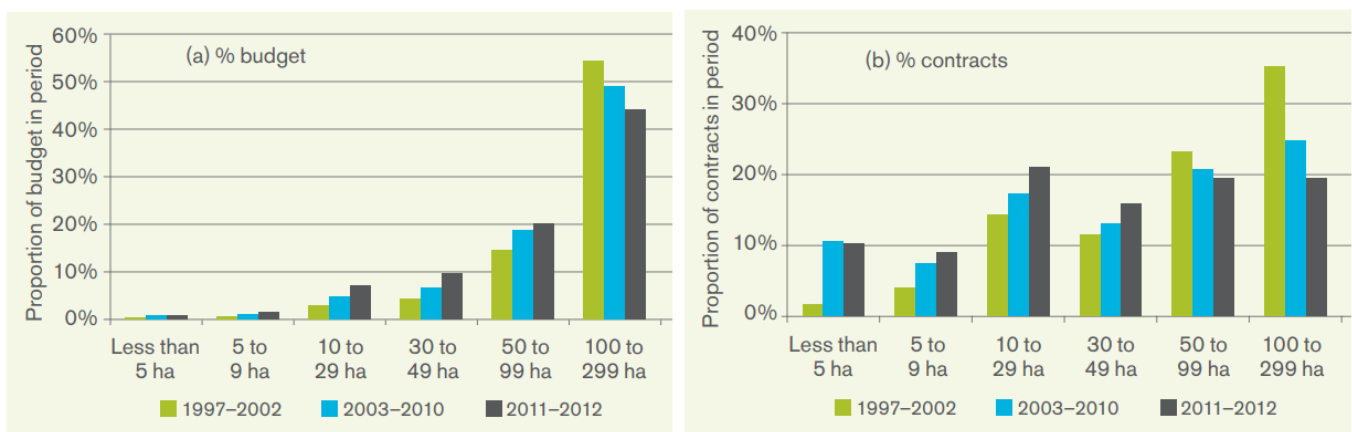


Figure 12. Share of budget (left) and number of contracts (right) by farm size and main period (Porras et al., 2013).

From a SRL perspective, it is important that land size does not become too much of a barrier in realizing new sustainable livelihood strategies. Currently, lack of (large) land ownership can be a barrier to participate in conservation (contracts) and thus impacts people who find at least one strategy inaccessible.

PES influence on land ownership

There is mixed evidence on the reverse relationship of how PES participation impacts land ownership. In a study of Arriagada et al. (2009) that combines case studies, household surveys and expert interviews, participants reported they joined PES to secure their property rights. Particularly large owners did this “to protect their land from aggressive land development policies” (Arriagada et al., 2015, 13). They wanted to protect the empty (unused) land that is often present at their farms (see 3.1). Key informants explained that the Institute of Agricultural Development (IDA) saw unused (forest) land as “useless” and believed it should be available for seizure for agricultural development. So participants applied for PES to improve their tenure security: Land became ‘used for conservation’ instead of ‘idle land’, so that it would not be vulnerable to squatters (Arriagada et al., 2009). The findings make an interesting point: PES gives land a legal use and registered status which increases land ownership.

But there is also negative impact of PES on land ownership: The earlier mentioned research of Allen & Colson (2019) found that landowners largest concern against PES was about land ownership. People stated that the government was found untrustworthy: There was concern that PES made the state effectively owner of the land. The reason for this was the deforestation ban: If you participate in PES and reforest land, and the PES contract ends, it can never be deforested and used for other purposes (farming) again: The land conversion to forest is permanent (Allen & Colson, 2019). So basically PES participation means

losing the opportunity of later land use, and gives the state authority over the land. This is a large issue: It is about self-reliance of rural households and the ability to access resources. If a farmer loses his ability to a livelihood strategy (farming) because of applying for a new one (PES), this increases vulnerability: If the new strategy does not provide good outcomes it will reduce the SRL of this individual. As 4.3.1 will show, insecurity and unsustainability of PES are a large issue.

Changes in land ownership and land prices

The changes in land ownership and prices of the last two decades are a central barrier for people who look for new livelihood strategies. This barrier is even more important than the issues with participating in PES: Land ownership and access are essential for most forms of (sustainable) use of land, for both landowners and 'landless'. In *Chapter 1. and 3* became clear that Costa Rica's development ideas and FCP have facilitated new flows of people and money towards rural regions, with the introduction of ecotourism and the connected protection of biodiversity. This has been the result of stimulation of landowners to participate in such activities, although it is also part of a larger commitment in which forests are aimed to be a motor for green growth. Foreign and urban investors have come to rural Costa Rica to participate in new opportunities, which increases pressure on land markets and decreases access to this capital. For the landless (often the poor) this is a large problem: They have need more investment to buy land and participate in (sustainable) livelihood strategies. For the 3/4th of people working in agriculture, there is now small chance of 'starting on their own' with a piece of bought land.

The changes in prices can be beneficial for landowners who sell land. The changes were reflected upon in interviews: Both Schuurman and Louman have confirmed that they cause problems for rural inhabitant land ownership. Louman indicates that these flows pressurize the local economy, particularly land markets. If there is more demand for land for numerous activities, the price goes up. People who leave farming can do this because they want to participate in ecotourism, or just want to sell the land because of the high land prices (*Interview 3:20*). Sellers then have the money to do other things, which often have failed and created large impact on their lives (*Interview 3:20*). If you sell land and start ecotourism, and it works, than you are good. If it does not work, than you have lost (*Interview 3:21*). Schuurman indicates from his own experience that it is usually poverty and inequality that cause people to sell land: they are in need of money short term to make ends meet. "If you have a viable business on your land, it is easier to resist a bid from a touristic company." (*Interview 1:10*). He also notes that land selling is only a short term solution to poverty: it is not sustainable in many cases (*Interview 1:10*). Land provides, as capital, opportunity for the future. From a SRL perspective, selling means giving up natural capital (land) in the process of finding a new livelihood strategy. If this strategy is insecure (see 4.3.1), this can impact livelihoods.

The above made statements will now be explored using found data. McLennan and Garvin (2012) did a case study on intra-regional differences in land use and livelihood of landholders during their forest transition. This research also uses a SL-framework, and compares two landowner groups and in different regions in Costa Rica. The study concluded that location is an essential factor for land prices: Where tourism potential is largest, particularly coastal locations, interest of foreign investors has driven the prices up (McLennan & Garvin, 2012). Both studied groups had large shares of landowners who sold land to these investors. People who did this said that this created a paradox for them: the economic benefit was short term, while they were left without a long-term means of subsistence (McLennan & Garvin, 2012). Also in the absence of foreign (large) investors these results were found: In a study by Horton (2009) on the Osa Peninsula, "where relative isolation has limited the presence of transnational corporate capital" impacts for rural land ownership were found (Horton, 2009, abstract). There are struggles over land access and natural resources due to the increase of community-based ecotourism (see 3.3). Horton (2009) concludes that the ecotourism boom, while creating potential for the poor, has eroded local control over land and resources: There is unequal initial access to land and capital and it reproduces already existing patterns of stratification (Horton, 2009). The same has been found by Noorloos in her study of residential tourism and land market pressure in Guanacaste (Noorloos, 2017).

These studies confirm that ecotourism has rearranged the ownership of land: New interest for land, because it has new economic potential, meant the selling of land which ended up in the hands of the initially more wealthy. Large landowners, investors, successful tourism businesses, or foreign parties all have gained land ownership, which has reduced the availability of the asset land for the original rural population. As Schuurman has explained, the loss of land ownership of such people is connected to a (necessary) move away to the city (see 4.2.4). But it is not ecotourism alone which increases land inaccessibility. Effectively, any measure that makes forest more valuable, like many stimulation-measures (*Chapter 3.*), have done so. PES for example has been criticized because inherently, by paying for ecosystem services, the state is increasing the opportunity of the land and thus its value (Bennet & Henniger, 2009). By making forests a proactive sector through multiple sustainable land uses, more money is involved in rural Costa Rica. This can create competition for land, inequality and inaccessibility of an essential livelihood resource.

Forest resources and basic needs

One issue of regulation and restrictions (*Chapter 2. And 3.*) of surrounding forest use is that it limits the access of forest resources. Whereas forests were initially open-access-resources, now they can only be used if several conditions are met. Users need secure and official land ownership and management plans. This is something Meza-Picado, who has been forest engineer for 25 years in Costa Rica, mentions: Productive use of forests is limited by these obstruction measures: excessive requirements and procedures, and necessary permits for natural forest use (Interview 7: 6).

There is of course an important distinction between using forest resources for commercial purposes (production) and using it for personal consumption. A landowner can plant some trees and harvest them later without issue (Interview 9:7). But this becomes more difficult when whole rural communities need construction materials and fuelwood. And even more so when products are extracted and put on markets. This is most strictly forbidden, if regulations and permits are not respected (sustainable management plans, *Chapter 2.*). Regulations make wood more expensive and less available on the market which means higher prices for these basic needs (see 4.3.1: *Purchasing power*). So these products become less accessible for rural inhabitants. If forest were still open-access-resource, rural communities would not have to buy for it but only have to extract it.

Indigenous peoples have strong cultural and spiritual values with the land (Bennet & Henniger, 2009). They use the forests surrounding their communities, with hunting or forestry to collect food for example (Wallbott et al., 2019). Louman was asked what the regulations meant for indigenous groups who have traditionally depended on forests. He explains that in the forestry law very clearly is stated that the indigenous population is allowed to use their forest land: They can cut wood for their own consumption (Interview 3:15). It is however a problem when they want to do this commercially, which falls under standard regulations. CATIE and other institutions have done much research on this, and Louman concludes that rural inhabitants have been taken into account. Issues remain however with conflicts over land and resources with PAs (Appendix 3.1). Studies have shown that not only PAs but all types of conservation areas have excluded forest access of the indigenous. Sylvester et al. (2016) and Wallbott et al. (2019) discuss how management regulations and PES have created conserved forests that impact indigenous people who needed them (traditionally) for the collection basic needs. The conclusion is that while indigenous consumptive use of forest resources is in principle secure, there are conflicting factors such as forest protection (PAs) and conflicts and insecurities of land access. Costa Rica increased its forest cover but also made the rural landscape a 'smaller place' with protected forests.

A world in which forests are still open-access-resources is an illusion: Forest protection requires some form of regulation, and legal ownership and responsibilities attached to it. Otherwise forests would be deprived of their resources: they have to be sustainably used (see 4.3.3). So it really depends on how the people that do not have access anymore are compensated and can find sufficient alternative livelihood strategies to be able to buy resources on markets.

Biodiversity and ecosystem services

SRL gives an interesting perspective on the new value of biodiversity: Due to FCP forests have become a valuable asset, because of their services and biodiversity value. With the CES system use of ecosystem services has been acknowledged, and users have to pay for this use. Providers of the use (PES-participants) then gain benefits (see *Chapter 3*). As earlier explained, water-users are the most important contributors in CES and facilitation of water supply (with forest conservation) has become an important ecosystem service. Effectively, previously unacknowledged natural resources have become assets that are valued and paid for. In a way Costa Rica has ‘created’ new natural capital that people can have and use. Water is a great example because the forests people own facilitate the water supply, but this process was in the past never accepted as a service that had to be paid for. The same has happened with biodiversity: The state has supported (eco)tourism. It thus facilitated a (tourist) demand for the experience of biodiversity. Where before few people paid to see the forests, now a large inflow of foreign currency is generated. So here too, biodiversity as a form of capital that can create income is manifested. Both this growth of tourism and valuation of ecosystem services provide people with new assets that they can use to create livelihoods.

4.1.2 Physical capital

Physical capital are the physical attributes, tools and technologies that are needed to effectively create livelihoods, such as: infrastructure (roads, vehicles, secure buildings, water supply, sanitation, energy and communications), tools (equipment) and technologies (e.g. agricultural technologies) (Serrat, 2017 ; Brocklesby & Fisher, 2003 ; DFID, 1999 ; Shen et al., 2008). Particularly in developing rural South regions it is not always a given that these physical assets are present or easily accessible. Change from farming to alternative livelihood strategies (see 4.2) requires adaptation by rural inhabitants. A change of practices also means a change of the physical attributes and tools and technologies these people use. Of course physical assets needed for farming are just as important: Not all people will change their strategies. However the assets needed for traditional agriculture have been present for a long time before any changes to the rural economy and FCP. Therefore they are not further analyzed, since there is no strong factor of change found. On the assets *tools & technology* not much was found in this research. However, *infrastructure* has been influenced by the measures of *Chapter 3*. and will be discussed.

Infrastructure

Most important for infrastructure changes has been the growth of tourism. (Rural) areas that were to support tourism activities had to be accessible and infrastructure has been created to make this happen. Koens et al. 2009 make this clear in their research, where they state that tourism has brought development of many kinds: infrastructure, education and medical facilities. These services are of help to rural inhabitants that can use them. If for example a dirt road was replaced by an asphalt road, it is easier to transport produce to markets. In a research of Allen & Vasquez (2017) a many farmers in Monteverde, Costa Rica, were interviewed: They spoke about how tourism has brought development in the form of infrastructure changes such as schools and paved roads. One respondent said: “[If it hadn’t been for tourism], we wouldn’t be as advanced as we are now. Monteverde wouldn’t have banks or good hotels. It wouldn’t have a high school.”(Allen & Vasquez, 2017, 218). It indicates that the facilities perhaps build for tourists also have function for local inhabitants.

The forest plantation sector has had some impact on infrastructure. Miranda et al. (2004) and Tacconi et al. (2010) explain that a timber industry has emerged in which timber is sustainably harvested. This sector has created jobs, microbusinesses and infrastructure (Miranda et al., 2004). This is also something Louman confirms (*Interview 3:12*). It is important though to realize that alternative strategies also replaced other strategies (like farming) which would have otherwise perhaps also create capital like infrastructure. Of course, infrastructure is also a result of general development and wealth. If a region develops, it will have the financial resources to build better roads and other services. An example of this is given by Borge & Martinez (2009) who have studied the effect of PES on indigenous communities: They state that PES helped these communities to increase income, which made it possible for them to invest in local

infrastructure. This shows how outcomes can connect positively to resources (see figure 5,8). Wherever stimulation-measures (*Chapter 3.*) have resulted in loss of income however, due to for example regulations on production (farming), it could have also decreased income and investment for infrastructure. So the connection remains a bit unclear.

4.1.3 Human Capital

Human capital is about the assets within the human body and mind that are needed to pursue different livelihood strategies (DFID, 1999). They are health, nutrition, education, knowledge and skills, capacity to work and adapt (Serrat, 2017 ; Brocklesby & Fisher, 2003 ; Shen et al., 2008). To be able to participate in the new strategies the state stimulates, it is important that people (landowners) know what to do and have the physical capacity to do the work it requires. The physical capacities that are needed for labor in new practices (conservation, agroforestry, ecotourism, etc.) are seemingly similar (or at least not more demanding) to traditional practices that used forest and land. The issue health is important in general, but does not seem to be connected to FCP. However there are some indirect impact of the way rural communities have been changed on health (see 4.2.3). In the same way, health and nutrition are impacted by food security, which is impacted by FCP (see 4.3.2). Important here are the mental abilities needed to participate in new livelihood strategies: skills, knowledge and education.

Skills, knowledge and education

New livelihood strategies require new skills, knowledge and education. Louman explains the population has been well educated (relatively), also on environmental concerns and practices (Interview 3:3, *Chapter 1.*). We have also seen multiple institutions providing support on knowledge and skills, with training and research (*Chapter 3.*, see *Interview 4.*). This is an ongoing process: As Louman for example explains: CATIE does research on sustainable management of forests and farms, and then communicates this knowledge, for example with training for landowners (*Interview 3:6*). There are numerous research institutions and NGOs who provide such support. While things can perhaps always improve, this research has the impression Costa Rica has done a good job in providing these assets according to its capabilities, using aid from non-state institutions. That does not mean however that information is always available everywhere in Costa Rica. A research by McLennan and Garvin (2012), where landholders were interviewed regarding their forest transition, concludes that in the regions studied programs for rural education and skills development were lacking. The lack of these assets among farmers made it difficult for them to adapt, or find off-farm employment (McLennan & Garvin, 2012). The main issue is that while there are supporting institutions and training programs, they are not everywhere and have limited reach.

The largest issue found in this research was with ecotourism entrepreneurship. Both Louman and Noorloos indicated that many ecotourism activities failed due to a lack of 'right strategies' which heavily impacted people: Participants did not know what was needed for the business and what tourists want and need (*Interview 3:10 ; Interview 5:2*). A case study by Howitt and Mason (2018), where local perspectives on ecotourism are explored from research on rural livelihood issues in San Gerardo de Rivas, Costa Rica, explains that imbalances in the access of information on ecotourism and marketing expertise create problems. Such imbalances are caused by internet access, computer skills, English language skills and even literacy (Howitt & Mason, 2018). (For more on failures in ecotourism see 4.2.3). While much support has been given by institutions (like CATIE) for the sustainable use of (forest)land, this support seems to be missing for ecotourism entrepreneurship. Furthermore, there are inequalities due to different access to information. This is particularly an issue for the poor, who often miss education, and the indigenous who often live traditional lifestyles and might not have for example access to internet, English language or literacy skills. Institutions however are working on this: SINAC for example has specific training for indigenous communities (*Interview 4:2*).

4.1.4 Financial capital

Financial capital consists of the financial assets needed for livelihood strategies. They are savings (for investment and financial security), credit and debt (both formal and informal), and of course income sources like wages, remittances and pensions (Serrat, 2017 ; Brocklesby & Fisher, 2003 ; DFID, 1999 ; Shen et al., 2008). Financial capital and physical capital together are what makes up the economic concept of capital (Scoones, 1998), which is limited compared to the SL-approach. Rural people (landowners) need to adapt to new livelihood strategies and need money to obtain many of the assets needed. Because rural landowners are often poor, financial assets can be large barriers for changing to new strategies or even maintaining current strategies. Of course the most important financial asset rural people need to support their livelihoods are income sources: they provide the money for living and working. At the same time, income may be insufficient when (living) expenses go up: Income (and poverty) and purchasing power will be discussed in 4.3, because they are also livelihood outcomes. Other important financial assets will be discussed here: In *Chapter 3*, became clear that there is financial support for landowners to start with sustainable forms of forest use, other than income. This support could bridge the gap for particularly poor (small scale) landowners to participate in new strategies. On the other hand researches show there are financial barriers for new livelihood strategies: Transaction cost for participation in PES, and investment cost for other alternative strategies.

Financial barriers

The main financial issue with stimulating landowners to pursue alternative strategies is that these strategies might require financial resources landowners lack. Many resources in this chapter require at least some sort of financial resources. According to Ramirez in *Interview 8*: there are quite a bit of expenses that have to be engaged with before entering conservation programs (*Interview 8:8*). This can increase inequalities: wealthy landowners can adapt easier with new practices and gain income easier than poor landowners. Here we discuss the two most striking examples of issues that were found in this research. The first example is investment for ecotourism activities: In *Chapter 3*, multiple ways in which landowners can have tourism activities on their land (and off-farm) have been explained. But these activities require usually an investment, for example for building accommodation. Some activities like tours might require less investment in infrastructure, but could require education and advertisement. In 4.2.3, the inaccessibility of ecotourism activities due to lack of investment-money (and other resources) is further discussed.

The second example is about transaction and application of alternative sustainable strategies. This barrier was found in many researches that talk about the cost of transaction, monitoring and complex and costly administrative procedures. Costa Rica has introduced many protection measures and regulations for forest use. It now needs to be proven that forests are used sustainably, through a legislative system of impact assessment and management plans (see *Chapter 2. and 3.*). The disadvantages of this is that users need capabilities and resources to comply with these regulations. Researches have discussed the inaccessibility of PES for poor landowners, but it has to be understood that this is not an issue of PES alone: Any type of sustainable use of forests requires a management plan (*Chapter 3*). These plans require landowners to adopt sustainable practices that need (costly) investment. But the plans themselves also require fees, as well as the monitoring that is done by institutions afterwards (Pagiola, 2008). They form a barrier for landowners (Pagiola, 2008 ; see also 3.1).

Meza-Picado explains that the forestry institutions have created barriers for producers (landowners) that restrict their profitability and their competitiveness (*Interview 7: 4&5*). He refers to a document that explains that transaction cost must be reduced by making procedures for management plan approval more simple (*Interview 7:3*). He even speaks of an ‘administrative ban’, as people perceive the administrative barriers created as a intentional banning of (particularly small scale) forest use and production (*Interview 7:6*). In 4.3.1 this criticism will be fully elaborated on. Ramirez agrees mostly with Meza-Picado: He particularly names the expenses of getting certificates (management plans) and the monitoring that needs

to be paid to officials. In some cases officials took 20% of the entire amount given for the program for only monitoring sustainable use and conservation once a year (Interview 8:8).

In 4.1.1: *Land ownership* was already discussed that small landowners are disadvantaged to participate in PES due small land size. Bosselman (2013), who did a study on the role of local intermediaries in PES, concluded from interviews and household-surveys that small landowners have also been excluded from PES due to transaction cost. He explains that these costs are relatively high and largely scale-independent, which means that smaller landholders have to pay almost as much to participate as large landholders do. This financial barrier small landholders has been confirmed by the World Bank (2015), Wallbott et al. (2019), Pagiola (2006) and Bennet & Henniger (2009). According to Porras et al. (2013):

“In Costa Rica the overall application process can be lengthy and tedious, especially for those who are not familiar with the procedure; and technical information is detailed and expensive. Some of the participation requirements exclude the most vulnerable landowners.” (Porras et al., 2013)

Rugtveit et al. (2014) did a study in one of Costa Rica’s regions, in which transaction and compliance cost of PES was quantified as a percentage of total payments received. They found that of the most issued contract type (conservation contracts) 24.2% of the payments had to be used for transaction and compliance cost. With reforestation contracts, this was even 91.8% (Rugtveit et al., 2014). This means that a significant amount of money that is to be earned (over multiple years) has to be paid in advance to apply. Clearly, this is a large barrier, particularly because application happens in advance, while income for livelihoods (payments) happen later. According to Ramirez: The requirements of the program from the get go entails that participants have some money, so PES participants are not the poorest of the poor (Interview 8:9).

Even though researches indicate that transaction cost is still a large barrier for landowners, there has been a (partial) solution: Small (poor) landowners in the same area could bundle their forces and together apply in one large contact with only one transaction fee. This is called collective contracting, and has been a later added mechanism to include the poor in PES (Pagiola, 2008). Porras et al. (2013) note that by 2012, about half of all PES-contracts were given to ‘legal entities’: These are groups of people who apply together under anonymity. This anonymity makes it hard to say who those people actually are. They are families, but also businesses that could be collectives of poor landowners but also larger (real) businesses (Porras et al., 2013). Ramirez gives a different example of NGOs that organize farmers to engage in programs: Farmers pay money to them and these organizations then help reduce the overall cost and hassle of application (Interview 8:8). Collective contracting could provide a strong reduction of financial costs for individuals, if they manage to organize themselves in groups. The cooperatives Schuurman mentions (Interview 1:5), which are often lacking in Costa Rica, could be of aid in this organization of landowners.

Financial support

Two clear instances of financial support were found in this research: Tax exemptions and support in the form of credit. Tax exemptions currently play a limited role in stimulation-measures due to limitations of (state)funding (Interview 9:1). In the past however this role was different, which is more thoroughly explained in *Appendix 3.2*. There are some forms of tax exemptions right now (also discussed in *Appendix 3.2*) but for this research most important is to mention that tax exemptions have a great potential from a SRL-perspective: They really have no negative impacts for livelihoods, and they can make strategies more accessible. They are also a tool for distributing benefits: Poorer landowners can for example get reduced taxes for easier adaptation (e.g. on income from sustainable strategies). This is not a funding issue when wealthier participants are paying higher taxes, that create revenues. It could resolve many inequalities currently found. This is further explained in *Chapter: Discussion*.

Credit, as a type of financial support, is a complex topic because conflicting results were found. While more research is needed here a conclusion is aimed to be drawn from that data found. According to Ramirez PES does not suffice for farmers to make the investments needed to perform profitable sustainable forest production activities. These investments are high, while the payments are low and too late: Investment must happen prior to the practice. He believes PES should be like a type of financial credit that helps people

get over barriers and develop reasonable alternative forest uses (Interview 8:6). Participants must have some money (for living too) before the income is generated in new strategies: credit could help. Louman confirms financing is very important for farmers to transition from farming to new practices. This is something CATIE is currently working on (Interview 3:13).

But credit is already provided in some forms: FONAFIFO also gives loans and grants with favorable (low-interest) conditions for sustainable forestry practices (FONAFIFO, 2023). The institutions has multiple types of credit, including micro-credit (for the poor). They also have specific packages that work with specific programs, like the PES program (FONAFIFO, 2023). The ICT also provides micro-credit for people who want to start tourism-businesses (ICT, 2010, 8-10). Of course it has to be seen how favorable these types of credit really are: Credit from FONAFIFO for example has several requirements, that can make it difficult for people to access it. Furthermore, people still have to pay interest rates (for FONAFIFO generally 5-7%). The issue of credit is that it doesn't simply provide resources, it also creates debt and new costs. Credit is not a solution for people who start new strategies that do not produce the income to pay it back. This was clear from the many failures in ecotourism for example: people ended up with a debt which actually worsened their situation (see 4.2.3). This is also a big issue for the forestry sector since it is a highly unprofitable and risky business with slow financial returns (see 4.2.2: *Sustainable forest production*). Taking into account that forest plantations (with PES) for example can take about 20 years to return income (for trees to reach logging age), it could mean it takes 20 years to repay debts with interest every year. These are not necessarily favorable conditions. So credit only has a positive impact when strategies are successful, people have the right resources and (institutional) support.

4.1.5 Social capital

Social capital are the social resources people use for their livelihood strategies (DFID, 1999). Such resources can be networks (like neighborhoods), relations of trust, understanding and support, groups (formal and informal), shared values, rules and behaviors and mechanisms of participation in decision making and leadership (Serrat, 2017 ; Brocklesby & Fisher, 2003). Social relations can be very important in rural areas, because rural communities are often close and people can support each other in various ways. Shared values, rules and behaviors can provide (informal) organization and structure for rural communities and their connected livelihoods. These social relations and organization have eroded due to stimulation-measures and changes in the rural economy, while new social capital has emerged through several institutions. Lastly, participation in decision making is important because it makes people feel involved to choices that are politically made, and could improve these choices with knowledge in the field.

Citizen participation and decision making

In Appendix 3.3 a more thorough discussion of citizen participation is given because it gives useful background information, but not the most essential findings. To summarize this part: Participation in sustainable new strategies is of course important for the states FCP approach, but depends on the access of the other resources discussed in this paragraph. Next to this, many institutions have aimed people to be involved in decision making: this could help these institutions understand what these people need for better livelihoods. It could also help landowners to gain 'relations of trust, understanding and support' with the state. However, these relations have not always been realized: Rural inhabitants (landowners) have indicated that the state was often found untrustworthy, and its programs could be risky, reduce self-reliance, and even ownership of land (see Appendix 3.3).

Traditional community relations versus new institutional support

Rural inhabitants often rely on more local social support and networks (than the state's), like local organizations (non-governmental) and families, neighborhoods and communities. This research found that traditional community relations and networks have eroded, while new more institutional (both governmental and non-governmental) networks and support have emerged.

Many rural communities have ‘fallen apart’. Because first some more understanding of the impact of ecotourism is needed, this topic will be mostly discussed in 4.3.4. However for this paragraph it is important to understand that the new flows of people and money in rural areas have caused many changes. This created alienation in rural communities, where cultural disintegration was perceived: Community organizations and relations have diminished (Koens et al., 2009). The traditional networks people rely on (families, neighborhoods, etc.) have declined because people have left, land ownership has changed, and new people have come. Social relationships and networks grow over time and cannot simply be replaced. Losing these relations might mean landowners do not know ‘who to go to’ for support or cooperation.

The lack of these more informal relations has exchanged by new social support from new local institutions. Louman has done research on the drivers of participation in PES, and he emphasized on the importance of NGO’s and other institutions (Louman, 2017). These institutions give multiple types of assistance (see also *Chapter 3.*). Farmers who were associated with local organizations had more forest on their land (Interview 3:7). CATIE and its involvement in communities and landowners with training is an example (see Interview 3.). In *Interview 4.* was also explained how SINAC and other institutions provide a direct connection to landowners to a network of support they can approach. Milder et al. (2010) argue that the strengthening of social capital and supportive local institutions has benefitted PES-participants. The interviews with farmers in the research of McLennan and Garvin (2012) concluded that at least some of the farmers were involved in local community groups that helped with social resources to support community development. However these groups did not provide support specific for landowners or for farmers (McLennan and Garvin, 2012).

This last point confirms something that Schuurman explained, which is a problem for the adaptation of landowners: In Costa Rica farmers are not well organized in cooperations and farmers movements. These organizations can help farmers to adapt and find sufficient alternative strategies instead of farming (Interview 1:5 ; see also 4.2.1). The assumption that can be drawn from *Interview 1.* and McLennan and Garvin (2012) is that while institutional support has been expanding, it is not accessible everywhere. Support really depends on the location of the institution, which could make some areas lacking of support. Furthermore, farmers could use more direct support that connects to the transition from farming to more sustainable alternatives. Institutions support sustainable activities, but not always the complex transition and adaptation required.

4.2 Livelihood Strategies

Livelihood strategies are the strategies people have to create and maintain quality of life, and mostly have to do with effective and secure employment that can generate stable income and other benefits (see *Theory*). Self-reliance is very important for households/individuals: having secure access to the resources they need to perform strategies that are successful, without dependency on others (Mphande, 2016 ; *Theory*). In the rural South agricultural strategies are by far most important (Davis et al., 2010). This is the same in rural Costa Rica, which has traditionally had an agricultural economy, though this has declined in recent years (see *Chapter 1.*). Livelihood strategies can be effective depending on the conditions in which they exist: Political, socioeconomic and even ecological changes can complicate or benefit a particular strategy (*Theory*). As was clear from earlier chapters new strategies have been introduced: Conservation and sustainable uses of forests (agroforestry and forest plantations) have been supported by either PES or other measures. Ecotourism provides alternative strategies instead or next to farming. And lastly, migration is another strategy, where people move away to find new opportunities and strategies (see figure 5,8.). All these strategies, relevant for rural Costa Rica, will be separately discussed.

4.2.1 Agricultural strategies

First here the traditional strategies of farming are discussed, which have strongly connected to forest land and deforestation in Costa Rica. They are not practices that contribute to own consumption (subsistence farming, hunting, foraging etc., which were discussed under 4.1.1) but for extraction of resources for commercial use. Costa Rica is traditionally an agricultural economy, and the strategies for landowners that the state stimulated (to conserve forest) were aimed to (partly) replace farming. So it farming gives an essential understanding of these stimulation-measures and their impact on SRL.

The decline of farming

To understand the impact that stimulation-measures (Chapter 3.) have had on farming as a livelihood strategy, it is important to understand a few things about the general decline of this strategy in Costa Rica. In *Appendix 3.4* this decline and the factors that contributed to it are more thoroughly explained: Farming still plays an important role in the rural economy, particularly for low-skilled employment. But the sector (especially small scale farming) has been in decline due to lack of protection, trade liberalization and market prices, While its share in GDP and employment has gone down, and the pressures of conservation measures like PAs and the deforestation ban (*Appendix 3.4*).

Impact on farming potential

Decline in agriculture is connected to many factors. Conservation policies play an important part in this because they lead to land scarcity and competition for land, and a pressure to convert farmland to forest (OECD, 2017). Multiple researches suggests that the stimulation-measures (*Chapter 3.*) have had their impact on farming as a livelihood strategy. Noorloos (Interview 5) referred to an article (Brignone, 2015) written by one of her students, which reflects the conflict of forest protection and farming:

The article describes experiences of a farmer from Osa Peninsula, who's family got the right to deforest a piece of forest no one owned before (open-access-resource) for farming in 1965. The farmer explains he cannot use his farm like before due to forest protection: If he leaves some land unused, forest will grow and it becomes 'protected forest' that cannot be farmed again. So he has to constantly keep using the land, which degrades the soil. Degradation had forced him to make the land forest now because it was unproductive. The compensation he gets for this (from PES) is minimal. Institutions in Osa have limited the livelihoods of inhabitants with regulations without offering good alternatives, which alienated people from their own land. There are some initiatives: small scale tourism mostly, but these are not always successful and often marginal.

The deforestation ban made expansion of agriculture to forested areas impossible, even on private lands (Fagan et al., 2013 ; Breitling, 2012 ; Galt, 2020 ; see also 4.1.1: *Land ownership*). This is very important because it means that, while land is scarce in Costa Rica and forestland cannot be deforested, extensification as agricultural strategy is unlikely: A farmer could only choose for intensification (see figure 5.). Even when agriculture does not decline due to a measure, it does not mean it is not negatively effected by it and can cost employment opportunities. Many stimulation-measures reduced the ability of farmers to expand farmland and attract more workers. Ross et al. (2007) estimated the amount of land under PES that would have been farmland if the program did not exist. This research is however old and fairly uncertain so it will be further explained in *Appendix 3.5*.

There are potential negative impacts in employment if forest protection results in the abandonment of agricultural lands that could have created jobs for people (Porras et al., 2008). According to Porras (2013), there is still no rigorous evaluation of the intangible benefits of PES. And there have no nationwide estimations been found in other studies (other than Ross et al., 2007). Therefore it was chosen to analyze the topic on a smaller case study scale, to see how rural people adapt and behave. Sierra and Russman (2006) interviewed farmers in Osa who either participated in PES or not. They concluded that PES seems to accelerate the abandonment of agricultural land and practices (Sierra and Russman, 2006 ; Daniels, 2010 ; Arriagada et al., 2015). The amount of time farmers have been under (PES)contracts has a large influence on this process: The longer under contract the less agricultural use is found. Almost all farmers who were in their fifth year under contract had abandoned farming altogether. Arriagada et al. (2015) used household-

level data to study a few of the poorest cantons in Costa Rica, and concluded that PES payments decreased two essential inputs for agricultural use of land: cattle and hired (farm) labor. This indicates that agricultural employment (and use) was lost in the participation of PES. Zbinden and Lee (2005) did an econometric analysis of farmer surveys and reported that non-participants had a greater number of farm workers on their land than participants. This is to be expected because under conservation contracts (the largest part of PES) economic activities (labor intensive agriculture) are not allowed (Porrás et al., 2013).

Some other case studies confirmed that PES contributed to more reforestation by farmers: In a study with farmers interviews, two-third of the PES-participants stated that without PES they would have never reforested their land (Schedlbauer et al., 2008). Morse et al. (2009) modeled land use change expected without PES and without the deforestation ban, and found ‘avoided deforestation’ to be large: 40% of PES participants stated that they would have converted forests if they had not gotten PES-payments and if there was no ban. This shows that agricultural land (and employment) would have been larger without PES.

Farm abandonment and flexible livelihoods

In a remote sensing analysis with interviews and ethnography Allen & Vasquez (2017) explained that of a large group of interviewed farmers, only 23% of them relied solely on farm production for income. Study participants used their farms for many activities other than farming, like (eco)tourism or only for residence while employment was found elsewhere. It shows that a static farming lifestyle is evolving in more flexible livelihoods with sometimes multiple strategies. Ecotourism is perhaps the best example: The research states that “national policy has served to promote farm abandonment in favor of tourism and that this change has been critical to forest regrowth.”(Allen & Vasquez, 2017, abstract). In some studied areas massive farm abandonment found. Allen and Vasquez (2017) describe:

This area is made up of ghost towns, [...] As little as 20 years ago, these towns were peppered with homesteads, but they have been abandoned in favor of migration to the Monteverde region, primarily to the town of Santa Elena, or (to a lesser extent) the central valley. The rise of the tourism industry was described in interview data as a gold rush, “Many people sold their farms to seek out [tourism] in Santa Elena.” (Allen & Vasquez, 2017)

As Schuurman explains in *Interview 1.*, the move away from agriculture is a normal process in the development of nations. What matters however is that these people, who loose their old livelihood, can adapt and find new types of employment (*Interview 1:5*). Schuurman, who did research on (farming)cooperatives and movements in Costa Rica, explains a problem: These movements are not strong enough to organize the rural population well enough to stop farming, adapt and find new work (within the agricultural sector, e.g. with sustainable practices) so they don’t have to migrate (*Interview 1:5*). Schuurman worries that currently people who loose farming livelihoods often end up in worse conditions (*Interview 3:5*). What matters thus to understand the impact of stimulation-measures, is the successfulness of people to adapt and participate in (good) alternative (stimulated) strategies.

A last note is that SRL is not simply about adapting and finding the right strategy to produce income. Wellbeing (outcomes) relate to other results of strategies as well: Traditional values, ethic and culture. In *Appendix 3.6* is more thoroughly explained how culture and lifestyle make it difficult to stop farming and find other strategies. This also has to do with (emotional) attachment to land and self-reliance.

4.2.2 Sustainable forest uses

McLennan & Garvin (2012) concluded in their case study: New livelihoods have emerged with alternative strategies, both on and off farm: forest conservation, timber plantations, tourism and farm abandonment (which means migration). In this paragraph alternative practices of using forests: conservation, agroforestry and forest plantations, will be analyzed. Understanding the impact of forest conservation, agroforestry and forest plantations is about understanding their success and failures. Interviews (and data) provided quite diverse perspectives on this success which gives interesting conclusions. A few things are important to note. Firstly, the PES program is closely tied to sustainable uses of forest, but not all sustainable uses of forests happen under PES: People could also use forests without the program as long

as they follow the regulations (like management plans). Nevertheless, it would be logical for a landowner who pursues a sustainable land use to participate in PES because it gives additional income. Secondly, for discussing sustainable land uses we have to make a distinction between conservation (maintaining forest), and forestry production (which additionally includes harvest and additional income). This is a necessary distinction that became clear in interviews. Lastly, impact of sustainable land uses has to do with income it creates: this is further discussed in 4.3.1.

Forest conservation

Conservation of forests by landowners for the sake of (just) creating biodiversity is necessarily connected to PES (conservation-contracts) because the program provides the only way in which income can be directly made from it without productive or other ‘use’. So how has the program been used as an alternative livelihood strategy and how did it impact participants?

This question was discussed with Alonso Ramirez. He is professor political economy at the University of Costa Rica and worked on conservation policies (particularly PES) for a decade. He explains that the success of PES can be understood from its demand: There is a lot of demand for conservation-PES, and if there is demand there is also benefit (Interview 8:9). There is also more incentive for conservation-contracts than other contracts (sustainable forestry production)(Interview 8:8). To understand this, it is important to know how PES works: PES is useful only if you have forest on your land that is established as forest legally. Because of the constraints that were set up by the forestry laws incentives and (deforestation) ban (see *Chapter 3.*, Interview 8: 4&9), you cannot cut this forest down. In this case PES helps landowners because at least they get some income (though not much) from otherwise (financially) useless land (Interview 8:9 ; see also 4.3.1). Outside of this condition, the contracts do not work because there is few money in it: “It does not link up nicely with business alternatives with these people to actually engage in and get some money” (Interview 8:4). So if you have farmland it is not beneficial to forego the farming and make it forest with these contracts. In the first place thus, it is the regulations and deforestation ban that give the incentive for this contract.

It is disputable whether there is a positive impact on SRL (income-benefits) from these contracts: Benefits are small and it is basically a makeup for restrictions on forest use. Of course it is these restrictions that protect much biodiversity in the country. One issue however is that, since these contracts do not really incentivize reforestation (of farmland), the contracts seem ineffective for creating new forest cover. Ramirez additionally explains that in many remote areas PES-payments are received by landowners that actually have no intention to deforest (Interview 8:5). This makes PES less effective for forest protection, but it makes it not less effective for SRL: Because people now get benefits for their forest, whereas otherwise they would have gotten nothing. Ramirez explains that it is also important to look at who engages in the program: It is often old people who have a farm but cannot work it anymore. Their kids don’t want to take over the farm and look for other employment and migration (Interview 8:10). PES is basically a retirement option for old farmers who will not deforest, which is a nice form of social security but does not really stimulate rural development.

Allen & Colson (2019) asked farmers about their opinion on PES: “Do you have any experience with (and opinions of) the current national PES program?”. Responses were generally negative (75%), while only 25% of respondents had clearly positive opinions. In figure 13. the opinions are stated in a diagram as categories of opinion (as a percentage of total opinions given). The positive opinions were about two things: 1) PES is cost effective for landowners who do not have land in production. Which confirms what Ramirez earlier stated. 2) Opinions were about agreement with the whole idea of compensating landowners for given environmental services, because it has (social) benefits. The negative opinions were more diverse: Most important was distrust in the state (4.1.5). Second is ‘lack of additionality’, which is the opinion that PES does not contribute to reforestation because it is useful for people who already have forest (like Ramirez states). The lack of positivity of the farmers responses is an indication of the limited usefulness of the conservation-contracts. On top of this, there were barriers found (see 4.1) that exclude the poor, and there are outcomes connected to it that are later discussed (see 4.3).

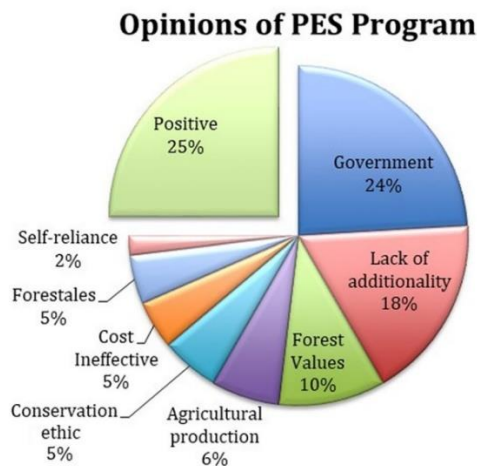


Figure 13. Categories of opinions on the PES program as a percentage of total opinions given by farmers. (Allen & Colson, 2019).

Sustainable forest production

The alternative to sustainably using forests on your land for conservation is to produce something out of your forest for (additional) income. This could of course be done with alternative PES-contracts (agroforestry and forest plantations), but also without them. Three interviews gave interesting insights.

Meza-Picado was asked if he thought practices, such as agroforestry and forest plantations, have resulted in socioeconomic development and benefits. His answer was yes, but only for very few cases (Interview 7:2). The main problem is that sustainable practices are expensive for landowners to undertake. These practices are simply not competitive in Costa Rica. He refers to one of his recent studies, which analyzes the opportunity cost of forest management (timber harvest) in rural region in Costa Rica. The conclusion is that that sustainable timber harvest has only potential (profitability) in areas with low opportunity cost (where there are no profitable alternative uses possible) (Zuniga-Mendez et al., 2022). These area's are far away from the market (Interview 7:2). His main point is the lack of competitiveness and how the government has been a continuous restraining factor in this. He refers to another document from CATIE (see Navarro et al., 2009). This document discusses the importance of creating opportunities for landowners to generate income from sustainable forest management, since all forest management happens on private land. But these landowners have been excluded in decision making, and have only received over-regulations and administrative restrictions (like management plans, legal uncertainty, transaction cost, etc. ; see 4.1) which decreased the accessibility of the practices (Interview 7:3). This has limited 'sustainable productive use and its economic viability' (Navarro et al., 2009, summary). This has led to the illegal deforestation of land by landowners who saw no other option than to create farmland (Interview 7:3 & 8:5). In *Appendix 3.7* some findings are given about illegal logging and deforestation.

If due to a lack of profitability landowners cannot find satisfactory livelihood strategies, and they start turning to illegal deforestation, this is an issue. The topic was discussed with Ramirez, who has seen many cases of indigenous sustainable use of forest. He is, like Meza-Picado, very negative though he also sees opportunity. He explains demand of (PES) agroforestry and forest plantation-contracts (compared to conservation contracts) is small (Interview 8:4 ; see also 3.1). The reason for this, according to Ramirez, is because these practices are the least successful: Projects for it end up in his experience as 'complete failures' (Interview 8: 3&4). He explains, like Meza-Picado, that these uses do not create competitive positions and profitable opportunities. He gives a number of reasons:

Firstly, he explains the whole forestry sector is in decline (for 20 years) and in a 'crises' (based on ONF statistics). The sector has not been able to compete with (less sustainable) sectors in neighboring countries that sell and produce cheaper and in more competitive commodity chains. This is a problem for the whole sustainable forestry sector (Interview 8:14). This has to do with how the commodity chain is established

in Costa Rica: products cannot compete with import wood because production is too expensive. Small landowners are in constant pressure of traders who do not pay much. (Interview 8:3). Secondly, PES-contracts are simply a 'really bad deal': They do not help in the cost of getting a plantation going, and the payments received are too little and given late. Farmers Ramirez spoke even had started cutting forests early (illegally) to make ends meet (Interview 8:4). He also spoke of other barriers that were already mentioned such as the 'administrative ban' (see 4.1.4). An example is sustainable cacao production: Ramirez studied cases of indigenous communities and MINAE surveys: Small farmers who do agroforestry and organic cacao farming, who have one hectare of land, make less than the minimum wage of any activity in the country. Only with 5 hectares you can make minimum wage. He says: "So you are pretty much condemning these people to poverty" (Interview 8:6).

According to Ramirez there are solutions of this lack of profitability, but that many things have to improve: 1) "We have to rethink how we do agriculture in Costa Rica", he says: Because production is expensive in Costa Rica, it cannot be done without market protection (that secures prices). Without it, farmers/producers are at the mercy of whoever pays for their products. (Interview 8:6). This is interesting since Costa Rica in the past actually had this protection for farmers but exchanged it for market freedom (*Chapter 3.*). 2) The PES-system must be rethought: Instead of barriers and late payments there must be a type of financial credit that actually allows people to setup and engage in productive (forest) possibilities: Eradicate the 'barriers of entry for this production' (Interview 8:6). 3) The contracts and stimulations have to be adapted to the requirements of the sector, to be commodity chain oriented: This is about producing in small production cycles (with faster tree growth and income returns) and producing cheap wood that is competitive and profitable. He gives the example of Teca trees, that grow in five years, and can be made to pineapple boxes used in the export-agriculture industry. These products have a good market, minimal investment and fast returns (Interview 8:14).

While this opinion originates from those cases Ramirez studied, it is a good example of how sustainable forestry and agroforestry (also under PES) are often unsuccessful, at least in some places. In Allen & Colson (2019): Interviewed farmers were asked about PES and which improvements they want in future programs: The farmers frequently stated that PES is advantageous only for people who do not produce on their land. Farmers also preferred a program that subsidized organic agriculture or agroforestry systems (Allen & Colson, 2019). So many wanted to produce sustainably and wanted the right support for it (and felt that it wasn't given currently). The research has indicated that there actually is demand for sustainable forest production, while opinions have been generally negative on the current program. So it partly confirms Ramirez critique, while it also gives hope for improvement.

Limited success for sustainable forest production

There have however been researches that are more positive. Louman explains that the manifestation and success of sustainable forest use really depends on the region. He studied three regions, of which one was mainly focused on agriculture, one on conservation-contracts, and one on sustainable alternatives: Many people there have planted trees for timber and seed production. Here also some industry has emerged surrounding this production that provides employment and income (Interview 3: 12&13). He also explains that success depends on the (quality of) support of local institutions, and that there can be resistance in the forestry administration to allow sustainable use of forests (Interview 3: 7&8). Ramirez agrees with this when he states that success cases do exist and have been characterized by strong support of international cooperations and the MINAE, who help with for example funding (Interview 8:3). But sustainable practices like sustainable agriculture, agroforestry and tree planting, have existed in Costa Rica and continue to exist: People have produced coffee for example within agroforestry systems (with trees)(Interview 3:5). There have been biological corridors with natural vegetation and this type of coffee-production. And there is much research being done. Such practices are probably the best option for combining forest protection with income and rural development (Interview 3: 4&5). Louman questions however whether the PES-program has been really influential, since payments are low and people have done agroforestry without them (Interview 3:5).

The agroforestry contract was created in the first place (by FONAFIFO) to provide incentive for biodiversity increase while benefitting the poor (Pagiola, 2008 ; Bennett & Henniger, 2009). While conservation-contracts have excluded the poor (see 4.1), Porras et al. 2013 have stated (based on FONAFIFO-data) that agroforestry contracts have been popular for small landowners (less than 10 hectares), as can be seen in figure 14. The payments and institutional support have helped investing in forestry activities and promote economic attraction of forest activities (Morse et al., 2009 ; Porras et al., 2013). This is similar to what Louman said about the importance of institutions and the creation of a forestry industry. The popularity among small landowners found by Porras et al. (2013) seems contrary to what Meza-Picado and Ramirez have said. There are 2 sidenotes however: 1) This is a relative popularity: Conservation-contracts are not viable for small landowners (see 4.1.1), so it is quite logical that a contract which provides additional (non-PES) income (agroforestry) is more popular. This is an improvement nonetheless. But PES has not very popular (viable) in general for small landowners (see e.g. figure 12). And the data shows that until 2013 (unfortunately more recent data was not found) there have been only 276 agroforestry contracts (compared to a total of over 18.000 (UNCC, 2019)). The share of agroforestry contracts in total contracts given until 2012 was 14%, reforestation (forest plantations) was 16% (Porras et al., 2013). 2) That people have participated does not mean this has been successful, and participation without success is bad for SRL. Ramirez stated that participants have often found difficulty during participation.

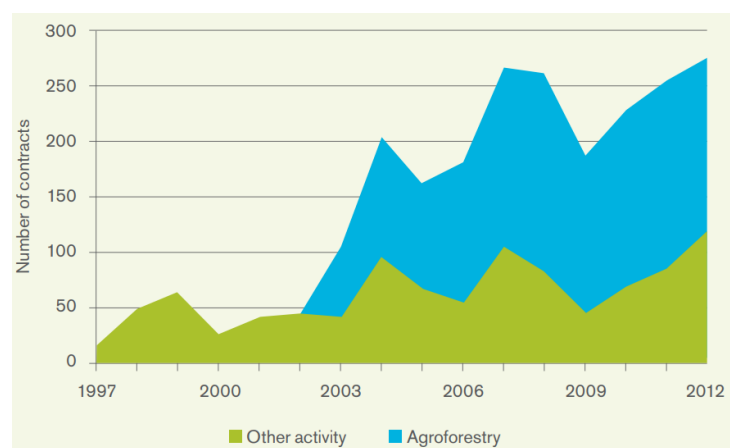


Figure 14. PES participation of small farms (less than 10 hectares) in agroforestry or other contracts between 1997 and 2012 (Porras et al., 2013 ; data was supplied by FONAFIFO).

A research of Cole (2010) examined the initial impacts of the agroforestry (PES) contracts in southern Costa Rica by analyzing farmer perceptions (participant and non-participant) and perceptions of forestry engineers, farmers' associations, NGOs and government agencies. Interviews reported positive (economic) benefits, particularly in the first 2-3 years of participation (Cole, 2010). The program helped overcoming economic and technical barriers for the transition. Of all farmers: 78% said income had increased due to the program, while 44% said their income was even higher without the PES-payments taken into account. So in these cases agroforestry was more profitable than farming. Household expenditure was also reduced due to the new subsistence products on farms: fuelwood and construction wood (Cole, 2010). So agroforestry helped in providing some basic needs.

Positive socioeconomic effects were linked to the strength of local-level project management and support by institutions (Cole, 2010). Without this support there were issues with starting up the businesses. Farmers who had entered contracts without organization support were very critical about training and assistance they received (from the program). Farmers' associations and communities stated that there were failed or poorly developed agroforestry plantings. This was a problem of middle and long-term support: While farmers did well the first years, there was lack of training in management of trees. There was a lack of sufficient capacity-building and technical assistance beyond the life of the contract: So after the practice was set up, farmers lacked support for managing trees and agroforestry business. There was poor

communication and follow-through, late payments and broken appointments by program management and forest engineers (Cole, 2010). So when a contract ends, and payments stop, people often do not have the capacities and support to keep their sustainable forest production up and running (see 4.3.1: *Income (in)security*). So Cole, Ramirez and Louman all refer to the importance of institutional support. When it is lacking, agroforestry is less successful.

In conclusion: Different from Ramirez and Meza-Picado, Porras et al. (2013) and Cole (2010) show that there is (some) demand and participation in the program. There are definitely success cases, with income benefits and other positive impacts. Ramirez also mentioned there were success cases: given the right conditions and institutional support. And while there are clear barriers for participating, the program could also overcome barriers in the beginning of the practice. But when the right support (and protection) is lacking these practices might fail. Furthermore, a practice can be successful at start but might fail later at the end or after the contract when support is lacking and strategies are poorly developed. This research concludes that the issues Meza-Picado and Ramirez discuss are very relevant, and are present alongside successful stories. It is important the conditions for many landowners improve to solve them.

4.2.3 Ecotourism

As was explained in 3.3, this paragraph will look at two things. Firstly how (small) landowners have been able to adapt to a new rural tourism-economy and participate in (eco)tourism. And secondly how ecotourism has impacted landowners who participated in it, as well as rural inhabitants who didn't. It is important to note that ecotourism is only a part of tourism: However in this study we look at ecotourism, because it is the main type of tourism in forest regions of rural Costa Rica.

Landowner adaptation and participation in (eco)tourism

Noorloos researched the topic of residential tourism and transnational property investment in Guanacaste, Costa Rica. She clarified several things: (Eco)tourism has created a lot of employment and opportunities in Costa Rica (Interview 5:1). But it really depends where this is, and for whom. Often, it is larger businesses and wealthier people, from outside (like the US or cities) who benefit from tourism (Interview 5:2). Ramirez calls this an 'uneven division of the actual benefits', when he explains that poor farmers end up on the bottom of the tourism-chain (Interview 8:3). Nevertheless, local (small) landowners did participate in the sector: They started small businesses, restaurants on their land, renting out little houses, giving tours (Interview 5: 5&7). Also the selling of land has been a common strategy for people to make fast income (Interview 5:7) (see 4.1.1: *Land ownership*). Ramirez agrees when he explains that he believes tourism still is the most successful of sustainable forest uses in Costa Rica (Interview 7:3).

Howitt and Mason (2018) did a case study where local perspectives on ecotourism are explored from research on rural livelihood issues, based on fieldwork, households surveys and interviews. The study explains that in a region where agriculture is in decline ecotourism has become a major component of the local economy. Many families depend on tourism as a complementary source of income, while maintaining their rural livelihoods and conserving forests (Howitt & Mason, 2018). They found examples of agritourism and rural homestays, which helped locals to retain their land and ways of life. Tourism has benefitted local communities in this way by providing income and reducing the need for migration (Howitt & Mason, 2018). So ecotourism is also a complementary strategy that can exist next to agricultural strategies and preserve their traditional ways of life.

In a study of Owens (2007) ecotourism is analyzed as an incentive for conservation on small farms. Small farmers were interviewed to understand why they participate in ecotourism, and confirmed that ecotourism has benefitted forest conservation on their land. The farmers stated all that they participated in ecotourism when there was a general increase in tourism in the area (Owens, 2007). The reasons for participating were all some variation of the following: 1) To obtain more income, 2) to conserve forests, and 3) to share knowledge on natural resources with others (Owens, 2007). This shows that conservation values and environmental education are important motivators, similar to what Louman stated (Interview 3: 3&6). The

farmers also stated in that ecotourism was a method for them to obtain adequate income to prevent them from having to sell their land. And that ecotourism increased the resources they needed, which enabled them to set more land aside for conservation (Owens, 2007). So ecotourism as a new strategy benefitted them and proved to be a step-up that made other resources (4.1) and strategies more accessible.

New inequalities in tourism

Tourism activities are not always accessible or successful. Noorloos stresses that it is important that the (local) population itself can participate (Interview 5:1). Ecotourism is only a viable option in those areas where it is present: As tourism accumulates at specific areas, only at these places it can provide alternative strategies and not distant places (Interview 5:4). And even where tourism is present people need resources, knowledge and social connections that local inhabitants often lack: Because of this inequality arises (Interview 5:2). An example is that people don't have land rights, and because of that cannot provide tourism activities on their land (Interview 5:5 ; see also 4.1.1). Noorloos explains that there is a dichotomy of people who can participate, and those who cannot. Lack of resources has been discussed in 4.1. A good example is financial capital: Starting an ecotourism business, like providing accommodation in lodges, requires an amount of investment that might not be achievable for the poor. In one of her studies, Noorloos explains that "the sidelining of smallholder peasant production [...] and the lack of viable alternatives for smallholders plays a role in current land and economic conversion" (Noorloos, 2017). Rural inhabitants must adapt to these changes, diversify their livelihoods where they live, or migrate to the city for work (Interview 5:4). But of course, Noorloos explains, ecotourism will always be deficient for all those small landowners who have lost their jobs: some of them cannot adapt, while many others can.

So it is not a question whether ecotourism can be a valuable livelihood strategy: It definitely has been one for many landowners and families in rural Costa Rica. But it is a question of "for whom it can be a strategy". Koens et al. (2009) also makes this point in their study that discusses multiple types of impact of ecotourism on 4 regions in Costa Rica. He explains that in a few regions local ownership of tourist facilities is very low, which means that foreign investors have dominated the market. This causes economic leakage out of the region (Koens et al., 2009 ; Duim et al., 2001). One example he gives are the 'package tours': These tours are provided by larger businesses outside of rural areas and the money 'leaks away' instead of going to locals (Koens et al., 2009). At the same time in some regions tourism has brought money in the local economy, particularly to local guides. Small scale tourism brings a little bit of money, which makes regions still dependent on tourism (Koens et al., 2009). So there is (still) possibility for income generation for small scale local tourism: particularly tourism that does not require much capital. Local guides or modest accommodation in existing structures can be a valuable new strategy to the local poor. But to eradicate these new inequalities the poor will need some help.

A solution to these new inequalities and barriers is to make resources more accessible (see 4.1). But another option is to facilitate communities to organize and cooperate to access resources: community based tourism. In this type of tourism only locals are involved. There are institutions (e.g. ADCOMAFOR) that have community-based tourism programs that unite communities and help them obtain resources together (Koens et al., 2009). Farmers and indigenous who were interested in ecotourism strategies have also formed organizations for rural community tourism themselves (Bien, 2010). These organizations help people to enter the tourism market by helping them with training (Bien, 2010). With combined forces local communities can work together and overcome some barriers. Institutions and the government can further stimulate such local adoption of the ecotourism strategy with providing more programs and support (incentives or benefits) for such initiatives.

The ecotourism boom and lack of good strategies

"Ecotourism has been a too big hype, with too much enthusiasm and too few knowledge: People did not know what needed to be done and how, how to attract tourists for example. There have been too many initiatives. But there are actually not that many of them that really work." (translated from Dutch: Interview 3:9).

Louman explains that the problem here is that people start with ecotourism but do not have the right strategies, and do not have the right support (Interview 3:10). When much advertisement was made for ecotourism, and many organizations were working in the sector, the result was that many farmers have jumped on the ecotourism boom without success (Interview 3:11). Ramirez states that ecotourism has many success stories, but in reality it is “a tough time for people to engage in this type of production [...] there is a very high learning curve.” (Interview 8:3). The result of this has been earlier discussed in 4.1.4: individuals and entire communities have adapted and invested in ecotourism activities, and have been unsuccessful and have become indebted and impoverished (Bien, 2010 ; see also 4.3.1: *Income (in)security*). The problem is also connected to the selling of land: Landowners sell land for short term income, then migrate to other touristic regions and invest this money in tourism strategies (see 4.1.1: *Land ownership*). If this generates long term income there is no issue, but if the strategy fails people lose their financial capital as well as their land. Noorloos adds to this by stating that the (eco)tourism sector is a strange sector, that moves fast and has a lot of competition. It results in many unsuccessful businesses and bankruptcies (Interview 5:10).

Many of the local farmers interviewed by Allen & Vasquez (2017) described the ecotourism boom as a ‘gold rush’. These farmers are angry at the government and their policies that promoted what they call, ‘an inherently risky lifestyle in tourism or similar service industries – an exchange of the self-reliance of farm work for the dependency of external labor’ (Allen & Vasquez, 2017, 217). The words ‘risky’ and ‘dependency’ characterize the issues of ecotourism as alternative strategy well: there is insecurity, and people have no control over this strategy, so it at least in many cases has not provided *sustainable* livelihoods. (see 4.3.1: *Income (in)security* for more on this topic).

Landowner ecotourism activities and other impacts on livelihoods

There are other impacts of (eco)tourism on livelihoods and the rural economy. It is difficult to separate the impact of specifically landowners activities with other types of tourism activity: The sector is a competitive market in which local landowners, foreign investors and many types of businesses interact. Landowners can also work in a tourism company as employee in town for extra income for example. The impact of specifically landowner stimulation-measures is thus concealed within the more broad impact of the sector.

Ecotourism in Costa Rica creates a development dilemma: Initially it creates only development, but with increasing scale of the sector the environmental, economic and social impact rises: Sewage problems, waste issues, uncontrolled building of tourist facilities and the disintegration of local communities social and cultural structures. (Koens et al., 2009). Noorloos adds to this by mentioning tourism's pressure on resources: Particularly water is a problem, which becomes scarce when tourism grows (Interview 5:1). This depends on region and type of tourism: She refers to residential tourism, in which people buy or rent seasonal residences to live at a part of the year. It includes swimming pools, gardens, golf courses, which pressurize the availability of water (Interview 5:1). Landowners have also provided residences and rented them out, and contribute to the inflow of tourists that use water and other resources (Interview 5:7). Additionally, landowners sell land so that other investors can buy it (Interview 5: 7), and then can possibly build residences. So even selling of land as a strategy (for better livelihoods) contributes to this issue.

The impact of reduced access to the resource land (changed land ownership and prices) has been thoroughly discussed earlier (4.1.1: *Land ownership*): With the new understanding about farm abandonment (see 4.2.1) this issue becomes even more apparent. Allen & Vasquez (2017) asked farmers: “Has the tourism industry benefited the local community?” Many farmers responded negatively: The farmers talked about farm sales and changing land ownership. One farmer replied:

It is obviously bad. It's bad because we used to work a lot here. People were hard workers and they lost so much potential. Tourism came in and people stopped working. Now people want to return but they don't have [workable] land anymore.”

Allen & Vasquez (2017) note that people want to return to farming because their ecotourism endeavors have failed. But afforested land can no longer be used for farming again (due to the ban). Differences in

education and employment have created a generation that does not know how to farm anymore. And land is too expensive to get back (Allen & Vasquez, 2017). Ecotourism has thus created some path dependency in livelihood strategies, which increases the risk when failure (of the tourism activity) happens. Development narrative has encouraged farm abandonment and promoted ecotourism (Chapter 3.). Both farm abandonment and ecotourism have increased forest cover. However both farm abandonment and ecotourism have an uncertain relationship with other social-ecological sustainability and related to certain problems (as visualized in figure 15. ; Allen & Vasquez, 2017).

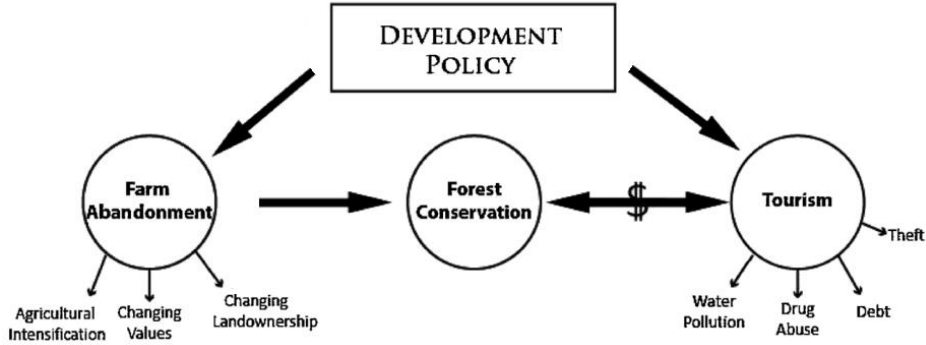


Figure 15. The relationship between development and forest cover, as mediated by tourism and farm abandonment factors (Allen & Vasquez, 2017).

In Appendix 3.8 some more research is discussed that confirms earlier mentioned impacts. These impacts are important but create some repetition with this paragraph or other sections. New impacts of drug abuse and crime was also found but remains a bit uncertain as impact.

Agrotourism

A solution that could facilitate better livelihoods through ecotourism, while not eroding away the security and self-reliance of traditional (farming) lifestyles, is agrotourism. This potential was found analyzing a study of Little & Blau (2020). According to Zhen et al. (2005), sustainable agrotourism relies on balance in development by combining self-reliance, nature protection and economic benefits. With agrotourism landowners can generate income from multiple sources related to farming. They can preserve rural lifestyles while creating new opportunities: Employment in tourism along with income from selling agricultural products directly to tourists (Barbieri, 2013). It has the potential to preserve local customs and farmers values (McGehee & Kim, 2004). It can also stimulate more sustainable practices and conserve resources like water (Barbieri, 2013 ; Choo & Jamal, 2009).

Little & Blau (2020) have studied a village in Costa Rica with a high concentration of agrotourism activity. They explored experience of landowners and analyzed socioeconomic data, and concluded that agrotourism is a viable and sustainable adaptation strategy to economic stressors (Little & Blau, 2020). They found that forms of community-based agrotourism have resulted in strongly increased employment throughout the community: There were agrotourism businesses on farms with lodges, jobs for construction and maintenance of these lodges, (women) workers who cooked and provided other services like cleaning, guides and vendors, and workers who maintained the farms and produced agricultural products (for self-consumption, tourists, or selling on markets)(Little & Blau, 2020). Agrotourism there thus created diversified income and employment that created security and self-reliance and less dependency on only one sector. Because one household was not able to provide this alone the whole community was incorporated (Little & Blau, 2020). The (more traditional) strategies also increased food security and availability of natural resources, for example due to better practices. Lastly, respondents showed pride and satisfaction in their work, because traditional lifestyles were learned to visitors and an appreciation of culture and biodiversity was (re)found (Little & Blau, 2020). Howitt & Mason (2018) also concluded in their case study that agrotourism has been as way for people to retain their land and rural ways of life.

Agrotourism certainly has some potential: It could find the balance between traditional livelihoods that provide food, secure (though low) income, and culture. While it also diversifies income with new strategies through multiple types of tourism services, that create a diversity of employment for communities. It could solve the farm abandonment problem, and make the transition to more sustainable strategies easier: Adaptation does not require risky migration, but can happen on the farm with modified practices. Of course, it has to be combined with sustainable practices and some forest conservation. The lesson here is that farmers can maintain lifestyles, but must diversify in a sustainable way: Have some farming fields, some forest on their land, and some tourism activity. Communities must also work together: one family or households can provide one service, their neighbors another.

Scale and limitations of tourism

Many impacts, as Koens et al. (2009) and Noorloos have also mentioned earlier, depend on the scale of the (eco)tourism sector. Too much tourism can put heavy pressure on resources such as water and land, and create other issues like waste, competition in the sector which leads to bankruptcies, possibly crime and drug-problems. Costa Rica has heavily invested in creating an ecotourism environment, and making it a central source of development in the proactive forest sector. But the country has to ask itself: When is it too much? When does the impact of tourism outweigh the benefit? How many people do you want to jump on the ecotourism bandwagon? And most importantly of all: who do you want to participate in the sector, and who not? These questions are discussed in the *next Chapter: Discussion*.

4.2.4 Migration

The remaining alternative strategy people may fall back to is migration. This could be out of necessity (poverty) or in the pursue of opportunity elsewhere. Migration is an alternative strategy, but it has to come with an additional income source (employment). So migration is connected to other strategies. There is migration to areas with more tourism (opportunity), to urban areas or even abroad. Earlier farm abandonment was discussed, and the selling of land and migration to find other work, e.g. in ecotourism. A study of Schelhas and Sanchez-Azofeifa (2006) analyzes the relationship of forest cover and social, economic, political, cultural and conservation factors in one region in Costa Rica. It uses ethnographic data for this. It found evidence on what they called the ‘closing of the frontier’: FCP, PAs and regulations in forest areas went hand in hand with a shift in the national economy away from agriculture. These factors led to a shift of residence patterns and economic activity away from forest regions toward urban areas, partly for tourism (Schelhas & Sanchez-Azofeifa, 2006). What was also found is that PES participation makes it possible to keep the farm (ownership) but still move away: People can live somewhere else and create extra income there, while their land/forest generates payments (Sierra & Russman, 2006 ; see 4.2.2).

Voorend talks about how small scale agriculture, in which farmers sell their agricultural products but can also use part of production for own consumption, is going away (Interview 6:3). There is no state protection anymore and income is too low, so farmers need to look for alternatives. He explains that the model for rural areas has been changed, with new opportunities which also stimulated urbanization (Interview 6:3). He acknowledges that, while there are alternative strategies, not all people could participate and some had to migrate. Especially the young found more opportunity in cities than in agriculture: also because small scale agriculture declined, and work is found in unattractive export agriculture (Interview 6:3).

Louman adds to this that it is not always necessity that drives landowners to migrate: While he acknowledges the abandonment of farming, he also states that many people simply don’t want to stay (Interview 3:14). Particularly the youth often does not want to farm. This is a concern that CATIE also has: They have a new program that aims to finance small businesses in rural areas, so that people have some capital (a loan) to pursue alternative strategies (Interview 3:14). It emphasizes the importance of financial capital for landowners to maintain strategies, or adapt, so that they do not have to migrate. Louman argues local (land use) planning is key to understand what people need to live good lives: A ‘landscape’ must be planned in such a way that people can find/produce food, have a diversity of opportunity for income, necessary capital and so forth (Interview 3:14). Going all in for forest protection

is thus a risky approach: It does not take into account rural people's needs of opportunity, basic needs, and resources (see 4.1). There must be a balance.

In *Chapter 1*, it was mentioned that while 30 years ago half of the people in Costa Rica lived in rural areas, now it's only 20% (FAO, 2023). Urbanization is a general pattern in Latin America and the South. Louman was asked whether he connected this urbanization to changes in the rural economy and the regulations on forest use, or to this more general pattern of urbanizing developing countries where people look for urban opportunity. He said it was both: many people want to leave, but it is also difficult to be a farmer with the current rural economy and regulations (Interview 3:23). According to Schuurman, many people have migrated to the city and ended up in difficult conditions and uncertainty (Interview 1:5). He explains that in cities there is much inequality and poverty: He mentions the so-called 'cuarterías': Houses subdivided in small rooms with wooden walls that people rent and where they live in very bad circumstances (see figure Appendix 3.9). The people that live there indeed (often) come from rural areas (Interview 1:5). He also notes that it actually often is pure necessity to migrate: Landowners sell their land out of poverty, and hope for opportunity in the city (which often fails). He argues: if people have a profitable (farm) business, they will stay. Farmers have a strong connection to their land (Appendix 3.6), and do not want to leave (Interview 1: 10&11). The perspectives Louman and Schuurman have given show there are different motivations to migrate, of which some is choice, and some are characterized by necessity and lack or failure of alternative (local) strategies. Lack of access (resources) to these strategies and failure is a topic the state can improve upon with better policies.

4.3 Livelihood Outcomes

After it was discussed how the access to resources was changed (4.1) due to the measures of *Chapter 3*, and how a move from farming to new strategies emerged (4.2), here will be analyzed SRL was impacted by looking at the outcomes of these strategies. Livelihood outcomes give a change in people's ability to live qualitative lives (*Theory*). Outcomes define livelihoods directly, such as poverty and food security, or indirectly by altering their sustainability: The future possibilities for good livelihoods. Such sustainability can be for natural resources or culturally: The preservation of the culture and social relations that people depend on (*Theory*, see also the framework of figure 5,8.).

4.3.1 Income and poverty

The most straightforward outcome of livelihood strategies is income, and how this can reduce poverty. Interviews and researches showed that income has to be not only sufficient in quantity but also secure: New strategies must have a certainty of a long term continued flow of income to households so that future quality livelihoods are secured. Lastly, income must have value: This is a matter of purchasing power, which depends not only on the amount of income but the cost of living too. The general state of poverty was discussed with Voorend as background information (see Appendix 3.10). The conclusion was that there is significant poverty in (rural) Costa Rica, because people often have income that is too little to pay for qualitative basic needs and good livelihoods.

Income from new livelihood strategies

So how have new strategies generated income? If some can participate and others cannot: what does this mean for poverty and inequality in rural Costa Rica?

Interviews have given some understanding of this: Louman states that there is poverty among farmers, but compared to surrounding countries it is relatively low. In general, poorer households are not those with farm-property, but those without land ownership. (Interview 3:5). So it is important to analyze how new strategies provide income for landowners, but also how income has changed (due to stimulation-measures) for vulnerable poor people without land. According to Schuurman: Land abandonment often indicates poverty and necessity to leave (Interview 1: 10&11). Poverty can also cause people to sell land for short

term benefits, as was discussed in 4.1.1: *Land ownership*. In *Interview 1.*, and 4.2.4, it was also clear that the poorest of people without land migrate: These people have not found viable alternative livelihood strategies to find income (Interview 1:5). Another point made by Schuurman is that, for farmworkers who have lost their jobs (due to farm abandonment), it is very well possible they find new farm employment but end up in worse conditions in the export oriented agricultural sector that is characterized by insecure employment (Interview 1: 8&9). This is often found in neoliberal development: large (capitalistic) companies for export where employment and working conditions are problematic (see also *Theory*). It indicates that changing traditional patterns of employment and livelihood into new ones is not a flawless transition but can come with difficulties of adaptation and impacts for SRL.

Louman states that sustainable land uses create new types of employment: He gives the example of landowners who produce wood in forest plantations. Around these plantations some industry has emerged, like (tree) nurseries, which create alternative types of income. (Interview 3: 12&13). This is confirmed by a few studies, that show that the (PES supported) forestry sector creates jobs and promotes infrastructure and microbusinesses around timber industry (Miranda et al., 2004 ; Porras et al., 2013 ; Tacconi et al., 2010). According to Louman there is not really more work, just different work now (Interview 3: 12&13).

PES income and the participation of the poor

The PES program has been credited to making progress to elevate poverty (Bennet & Henniger, 2009). At the same time there are critiques that payments are often not significantly valuable for farmers (e.g. see Interview 3:5). It raises the question: for whom does PES create (significant) income?

Studies have aimed to quantify the importance of PES for household income. Based on surveys from participants of PES, Ortiz et al. (2002) estimates that the payments make up about 10% of household budgets. Another study of households surveys in another region estimates that this is about 16% (Miranda, 2003). In Osa, for PES participants who are poor, PES-payments brought half of them above the poverty line, according to Munoz (2004). In this region landowners are poorer than in other regions (Arriagada et al., 2015), which suggests that PES can be an important income sources for the poorest who do not find payments to be insignificant. At the same time there are barriers for poor participation: Miranda (2003) concludes that, while on average 16% of income was from PES, this percentage is smaller (5%) for landowners with small areas. This has to do with the exclusion of small farmers due to small land size, transaction cost and other lacking capital (see 4.1). So the findings of Miranda (2003) show a different picture than studies that claim that especially the poor benefit from PES income (Munoz, 2004 ; Arriagada et al., 2015). Porras et al. (2013) point to various studies that conclude that PES-payments often go to landowners with relatively high levels of education, and farm size. According to a research by Matulis (2012), the most important reason for this is that large landowners can pay the fixed cost of transaction and monitoring (see 4.1.4). These researches (and 4.1) emphasize that though PES can help the poor, they are underrepresented in it.

How have the poor been included?

Costa Rica now has had over 20 years of experience with its conservation approach. The above mentioned issues of exclusion of the poor have not been (completely) unnoticed. So how has Costa Rica aimed to improve inclusiveness in PES? While some progress in policy and support for land ownership and transaction cost was already discussed (see 4.1), here further improvements will be analyzed.

The research of Porras et al. (2013) is very helpful here. Costa Rica has made progress in including the poor by identifying where they are present and where PES would thus be most effective. In 4.1.1 was discussed that indigenous groups in Costa Rica depend on forest resources, but cannot use them commercially. There are few alternative strategies to provide income for the indigenous, who live in distant forested regions (Porras et al., 2013). Therefore the state has focused on incorporating them in PES: Between 1997 and 2012, the allocation of (PES) funds for indigenous groups increased from 3% to 26% (Porras et al., 2013). Now indigenous areas are the largest areas of forest cover in Costa Rica, outside of the PA-system (Sucre, 2012). As Borge and Martinez (2009) conclude in a World Bank research: PES has

helped these communities by diversifying their income, and generate investment money for education and local infrastructure. So the state made progress in including the indigenous. Furthermore, the state has incorporated ‘priority areas with low social development’ (Porras et al., 2013). Participation of the poor has been prioritized since 2004 by using a low development index (SDI, an indicator of relative wealth) to assess what the poorest (forest) regions are and make more contracts available for those regions (MIDEPLAN, 2007). However, Porras et al. (2013) are critical: They state that multiple studies claim that even in these priority areas there is inequality of who can participate in PES. Still large landowners (or people with other capital) benefit the most. As they conclude, an ‘area’ should not be prioritized but specific characteristics of people such as land value, income, gender etc. (Porras et al., 2013).

Income and profitability of conservation and sustainable forest production

The interviews shed new light on the above mentioned findings. Ramirez explained in 4.2.2: *Forest conservation* that there is some benefit of conservation contracts, but only really when there is forest on the land that cannot be deforested. The income from PES is simply not enough to transition from farming to conservation alone. This is one reason why small farmers are underrepresented, and only get about 5% of their household income out of PES. PES does make it possible to work off-farm and get extra income somewhere else. So it could be seen as a financial resource for moving from traditional strategies to new ones. It is also beneficial for people who cannot farm anymore because they are old (see 4.2.2).

For sustainable forest production, both with PES and without, both Ramirez and Meza-Picado indicated that there are big issues of competitiveness and profitability (4.2.2). In many cases forest landowners receive little from producing and selling wood (Interview 7:5). Implementing sustainable practices legally in Costa Rica is simply really expensive (Interview 7:2). If sustainable practices in forestry are to be adopted, landowners must create income with it. But Meza-Picado states that forestry institutions created barriers that go against business and profit (Interview 7:4). The contracts given are, according to Ramirez, ‘a bad deal’: With additional costs and late payments. The state has aimed to create a proactive forest sector and market-mechanisms, but not created the opportunity for landowners to take up a profitable position in it for them to make income. This is a missed opportunity because a more competitive forestry sector could create more transition from farmland to forest, and it could provide better SRL. This has become also clear in the research of Allen & Colson (2019) that discusses agroforestry: Farmers who had agricultural land were found to require much higher payments (than currently) in order for them to participate in conservation-contracts. However, they preferred to agriculturally use their land with agroforestry-contracts, and were required significantly lower payments for participation in these contracts (Allen & Colson, 2019). So while payments were still too low, they saw more opportunity in this strategy that was more similar to their traditional ones.

According to Ramirez, the PES program (all contracts) has potential but must be rethought: It should engage more in poverty reduction and social inequalities: So far they have only done this by prioritizing contracts in poor areas (see above). But Ramirez says that there must be more ‘integral types of solutions for these farmers’ (Interview 8:15). He gives the example of social safety nets: measures for when people fail strategies that make their lives more secure (see *next paragraph*). Another measure Ramirez mentions is protection in markets: keeping prices of forestry products secure. The issues Ramirez mentions are not just about income: They are also about listening to poor farmers and having them participate in decision making: They can say what they need to be competitive and profitable sustainable forestry producers. There have been proposals, by indigenous, peasants and even entrepreneurs, of changes and ideas on alternatives to the program which would be helpful and applicable for the specific conditions in which these people live and work. But they have been neglected, states Ramirez. So a first solution would be to make PES more participatory (Interview 8:16).

While the position of this research remains that there are also successes in agroforestry and forest plantations, they depend on the right conditions that often are not present (4.2.2: *Sustainable forest production*). The issues Ramirez and Meza-Picado mention are essential for improving sustainable forestry production as a livelihood strategy and thus to positively impact SRL.

Income (in)security

Good sustainable alternative strategies for landowners depend not only on how much income is gained, but also on the security that this income is going to be sustained long term.

The most striking example are tourism activities, which have created both potential and failure for participants. Success is dependent on good strategies in a competitive and overcrowded tourism-market. While self-reliance and independency is very important for good livelihood strategies, tourism is an inherently risky lifestyle and makes landowners dependent on external factors. This has been made clear by Noorloos & Louman (see 4.2.3). According to Ramirez, ecotourism is the most successful alternative sustainable strategy in which forests are used, but also very risky (Interview 8:3). He was asked what he thought of agrotourism, as potential solution: Agrotourism could combine farming with tourism, and provide the opportunity of tourism as well as the security of farming (see 4.2.3). Ramirez has been studying indigenous groups that produced cacao with organic farming and agroforestry setups. These groups had a multifaceted farm that produced many products for own consumption, but their cacao production failed to generate income. So these groups started with tourism: tours of cacao farming and accommodation. This helped them to create better livelihoods (Interview 8:11). The main problem is, however, that when there are success cases and multiple people start doing the same thing in an area, competition starts and benefits go down. Tourism is limited and there have been too many people aiming for the same opportunity. So it is probably not sustainable long term (Interview 8:11).

Another issue is that landowners become dependent on something that is uncertain: tourism can decline, and has done so in the past. When Ramirez came back to the indigenous groups after Covid, their tourism activities were nonexistent and the accommodation they build fell apart (Interview 8:13). So (eco)tourism creates large insecurities for people who depend on this strategy for income. Of the farmers that were interviewed by Allen & Vasquez (2017), a general trend was found in that they pointed both to the income opportunity and insecurity of tourism: In the Monteverde region for example tourism had brought increased income, infrastructure and development. But at the same time the sector collapsed after reduced tourism inflow in the 2008 global economic crash, and recently with the Covid pandemic. When farmers build accommodation by for example mortgaging their farms: they are left with debt (Allen & Vasquez, 2017). The crisis in 2008 left 'a trail of abandoned construction sites and foreclosed properties that persist to this day' (Allen & Vasquez, 2017).

A security issue both for forest production and conservation with the PES program is that it makes participants dependent (less-self-reliant) on program payments and support. What happens when the contracts have ended, or support is lacking? Pagiola (2008) makes the point that a PES-contract (and payments) are set for a fixed time, but farmers have no insurance that these contracts can be renewed. An example Pagiola gives is with the forest plantation contracts: These contracts are for 5 or 10 years, but it takes 20 years to grow trees for timber harvest. So there is a gap of support and payments (Pagiola, 2008). This is also why Ramirez suggested shorter production cycles (Interview 8:14). It is important to note that the continuation or renewal of contracts is not something FONAFIFO can easily control: They too are dependent on (international) funding (*Chapter 2.*), and this funding usually comes in certain moments and periods that expire (Pagiola, 2008). Funding is already lacking to issue all contracts (*Chapter 3.*), so it provides an inherent insecurity in the workings of the program.

The best solution for all these examples of income insecurity is diversification: If people maintain multiple livelihood strategies and sources of income, they become more resistant to the failure of one of their endeavors (see also Interview 5:6). Ideal would be that landowners have some farming on their land (subsistence farming for consumption, and selling on markets), some forest under PES, and some ecotourism or agrotourism activities. This would give them much more secure livelihoods.

Purchasing power

Voorend has mentioned in the interview that there is significant poverty in Costa Rica, due to not only low income but high and rising prices of qualitative basic needs: he gives the example of food and housing

(Interview 6:5 ; Appendix 3.10). Food security will be discussed later, but the general rises of prices and the declining purchasing power of rural inhabitants will be discussed here.

Purchasing power is discussed because stimulation-measures (*Chapter 3.*) have impacted this essential factor in SRL: The introduction of tourism and a proactive forest sector have created flows of people and money which have pressurized the local availability of many basic needs. In *4.1.1* was explained how prices of land and housing have increased due to investment and new (eco)tourism opportunity. So these developments are a reason why people live in low quality housing: it is the only thing they can pay for with their income (Interview 6: 5&6). In general, when there are more people (tourists, wealthy residents) who come to rural areas and are willing to pay more for products, prices of goods go up and purchasing power goes down. Koens et al. (2009) explained in his study that tourism has caused the inflation of local prices: In the Manuel Antonio region these prices have caused locals to be excluded from facilities and parts of the coastal area (Koens et al., 2009). This is however also a product off Costa Rica's development and neoliberal globalization: McLennan (2012) showed with interviews that farmers had to deal with new socio-economic context of this globalization and were unsuited for it. They traditionally lived subsistence farming lifestyles that were now insufficient, and were confronted with increased costs of living: Things like electricity, government fees and education were mentioned. So when the state invited people to enter rural forest areas to see nature and provide foreign currency, and stimulated landowners to facilitate this, they also caused the (unwanted) side effects of pressure on markets and reduced availability of goods.

4.3.2 Food security

Food is an important requirement for the (immediate) maintenance of (rural) livelihoods. Louman explained that nutritious food is expensive and people in Costa Rica often lack the income to access it (Interview 6:5). Other interviews showed that there are multiple factors that have decreased rural food security which have to do with the regulations and measures that stimulated landowners to conserve forest. At the same time there are also other factors at play.

According to Schuurman, the state is worried about the country's self-sufficiency for basic-food supplies and staple foods, particularly rice. These products are not produced in sufficient quantities to provide for the domestic markets, and have to be imported (Interview 1:6). There are more broad developments of export-agriculture in a neoliberal economy and decline of small scale (subsistence) farming that have led to food insecurity in Costa Rica, which were discussed in interviews and are further explained in Appendix 3.11 (see also *Chapter 1.* And *4.2.1*). At the same time, stimulation-measures connect to these developments and food insecurity. New livelihood strategies have been stimulated that increase forest cover on private land: It led to a transition of farmland to conserved forest. Forest land could not be remade in to farmland, which reduces the supply of food both for own farmers consumption (subsistence farming) and for the local market (the agricultural potential, see *4.2.1*). Furthermore, sustainable agricultural and forestry practices have increased. But these projects do not have higher yields: Louman was asked whether this sustainable production could secure the countries food supply, and he answered that he and his current NGO (Tropenbos International) are struggling with exactly the same question (Interview 3:16). Sustainable practices could act as support for food supply, but not really secure it. It helps for local food security, but not in the cities. At the same time, export-agriculture does not provide any food for Costa Rica, so sustainable practices could provide some diverse products that help local security, also by improving diet (Interview 3:16). A point Louman makes is that production of just coffee for example could have dramatic consequences when the price goes down: People produce no food for themselves and have too low income to buy food (Interview 3:16). So sustainable practices and subsistence farming with diversity in products could be important. They are an addition to the supply, but not a complete solution. It really depends on what they replace: if they replace export-farming it is good for food security.

A last important connection between stimulation-measures and food security is about land ownership. In *4.1.1* was clear that one of the (unwanted) effects of FCP has been the selling of land. This selling of land means that landowners lose an essential bit of capital that is needed to produce food to the market and

themselves. When people sell land and don't make food for own consumption, they have to buy at supermarkets that have monopoly positions and very expensive products: "Live is expensive in Costa Rica, and poverty emerges"(Interview 6:6).

An essential remark however is that sustainable practices can secure food supply for the long term: Intensive agricultural methods deplete soils, and decrease biodiversity. This is something Louman for example mentions: Large scale agricultural companies exhaust land with intensive practices, which makes the land unable to produce food afterwards (Interview 6:6). Extractivistic export-agriculture pays no attention to the future of the ground or people (Interview 1:8). So there are benefits of sustainable practices for natural resources sustainability, which is the topic of the next paragraph.

4.3.3 Natural resource sustainability

In 4.1 was mentioned that stimulation-measures (regulation) has decreased some access to forest resources, but there is another side to this story: Protecting the forest means that such resources are available in and for the future. Forest ecosystems can be restored and maintained, and produce resources such as fertile land, water (storage) and forestry products. Then there are also the benefits for global environment and climate: Biodiversity hotspots are essential for climate maintenance, rainfall, carbon storage and so forth.

One essential factor became clear in the interview with former minister Carlos Rodriguez. According to Rodriguez: "It is an element that is very important but in many cases not well understood, studied or recognized"(Interview 9:1). This element is the capacity of soils: Rodriguez explains that in the past all land in Costa Rica was assumed to be fertile. But when the government stimulated deforestation and productive activity on land (see *Chapter 1.*), soil fertility was reduced due to rain erosion and intensive use. Around 60-65% of soils in the country are fragile, and not good for agricultural use or cattle grazing. This was confirmed by Fletcher and Breiting (2012) and Brownson et al. (2020). So landowners who have cut their forest for example for coffee production have after 10 years not been able to keep producing and lost income and livelihoods (Interview 9:1). In these cases traditional farming produces unsustainable livelihoods, and farmers need alternatives strategies. Rodriguez states that because of this there is no food insecurity due to PES: Land with good soils will always provide more economic opportunity (with farming) and will not compete with PES, and marginal soil-land creates no income and can become PES-land (Interview 9:10). This does however not mean that other stimulation-measures have not complicated food production: The loss of land ownership, and ability of landowners to agriculturally produce due to regulation are still there.

So the decline of traditional farming was, on the long run, perhaps inevitable. The necessity for farmers to find alternative strategies becomes even more important in this light. But the issue also demands us to ask: what type of agriculture is it that depletes these soils? Better knowledge and practices (instead of intensive export-oriented monoculture farming) such as agroforestry and sustainable small scale (subsistence) farming could maintain soil quality and sustainably produce food (locally). And what happens on land that still is fertile?: Should products be made for export, or staple foods for the domestic market? This is of course also an issue of profit, funding and distribution. Lastly: The deforestation ban makes it that landowners cannot leave land without use to recover (because then it will be protected and unusable). This means farmers have to use land intensively, or otherwise lose its agricultural potential (Brignone, 2015). So regulation here has stimulated unsustainable use of land.

There have also been clear indications that while the state has propagated sustainable use of forests, that does not mean these uses have had no impact on natural resources sustainability. Ecotourism has grown into a scale where it creates water scarcities, biodiversity loss and takes large pieces of land (Interview 5:11 ; Interview 3:4 ; see also 4.2.3). If too many tourists come visit protected forests, they can still leave their footprint and damage the ecosystem. So the state must ask itself the responsible limits of this sector, the amount of tourists it can allow its forests to carry, and the type of activities it wants to stimulate: small scale (local) tourism or large scale businesses.

4.3.4 Cultural sustainability

In 4.1.5 was explained that rural inhabitants often rely on local social support and networks, from official organizations to informal ones like families and neighborhoods. The (landowner) stimulation and newly created opportunity of the tourism sector made (wealthy) people migrate, from other rural areas, the city, or abroad, to tourist forest regions. Logically, this has changed these regions and the social structures that in the past were more static. There have been shifts in land ownership, as was clear from 4.1.1: *Land ownership*. It was discussed how these developments created alienation between inhabitants and these new conditions and newly formed communities. But there are also other factors, new interests in biodiversity from NGOs and other institutions, research, new practices in agriculture and forestry and new types of employment. This also cause migration flows and changes to culture, rural communities and regions.

There were some studies found that analyzed the effects of tourism on culture. The earlier mentioned study of Koens et al. (2009), who did interviews with researchers and other actors, found impacts in several regions. In the Manuel Antonio region cultural disintegration was found: the increasing number of tourists and immigrants caused the organization of the community to erode. Similar things were also found in the Monteverde region (Koens et al., 2009). There was uncontrolled building of tourist facilities found, which altered communities and created new problems. There were sewage problems, and issues of waste management (Koens et al., 2009). In both regions, other impacts were found such as the increased access to alcohol and increased crime rates. In the Manuel Antonio region particularly, a troublesome increase of drug abuse and prostitution was also found (Koens et al., 2009). The issue is that new flows of people and money have presented areas and communities with new, often dangerous, substances and activities. Allen & Vasquez (2017) provided evidence on this with farmers interviews. Residents who had participated themselves in the ‘tourism boom’ explained their stories of negative impact on communities and families:

“One person explained that going from milking cows to tourism was too much for many of them—some have passed away from drugs and alcohol; some have lost their families, their inheritance. He suggested that he and his friends did not know how to handle these economic changes, and life was, possibly, better before tourism.” (Allen & Vasquez, 2017, 219).

Clearly the adaptation to vastly different livelihoods, often accompanied by failure, has negatively impacted at least a part of the rural population. There was more research found on the difficulties people had with adaptation in relation to drugs, prostitutions, alcohol and crime, and how this changed communities. This research was explained and further discussed with Noorloos in Appendix 3.12.

(Eco)tourism and the proactive forest sector have resulted in large changes and required large adaptations of rural inhabitants and landowners. These adaptation required resources, skills, the right strategies and much mental sacrifice in order to be successful. Failure has opened up the door to problems: Loss of income, land, financial resources and social relations. The changes that eroded the social capital of these people have made things worse for those that did not succeed. And this has connected to the use of substances and activities that have been there before, but that were made more available, though cannot be fully contributed to tourism alone. An essential thing to understand for the state is that mental health, and the difficulty to accept and comply to change, is a serious matter that defines peoples livelihoods. Protection and support for this mental health is essential.

4.3.5 Vulnerability and Wellbeing

Vulnerability and wellbeing are two essential outcomes for sustainable livelihoods. This chapter has described multiple impacts that relate and makeup the vulnerability and wellbeing of people. In Appendix 3.13 is more thoroughly explained how regulations, incentives and new strategies provide rural inhabitants with many changes they need to adapt to. Issues with adaptation show vulnerability of these people. In Appendix 3.14 is explained how multiple impacts and issues that people have in the new rural economy have effected their wellbeing in many ways. Both vulnerability and wellbeing (changes) are clear outcomes of stimulation-measures.

While opportunities can most definitely be found in the new proactive forest sector and with the alternative livelihood strategies that the state has stimulated, this chapter has shown that there are also issues and negative impacts for SRL. In the next chapter will be summarized what impacts have been found, and discussed how Costa Rica can improve on them: Understanding the impact from a SRL-perspective can aid the country to continue on its course for biodiversity protection and sustainable use of forests, without causing (unwanted) impacts and excluding large parts of the rural population.

Discussion

Have Costa Rica's stimulation-measures been successful from a SRL-perspective, how can they be improved and how applicable are they for forest conservation in the South?

The question of the previous chapter was: *Have Costa Rican landowners been able to adapt to these stimulation-measures and how did these measures impact sustainable rural livelihoods in forest regions?* Because of the large amount of information in the previous chapter, there are many conclusions that have to be tied together to provide understanding and answering of this research question. For this reason there was no conclusion at the end of *Chapter 4.*, and this chapter will perform as a summary and discussion of the findings. It reflects on what issues have come up with Costa Rica's conservation approach for SRL (of both adapting landowners and other inhabitants). Furthermore, an attempt is made to find opportunities and possible solutions (see also overview on *page 85.*). The implications and solutions given here are meant to inform policymakers, but in the first place are prone to further research: The conclusions this research can make are limited and much more information and research is needed to further explore the suggestions given here. As mentioned in the Methods section: the aim of the research is to provide academic backbone to the topic and stimulate further study. Particularly more detail is needed on many of the topics mentioned in this research. Lastly, the applicability of Costa Rica's approach on a larger scale (in the South) is discussed. So the fourth and fifth research question will both be answered in this chapter.

To aid in this, in an interview former 3-term-minister of the MINAE and current CEO of the GEF (Carlos Rodriguez) was given questions based on the last chapter, which were critical on FCP. He has replied to some issues that have been previously mentioned, to also provide the perspective of the state. Rodriguez is arguably the most influential policymaker in the creation of Costa Rica's conservation direction of the past decades, particularly for its market-based approach. And his commentary will provide important reflection. Of course also his perspective will be critically evaluated and taken into account for the conclusions of this research. So in some cases in this chapter will be referred to *Interview 9.*

This discussion (and the entire research) is not a critique of the direction Costa Rica has taken as a whole. The country made tremendous progress and has a successful conservation history based on its forest cover and restoration of biodiversity. This research gives constructive criticism from one perspective (SRL), and discusses the issues found here and what could be improved from that perspective. The research has focused on the negative impacts, to improve policy. That does not mean that the overall approach is bad, in fact, this research is aimed to explore the possibilities of this approach. Because Costa Rica's direction has been successful for biodiversity, it is important to seek improvement in its social dimension (SRL).

Adaptation to the new rural economy

Rural Costa Rica has changed a lot: Agriculture has been in decline, and has moved from small scale to large scale export-production. Small farmers saw decline in income, due to lower yields and soil quality and issues of prices and markets. While the state aimed to restore its forest cover, it stopped with (farmers) protection and cancelled perverse incentives. Farming strategies could often not support livelihoods sufficiently anymore. The state started stimulating other alternative strategies that were sustainable: incentives for conservation and sustainable production. Deforestation got banned, and forest could only be

used after environmental impact assessment. Institutions were made that supported the transition to more forest: research, education, and support. Ecotourism became a large sector. Due to it, and other (environmental) interest in forest regions, flows of people and money appeared that changed the rural landscape and communities. They changed land ownership, pressure on economy (food, housing etc.), and social capital.

All these changes to the rural economy required people to transition and adapt, and the state to support this process. Landowners, who are aimed to find strategies that protect and increase forest, must find opportunity in these strategies: They must be successful to improve livelihoods, and reduce impacts and bad consequences like migration. Creating markets for people to participate in (ecotourism, PES, sustainable production) means setting them free: The success stories show there is opportunity, but it is the failure stories that matter: freedom is dangerous when it creates heavy competition on a limited resource or strategy. Some support and protection is necessary. Furthermore markets (and incentives) can create negative side effects: Freedom of people to invest and do business can create issues for those in the weakest positions, like rising prices of land and food, and loss of opportunities of livelihood strategies. The market does not automatically solve all problems: It creates new ones too. And poverty in rural area's is on a crossroads now that cost of living is going up and livelihood strategies have appeared to be vulnerable.

New livelihood strategies and resource access

A changing rural economy with new livelihood strategies must take into account the resources people need to participate in these strategies. It matters who can participate, and who can't: the poor are often excluded.

Land ownership - From a SRL-perspective, it is important that land size does not become too much of a barrier in realizing new sustainable livelihood strategies. The analysis of land ownership has shown that there is a certain (relative) amount of legal certainty for (small/family) landowners. But there are issues with participation in new strategies: Interviews and several studies have shown that small landowners generally have been excluded in PES. They often lack official (uncontested and clear) property titles or ownership which prevents them from participation. The state has improved on this, with more land titles and participation without them. But the system in which official ownership must be proven remains vague: Grey areas must disappear (e.g. with INDER) and the requirements for participation could be eased: Particularly small landowners without official ownership, but of which it is clear they have lived and worked on the land for a long time, could perhaps be assessed by officials and granted participation based on tenure. Solutions here depend on the overall clarity and functionality of the system in which land ownership is registered, which is a large project.

Another issue is that farm size strongly influences participation. Large landowners have more benefit from PES because application is relatively cheaper, and they often have more (unused) land to spare which can provide extra income with PES. Small landowners cannot rely on only PES income on their land. According to the state, conservation-contracts cannot compete with productive use of land when soils are good, so these contracts were meant to be only effective on empty land. Other contracts, where land is productively used, create additional income and have increase participation of small owners (more later).

Furthermore, there is the issue that PES effectively makes the state (partial) owner of forest land: People cannot work on it anymore and have their self-reliance decreased. This is however mostly due to the deforestation ban, and in the light of conservation perhaps a necessity. As long as they are provided with good secure alternatives that give them good value for their decrease in self-reliance this does not have to be a problem. Especially since farming is often not a viable strategy either anymore.

Lastly, land is an important resource for tourism activities. The new rural economy has created new land investment (often for tourism opportunity) and pressure on the land market. Landowners have had short term income from land selling, but also lost resources long term. The access to land is reduced so people without land are in a weaker position to gain good livelihoods. The proactive sector has thus created new inequalities and vulnerabilities based on land ownership. The best solution would be to prevent people

from losing/selling land: the ecotourism hype must be either tempered, or activities that maintain ownership could be stimulated, like agrotourism. Making alternative uses, like conservation, more attractive will also help. Selling usually happens when no alternatives are found. Investment from wealthier (foreign) parties could also be hindered like with taxation, or limited with quota. More research is needed.

Since loss of land ownership has become an issue, it is essential that the landless have alternative livelihood strategies. It seems that within the rural economy, ecotourism can create opportunities for activities that do not require land (e.g. tours or street selling). But these opportunities require access to resources and competitive positions that are not often present for the poor landless. Community-tourism and other projects can help because they incentivize communities to work together and access resources together. Everyone can perform a specific task in one bigger community activity. For people who still don't find strategies better social safety nets could be the only real solution.

Basic needs from the forest - There was an assumption that regulations and restrictions on forest use would mean that access to forest resources and basic needs derived from the forest would be decreased. That Costa Rica had regulated an open-access-resource. But the reality is a bit more complicated and the state has created some possibilities for forest access for those who need it. Landowners and indigenous groups, who rely on traditional uses of the forest, have the option to use the forest resources for own consumption. They can use wood for construction or fuel, and hunt and collect food. The main issue is however that rural people who do not own land have to access such resources on markets, and because commercial use of forests is restricted with regulation, prices have gone up. It has been clear that expenses of basic needs have gone up in Costa Rica, which is a big driver for poverty. Before communities could probably rely on their social capital, relations with forest owners, to extract some wood from nearby forestland. But regulations now will make larger extractions for communities impossible and illegal.

Forests used to be an open-access-resource, but land ownership has been given to mostly small farm-families and later forests have been regulated and protected with several measures. People cannot simply take what is not theirs anymore, which is a logical result of the ambition to protect forests: It requires rules and clear land ownership, which excludes non-owners. If biodiversity is to be protected, what really matters is how people who do not have access anymore are supported and compensated: They have to be able to buy products for reasonable prices on markets and the state could help facilitate this (see later).

New natural capital - What Costa Rica did very well is the creation of a system in which biodiversity and ecosystem services are made into a type of natural capital that creates income. The PES and CES systems made users pay for things like water provision and storage, and made suppliers benefit. Where previously forest was valueless, now they are products sold in ecotourism. So the rural population has new natural assets to sustain their strategies and livelihoods with, which do not (usually) damage the environment.

Infrastructure - Several findings indicated that three important factors, that are partly derived from the stimulation of landowners to conserve, have led to an increase in infrastructure and overall development. Firstly (eco)tourism has brought (necessity of) better roads and facilities that local inhabitants can also benefit from. Secondly new strategies, like PES, have been found to increase income which was used for education and for example healthcare. More wealth creates more development. Thirdly, the new forest plantation sector has led to the creation of some timber related industry, including some connected infrastructure. Of course infrastructure is also a result of general development and economic growth.

Skills, knowledge and education - Skills and knowledge are essential for obtaining effective livelihood strategies in rural Costa Rica. The population is relatively well educated, particularly on environmental concerns and practices. There are many institutions that do research, and provide support on these human resources. This research has the impression that Costa Rica has overall done a good job (for its capacity) with such institutional support, but this support is not always available in every area and very dependent on the location and quality of institutions. Fixing this issue is complicated, because funding is limited and already the state depends on non-governmental organizations to provide support. But with the resources

that are currently available there could be more emphasis on specific (lacking) types of support: Subsistence farming, diversified strategies like agrotourism. But also support not on practices themselves, but on risk assessment, economic viability of strategies and livelihood security. To make people resilient and smart participants in the rural economy, and also tell them when a particular strategy is probably not a good idea in a certain situation. People can be supported in finding alternatives and escape plans to transition into new employment. Training for good ecotourism strategies is an important concern: while there is much support for sustainable practices, landowners who start ecotourism require a similar amount of support so that they do not fail (see later).

Financial barriers and support - While farming has been an accessible (read inclusive) strategy in the past, there are now issues in participating in new strategies because they require financial investment. Forest plantations, agroforestry systems, sustainable practices, and particularly ecotourism activities require a significant amount of capital that excludes the poorest of the poor. Heavy competition in for example ecotourism makes it even more difficult to be successful without significant investment (see later). A straightforward solution that has been mentioned in interviews is providing sufficient credit: There have in fact been forms of credit for forest production and ecotourism, although credit also means additional cost (interest). The main issue however is that strategies have been prone to failure and this would lead to debt and dependency if credit is given. So credit really is only an option if the problem of failure is addressed, this depends on other factors such as support, protection and competition in the market. Tax exemptions could create better results for poverty reduction and equality: They don't have to be paid back. If small landowners get a reduction on income tax e.g. paid by more tax for large landowners this could reduce new inequalities that have arisen and does not cost additional state funding. Similarly for the tourism sector: foreign investors could get an increased tax to reduce their pressure and competitive advantage compared to poorer participants. More research is needed on the potential of these specific solutions.

The other issue is the cost of transaction, monitoring and complex costly administrative procedures of PES contracts and general forest use. Management plans require financial resources that people often lack. Interviews and studies have shown that barriers have been created, aimed to secure forest protection. These barriers restrict profitability, competitiveness and participation. The fact that some investment is needed for application, excludes the poorest of the poor. Transaction cost does not scale much with land size, so these costs are particularly difficult to cope with for small landowners. This could be solved by making them scale better with land size, but also investigating how costs could be reduced: e.g. cost of monitoring seems excessive and could perhaps be decreased with modern technologies. New contracts have in fact decreased transaction cost, and collective contracting has helped individuals to cope with costs in groups as legal entities, or with the help of NGOs and other organizations. Farming cooperatives, to facilitate the transition and adaptation of farmers towards new strategies, could be further expanded and improved.

Relations with community, institutions and state

The range and setup of institutions, both governmental and NGO, is impressive and relatively extensive for the South. Findings show that there is however also some distrust with the state, due to issues of self-reliance, ownership, regulation and enforcement. This could complicate participation in programs and the acceptance of support. Interviews have stated that the state has not listened to the demands of (smaller) landowners (indigenous, peasants and entrepreneurs) who stated what they required for more successful livelihood strategies. PES, was said, needs to be more participatory (Interview 8:16). It is of course also possible that the state has heard these people, but does not agree with what they demand. The profitability and opportunity of the forestry sector is something that is debatable and will be discussed later.

Traditional social capital has existed in the social relations and support of networks of communities, families, etc. Studies show that this capital has eroded: there has been alienation in rural communities and cultural disintegration due to changes of landscape, migration, and flows of money. In its place have come new institutional support that give many types of assistance and provide some resources. While this support can really help, it is not always available everywhere. They also provide support for conservation and

sustainable management, but what is somewhat missing are farmers cooperatives and movements that support specifically the transition from traditional practices to newer strategies.

Transition to forest conservation and production

Leaving farming behind - An assumption of this research was that the stimulation of landowners to converse farmland to forest (with several strategies) would result in the loss of agricultural employment and production. But the relation between stimulation-measures and farming production is much more complicated. Furthermore, the opportunity of forest conservation and particularly production is disputable. The agricultural sector has been in decline throughout past decades. This decline was found to be caused by many factors, certainly not all conservation related. Costa Rica's choices for agricultural development and state protection, and changes in globalization, markets and environment have been important factors. At the same time the stimulation of landowners to act within a sustainable proactive forest sector has had its impacts: Farmland has been sold under the pressure on land markets, and new strategies have been pursued. Regulations such as management plans and the deforestation ban have made switching back from forest to agriculture impossible, which decreases farming potential. Studies have indicated that PES has accelerated the abandonment of farm-practices and employment. Farming lifestyles have been evolving into more flexible livelihoods with diversification of strategies to generate income: PES-participation, ecotourism activity and other types of wage-labor. Particularly the opportunities of ecotourism have drawn people away from farming, often accompanied by migration and farm abandonment.

Interviews suggest that this is not necessarily bad: Developing countries have a tendency to move from agricultural to better strategies. And the future of farming livelihoods in Costa Rica is very uncertain: There are concerns of lack of competitiveness against cheaper prices and production abroad, and the sustainability of farmland has been complicated by soil degradation. This is worsened by the lack of state support, particularly for small farmers. But it is perhaps also inevitable: Agriculture has become large scale and intensive all around the world, and there might not be much place left for small scale farming in the global economy. What matters most is that rural inhabitants, can transition into new strategies that create qualitative livelihoods. New strategies however do not have to mean people have to give up their lifestyles. Adaptation of farmers to new lifestyles can be too demanding, and farmers are attached to their former practices, land and self-reliance. Rural inhabitants have farmers values and mindsets, and prefer to participate in sustainable practices that are similar to their old strategies. Diversifying is an important strategy: Farmers cannot rely on farming alone, but can expand with a bit of conserved PES land here, a bit of tourism accommodation and tours there. Agrotourism for example can be an way to preserve lifestyle and give people income and satisfaction in work and life.

Conservation contracts - Conservation contracts have had (limited) success. Interviews and data indicate that there is more demand for conservation-contracts than supply. This demand shows there is benefit, although supply is restricted due to funding. Conservation-contracts are only useful for already forested or unproductive land. The income from it is too low to compete with farming (on fertile land), so it is mostly people who do not have such land or are not willing to produce agriculturally: old people for example. Landowners with forest cannot deforest by law: Conservation-contracts are in a way a makeup for these restrictions, to provide rural inhabitants with some income for their not farmable land. Some studies showed that it got some poor people (partly) out of poverty. It is most definitely not a complete alternative strategy for landowners, but it makes it possible to keep land and create additional income from other activities (on and off farm). It provides some time and freedom to pursue a better livelihood.

There are some issues. Studies have shown that farmers are often negative about the program, and there are barriers for entry that have already been discussed, like (small) land ownership and transaction cost. The poorest of the poor have been somewhat excluded, though the state has made small changes to improve this (later discussed). Also the conservation-contracts make participants less self-reliant (dependent on payments) and restricted to program regulation. The dependence on payments is an issue because contracts end, and there is uncertainty if they will be renewed, which causes income insecurity.

Forest production - Strategies of forest production (forest plantations and agroforestry) are a different story because they rely on payments and success of production. Participants have to put time and effort in this production, so they cannot simply pursue other strategies and are dependent on profitability. Studies and interviews gave quite different opinions on the impact and success of forest production strategies.

Issues mostly related to the profitability of the forestry sector. Interviews claim sustainable practices are expensive for landowners to undertake, and are often not competitive enough to benefit from. Regulations and administrative restriction (like management plans) decrease the accessibility of the practices and their economic viability. Agroforestry and forest plantations have been found to be failures. And illegal logging has been seen as a result from this lack of profitability, to obtain financial security out of necessity. These issues are connected to the more broad decline of the forest sector: Costa Rica has not been able to compete with neighboring countries that sell and produce cheaper with more competitive commodity chains. The plantation-contracts have barriers, do not help to get the plantations going, and payments are set late. When contracts end, participants are left without support and payment while their income (from logging) comes much later. So there must be better support for better strategies for forestry beyond the contract. Sustainable forestry (in the case of forest plantations) has not been as successful as the state had aimed when promoting the proactive forest sector, at least in some places.

But there has also been success. Even though farmers opinions on the current program are often negative, there is clear demand for sustainable forest production, particularly agroforestry contracts. The agroforestry-contract has been created by the state to include (poor) small landholders, and bring conservation (PES) and best practices 'within the agricultural sector' (Interview 9:4). But sustainable practices such as agroforestry have existed in Costa Rica long before PES. Farmers have planted trees among their crops, for example in coffee-production. There is also much research done on these practices. Interviews indicate they are most likely the best way of combining biodiversity protection with income generation. Studies of specific areas have indicated for example that most participants of the program have had increased income, about half of the time even without payments. Other benefits were found to be subsistence products on farms, like fuelwood, which helped in obtaining basic needs. These studies also claimed that this was only possible because there was the right institutional support, for example from NGOs. Also forests plantations have emerged in Costa Rica, where many people planted trees for timber or seed production: Some forestry related industry has emerged that provides infrastructure, employment and income. There was not much other evidence found that forest plantations have been very successful.

This research concludes that both negative and positive findings of sustainable forest production (agroforestry and forest plantations) are true: They are most likely happening simultaneously in Costa Rica in different areas where institutional support and other conditions differ which result in different levels of success. When Rodriguez was asked about the issues and benefits of both agroforestry and forest plantations, he separated both practices. The former minister is fairly positive on agroforestry, because it has provided some biomass at the farm level and was approachable by the poor (Interview 9: 3&4). When he was asked however about the issues of profitability and failure of forest plantation, he gave an interesting answer. He believes it is a good thing that the forestry sector has been in decline: "I think it is good, because primary forest should not be logged. [...] I don't think that Costa Rica can do sustainable management of (old) grown forest." (Interview 9: 5&6). He argues that forests are simply not a place for logging: Costa Rica has alternative uses of forests that do not damage and have been more successful (conservation and ecotourism). Forest plantations will never compete with neighboring cheaper production: Costa Rica's forest is fragmented, with little pieces of land (belonging to different landowners due to lack of large landownership), which makes it economically unviable to do sustainable logging.

Interviews (Ramirez) have argued that there is opportunity in forest plantations if farmers get some market protection (like before), and if the barriers for entry are eradicated. Furthermore, contracts and other stimulations must be adapted to the requirements of the forestry sector, with better commodity chains that are more profitable. Small productions cycles and cheap wood useful in the Costa Rican economy are examples (Interview 8:14). But the question is: how much (of already limited funding) must be spend to

make a sustainable practice that still harms forests (to some extent) profitable in a failing market, where competition is harsh and production cost and circumstances (fragmented forest) not ideal. Can it even be made into a reliable income source for rural landowners at all?

This research concludes that the sustainable practices of forest plantations and agroforestry must be treated separately: Agroforestry has potential and while it is often failing, has worked with the right institutional and program (PES) support. It has further benefits of providing subsistence products (food), and can be combined in diverse strategies on farms to increase biodiversity and employment. Agricultural products produced can be sold more easily and faster than timber. But there must be a little more support and communication beyond contracts, and if possible some protection like small scale farming has had in the past. Let unsustainable producers (large scale export companies) perhaps pay for it. In areas where institutional support is lacking, maybe agroforestry should not be incentivized until it is not lacking anymore. This is perhaps the most realistic approach since the state cannot give all support needed. As Louman suggested land use planning is essential: Assessing what people need in an area and what can be given in support of this should be leading in determining which programs should be given where. Forest plantations (logging) however has less potential: There has been too little evidence found of real success in the sector, which has been repeatedly said to be in decline and in a bad competitive position in the (global) market. It would require too much funding to make the practice work. And the practice is unfit for poor landowners: The returns take long (trees grow slow), are insecure and much investment is needed, while the poor need fast and secure outcomes (income) for their livelihoods. Furthermore the insecurity of (international) program funding (see later) makes it too dangerous to secure long term support (for example for 20 years). It is doubtful that protection and security of (timber) prices would be economically viable to an extent that producers will actually be profitable, although such statements require more research. To conclude, the (preliminary) position of this research is that plantation-contracts should not be further given due to the risks of failure and livelihood loss. The money that this saves could be given to further expansion of the agroforestry contract for example. This is perhaps a harsh conclusion but the limitations of funding, which will be later discussed, demand for it.

Food security - Food insecurity is one of the main issues found in this research. Expenses of living, such as food, have gone up which create new poverty. Costa Rica does not produce much food for domestic markets, so it has to import much which increases the prices. Pressure on (local) food markets has increased due to new flows of people and money to rural areas. Small scale subsistence farming which could provide additional food security to families and communities has declined. There are indicators from studies and interviews that show that stimulation-measures have led to reduction in agricultural production, mostly decline of farming potential. This is mostly due to strong regulation such as management plans and the deforestation ban, and only a little due to PES. Rodriguez claims that PES, because its low payments cannot compete with agricultural production on fertile soils, does not impact food security (Interview 9: 10). This research concludes that this is mostly true, since PES works on already forested or empty land. But (conservation) regulations (outside PES) have certainly had their impact, although it is very hard to define how much exactly. Most reasons for food insecurity are beyond conservation policy: The country produces mostly large scale for export, has stopped protection for small scale (domestic) production, and already bad national soil fertility has been further decreased due to intensive practices. But the state could use stimulation-measures also to improve food security: Hybrid solutions that maintain farming lifestyles can help. They can become more profitable by combining farm production with conservation-contracts and tourism activity in agrotourism. Additional benefits are that attachment to land and traditional livelihoods, social connections and mental health are improved. Of course such diversified strategies require financial resources and sufficient land space. Financial credit could be given for specifically diversified (hybrid) strategies. If support and financing is sufficient, good strategies can be made that make success easier and help landowners pay loans back. For landowners who do not farm (commercially) it could be incentivized to at least participate in some subsistence farming to support themselves and their communities. Replacing forest plantation contracts with agroforestry contracts could also help.

But it must also be critically questioned how agriculture is done in Costa Rica in general. The country mostly produces for export: coffee, bananas and pineapples do not really help domestic food security. Of course such agricultural production has generated economic growth, employment, and in general is more profitable. But Costa Rica as a social state must also question how much neoliberalism is good for its rural inhabitants: Some more focus on domestic production, and small scale farming where people keep their (land) ownership and self-reliance could be good. Large scale production leaves many rural inhabitants (and migrants) in insecure and bad employment conditions. Especially for soil fertility, intensive large scale agriculture is not sustainable and smaller scale sustainable practices could be more supported. Certain foods that are essential for food security (staple foods, rice and beans) could also be produced large scale and supported by the government to keep profitability up and prices lower than import prices. This is however a suggestion that requires more broad and in depth analysis, to understand its viability.

The limits of ecotourism

According to interviews and most studies, ecotourism has been the most successful strategy for rural inhabitants to provide livelihoods. It created employment, infrastructure and other benefits for participants. Local (small) landowners have started businesses like accommodation, tours, or sold their land. Ecotourism has become a major component of rural economies in Costa Rica, particularly for farmers who use it as a complementary source of income to make up for the loss of agricultural income. As an alternative strategy, tourism activities have provided some new resources that make other strategies, like conservation (contracts), more accessible alongside it. So it is a step-up for many forms of capital.

Tourism: successful to whom? - It is essential to question where it is successful and for whom: Opportunities depend on locality, and the access to resources: Larger players, investors from outside, have dominated the market which creates new inequalities. The poorest (farmers) end up at the bottom of the chain and face competition. For SRL it is important that the local population can participate, but local ownership of tourist facilities is low in at least some regions. This could be improved by facilitating communities to organize themselves and work together to access resources and start tourism activities: community based projects. Farmers and indigenous have started organizations for community tourism in the past, but institutions and the state could provide additional support for this. Perhaps there should be less focus on the (landowner) individual, and more on social capital of communities. Because individuals in communities have different capacities, they could perform in specific roles as part of a tourism activity. Agrotourism businesses are a good example where landowners provide forest and accommodation, and other people from the community can cook, provide services, or tours. Community projects can maintain and strengthen social relations (social capital). If agrotourism activities are sustainable, they can combine income and conservation. Perhaps most importantly for SRL: Such diverse strategies can create self-reliance and security: Multiple sources of income give more certainty to provide for livelihoods and less dependence on external factors. So these activities (agrotourism and community projects in general) have to be stimulated: Support from institutions, programs from the state, and even expanding PES for sustainable agrotourism contracts could be considered. Such a contract could require landowners to hire locals for their services to tourists, produce sustainable food and conserve forestland. It could also give some additional payments particularly in crisis moments when the tourism sector collapses. Lastly, there could also be certification for rural and community development: Similar to the sustainability certificates (CST, see 3.3) the ICT could give certificates that prove rural community's development and culture is protected due to certain tourism activities, which will attract more (conscious) tourists to these activities.

People often lack not only investment money, but also the right strategies in (eco)tourism (social connections, support and knowhow). This has been a big issue particularly because there has been an ecotourism boom where to many people participated and competed in a strange fast moving market. Bad strategies have often resulted in failure: Bankruptcy, loss of employment, income and land ownership, mental issues and substance abuse. and debt have been found in studies. There is also some path dependency, where participants go all in and cannot get back to traditional (farming) strategies. These issues have made this alternative strategy an uncertain and risky business and not a sustainable livelihood

strategy. A poor farmer who must find a new job must really think twice about starting an ecotourism business in this market. Financial credit could be a solution (for obtaining financial resources), but in a risky sector it might just as well lead to debt. What would really help is if people improve their strategies for ecotourism: This depends on the right information and skills, and thus (informational) support from institutions such as training. While there is much support for sustainable practices such as agroforestry or conservation, this support seems to be lacking for ecotourism entrepreneurship. Institutions like NGOs should really help people to make good plans and strategies, and in the first place make good assessments of how successful their activities could be in the current market.

Another big issue is that (eco)tourism activities are inherently insecure, because they rely on external factors that are beyond the control of both participant and state. This effects self-reliance and increases dependency (for both individual and nation). Studies have shown that the supply of tourists have strongly declined due to (often economic) events such as the 2008 banking crisis and the Covid pandemic. These activities have resulted in a collapse of the tourism market, with many dependent rural inhabitants left without income and worthless tourism facilities. If a large part of its rural economy depends on such an uncertain factor, the state must really ask itself if the proactive forest sector really is an economically sustainable sector. The solution for landowners is to diversify, to have multiple (non-tourism) sources of income. It is important that state regulations and permits (management plans) leave enough space for such diversification: They have to be flexible, and allow multiple profitable sustainable practices and land uses.

Priorities in a regulated tourism market - Some solutions were given to make ecotourism a more viable livelihood strategy. But these solutions will not help if nothing is changed to the market itself: Competition is too large for it to become a qualitative strategy for the poor. Interviews have indicated that when activities are successful multiple people start doing them in the area, competition increases while demand is external and limited. This makes the strategy in its current form most likely unsustainable, and it has in fact already proven to be since ecotourism has had a boom-period which has partly ended. Issues of competition come from both numbers (supply) and inequalities due to larger players with more resources.

This research therefore suggests that the state make some critical decisions on who to allow on the ecotourism market: The local poor and small landowners can only be really successful if other people are a bit more excluded. People who could be excluded can be foreign investors, wealthy urban residents, and very large (and non-local) tourism franchises/companies. This is a complicated solution, because Costa Rica is neoliberal and has propagated market freedom. But it is not so neoliberal that it has not regulated its markets in other sectors (like the forestry sector). The reason for free markets in tourism has been to attract foreign currency: But the amounts of tourists have already reached their maximum, looking both at the negative impact (such as resource use) and the actual demand for tourist activities. Actually, this research suggests that while demand is limited, Costa Rica must get most out of it by having less competition and increased prices: high-value tourism similar to Bhutan (which means not luxurious services, but tourism that is willing to pay for sustainability and rural development). So cheaper prices and competition means attracting more people for less money, with more damage and less (local) benefits.

Ideally, the demand for activities should be met with a similar amount of supply, so that failure is minimized. Costa Rica must determine who should benefit from this demand and who should not. Some small measures, such as taxation larger (foreign) businesses and using this money for protection of small local initiatives, or programs (contracts) that support activities or institutional support, will help. If funding is limited, benefits and costs could be at least better distributed to make the poor participate. Outside companies could also be required to hire (a quota of) local employees (under good work conditions).

Scale and impacts - The tourism sector is a combination of local landowners, urban residents and foreign investors. Together these people create a competitive tourism-market that has also created negative impacts for rural Costa Rica. This is another reason for limiting the scale of tourism, because too much tourism has contributed to pressure on resources (land and water), issues of waste and changes in rural culture and communities. Also substance use, prostitution and crime have been connected to tourism. Costa Rica has stimulated people to jump onto tourism opportunity in a free market. This has resulted in an ecotourism

boom which left many people in poverty and without resources. The state must ask itself if it wants to keep growing its tourism sector, or also focus on other types of employment and strategies. Ecotourism can certainly not provide livelihoods for all people that have lost traditional livelihood strategies.

Protecting the excluded

In this research it has been clear that the state has taken some measures to attempt to include the poor into the newly stimulated strategies in the rural economy, but that there is still much exclusion of people without access to resources. The state should improve its policies so that they increase participation of the poor, and people are protected from failure of strategies: There must be more livelihood security. Costa Rica has been known to be a relatively social state, and can live up to this reputation with less market freedom and more social safety nets. There must be more attention for poverty reduction and social inequalities.

Entry barriers - Several barriers (lack of capital) create difficulty for the poor to participate in alternative strategies. Specifically for the barriers for PES, former minister Rodriguez was asked what his perspective on this was. He goes so far as to say that these barriers are insignificant, because there is plenty of demand for the program which shows that people like the program (Interview 9:3). So the conservation goals (given the limits of funding) are met. But this research has found that this is not a great approach to the issue: It matters what type of demand is created: Small (poor) landowners, who have limited resources, have limited access which makes conservation-contracts more interesting for larger and wealthier landowners. This is a big issue because it reduces the chances of the poor to find good strategies for livelihoods.

Better distribute PES benefits - A few measures have already been taken to include the poor in PES. There have been priority regions with low rural development where PES is more promoted. While these regions have had more program participation, the dynamic in which people with more resources have more success in application has not changed. So even in these areas large landowners have participated more. Inequalities exist in poor regions too so there should be more focus on not just region, but who can apply. Poorer participants should for example pay lower (transaction) costs. If reducing the cost of application (which reduces funding) is problematic for the viability of the program, poorer participants could be compensated by higher payments. Large landowners could be given less payments, since their transaction costs are relatively low for their land-size and payment amount: This frees up money for compensation for the poor. Since large landowners still have most benefit from the program, they will participate anyways. Actually, the demand for PES is double the supply (due to funding) anyways, so Costa Rica can better distribute benefits without it effecting the demand so much that the supply will not be met and the program becomes less effective for conservation purposes. This research suggests the state would decrease the payments for large land contracts, and use the money to include the poor. Half of the programs budget goes to the largest landowners (100-300 hectares, see figure 12.), so it would mean a huge amount of financial resources that can be better distributed.

More agroforestry for the poor - The funding that opens up this way could be used in combination with another measure to include the poor. Agroforestry contracts have been created to make sustainable agriculture with biodiversity increase (tree planting) more viable and profitable. This has, under the right circumstances, benefitted poor people (small landowners). There should be more of these contracts issued, they should have priority, particularly for small landowners. There are additional benefits (apart from income generation): food security, preservation of culture, lifestyle and land ownership, mental happiness.

Livelihood strategy security - According to Rodriguez, the main issue for poor participation in PES is not the access of PES, but the lack of funding. He states that the requirements of the program are clear, and that a limited supply (of payments) means that people are chosen based on these requirements:

“Some people make it in the program and other don’t. And [if] you get selected you can be included in the program for 10 years, and when these years are over you need to hope that the situation in which you are in is good enough for you to continue. [...] Nevertheless 40% of the beneficiaries of the program are very poor people.” (Interview 9:2).

Rodriguez has a point that funding is an essential limiting factor. But that does not mean that the funding that is there could be distributed better, and that requirement costs can be reduced, as has been argued. Furthermore, 40% of beneficiaries seems a much higher number than it actually is: poor participants have little land and thus get only little payments. Earlier has been shown that by far most funding goes to large landowners, and it is the financial support that really matters for poverty reduction. Payments increase based on land size, and one large landowner could get more income from PES than 10 small ones.

The approach of ‘giving people a contract and then hoping they will make it in the end’ is not the right one from the perspective of SRL. Good livelihoods are secure livelihoods: they must have sustainability and certainty for future benefits (income). Participants become dependent on payments and loose self-reliance, which is an issue beyond the duration of the contract. So it is essential that there is more security for these people: There must be some clarity or even certainty on whether contracts can be renewed. Renewal must be prioritized for those who really depend on it, and do not have additional income sources. If due to funding renewal is not possible, there must be better support at the end of contracts, training for creating the right strategies to move on without contracts and still generate income. And livelihood strategy security is not just about PES, it should be provided to any type of alternative (forest-related) strategy, particularly ecotourism: Ecotourism activity is a risky business, and safety nets could really help to protect those people that fail (similar to what Ramirez suggests in Interview 8:15). What possibilities the state has to provide this is a bit beyond this research and really depends on funding. But the most important measures will be to prevent failure in the first place: There must be good assessment and support for right and viable strategies. There must be less promotion of ecotourism in general, to not create ‘booms’.

Bottom up solutions - These are all solutions that require further in depth research to be real measures, and this research merely suggests that they be further analyzed. In the first place however, solutions must come from those it aims to benefit: Rural inhabitants are in the best position to explain what they need for their strategies to work and be successful. They can identify barriers, shortcomings and unforeseen complications, practical flaws of programs and support, which they can communicate to the creators and implementers of policy. Apparently, as Ramirez states, there have been proposals from indigenous, peasants and entrepreneurs for alternative or better programs: It is essential that the state listens to these remarks and sees how it can improve its policies so that they are applicable by people and can generate income. The poorest of the poor must be included in decision making, especially when they have not been able to participate in programs. They can show what their issues were. This does not mean of course that local opinions are always right, but it is important to take them into account.

Implications for global South development

So, from the perspective of SRL, what potential has Costa Rica’s approach (stimulating landowners to conserve) for general sustainable development in forest regions in the South?

No success without international funding - The biggest issue of the approach has to be discussed: Funding for FCP, stimulation (market) measures and support is limited. As has been shown in earlier chapters: the state has not been able to come up with sufficient and consistent money to provide for its conservation market mechanisms. It is dependent on taxation, money from ecosystem services users and particularly international funding. When Rodriguez was asked what complicated more poverty reduction in PES he referred to the funding issue: There is money coming from tax, carbon credits, REDD+ and other sources, but it is not enough and the real issue is that of offer and demand (Interview 9: 2&3). This research also found that PES-demand overshadows supply. The payments are not big enough for people to completely rely on PES, and it is simply not possible to give unlimited terms of payments or renewals of contracts. No matter if PES is successful or not, it is most definitely costly. The funding that is there could be better distributed, as was explained in the last paragraph, but it is largely beyond the power of the state to increase international funding. Most of the solutions given here in this discussion depend on funding, so this is the first thing to look at.

The former minister is currently CEO of the Global Environmental Fund, which is the biggest international environmental fund in the world and one of the contributors of Costa Rica's FCP. He was asked if the lack of funding is a problem for the future (and sustainability) of PES, where contracts might not be renewed and general conservation policy is compromised. He answers affirmative: It continues to be an issue, because they (Costa Rica and GEF) hoped such funding would be a financial complement of the conservation agenda. But the carbon forest market is voluntary, not binding, and agreements such as the Paris Accord (article 6) are not working: There is no real international carbon market (Interview 9: 8&9). Biodiversity hotspots such as Costa Rica's are essential for global environment and well-being: If the country protects its forest to help the world it eradicates some other economic opportunities (extraction) and must be sufficiently compensated with international funding. Funding can then be used support further conservation such as PES. This is the essence of a carbon market. Costa Rica's approach, and any similar approach in the global South, is dependent on such a market and can therefore only succeed if the world cooperates. Developing countries will otherwise never have enough resources themselves to protect their forests through market incentives and support programs for landowners, like Costa Rica has tried to do. In fact, if more countries would have a similar approach as Costa Rica, there will be even more funding needed and Costa Rica will most likely lose some of its funding. This issue must be solved globally.

If the successes of Costa Rica's approach for a significant part depend on more funding (for more and better paid contracts and other financial stimuli, for better and more widespread support, for measures to protect strategies viability and provide safety nets, etc.) the approach could be much more valuable for biodiversity protection and SRL. The limitations of programs like PES could be decreased and much more participation, income and other benefits can be generated. A working system in which the North finances the services (biodiversity protection) the South provides to the world could be an effective measure to combat climate change, ecosystem collapse and even inequalities and poverty. Hopefully the recent World Biodiversity Summit (COP15), that mandates much more land to be protected globally, and future international cooperation will provide such a system.

Failures and opportunity in productive (forest) sectors - From an SRL standpoint, Costa Rica's attempts to combine conservation with rural development by stimulating landowners to participate in sustainable production in the forestry sector has not been very successful. Sustainable practices are expensive, and require too much support to be profitable. This is likely due to the specific conditions in Costa Rica though: It is a country with relatively more expensive production than neighboring countries, and it has fragmented forest with still much small landownership. These factors complicate profitability. In other countries in the South where conditions are different and production is cheaper and more viable, such practices could have potential. Further research on other specific cases (countries) is needed.

Agroforestry and agrotourism do have potential, particularly because they create benefits of diversification, sustainability (soil fertility), subsistence farming, traditional lifestyle. And also benefits beyond the landowner: community employment, food and provision of other basic needs. There have simply been found more success stories with these practices, and they provide opportunity for small landowners. But they require much institutional support and strong programs, which Costa Rica took years to accomplish and still must improve on in many regions. Nevertheless, it is a valuable step in forest transitions that does not demand too much adaptation from people. If conservation-contracts are a step too far for global South countries, agroforestry contracts could be a good option. If funding is sufficient, it could actually be very successful (although this could not be derived from Costa Rica's case since funding is limited).

But an issue that Costa Rica and the whole South has to deal with is that we are entering an age of scarcity, increasing consumption and environmental collapse. Climate change will complicate agriculture and other sectors and increase demand for products and pressure on markets. It will be very difficult for nations to decide on stimulation of landowners to conserve: More forest means less space for production, whether it is food or timber or raw minerals. Food prices for example have risen and will continue to rise. This will be a worsening issue that the South, and also Costa Rica has to deal with. This provides even more reason why the North must compensate for the South, and reduce its consumption.

Limitations of the global tourism supply - Ecotourism has been more successful in the Costa Rican case. It is a risky livelihood strategy, but with better support and safety nets and some regulations on a now (relatively) free tourism market it could reduce this risk. The impacts and scale of tourism should however always be reflected upon. More research is needed on this, but it could prove to be a very useful alternative to deforestation that provides SRL. The main issue for application in other countries in the global South however is that not only tourism (demand) in Costa Rica is limited, it is also globally. Currently many people from over the world travel to Costa Rica because of its green trademark and sustainability concerns: These are often environmentally conscious tourists. If more countries would start doing what Costa Rica has done, these tourists will be spread out. This is similar to what has been mentioned earlier on, that competition and surplus of tourism activity supply would reduce its benefits and increase its risk. Unfortunately thus, looking at larger time frames and adoption of multiple countries of Costa Rica's approach (particularly in the same region), the approach seems unsustainable (economically). It would need additional help and regulation: If travel/tourism for example follows more environmental and social standards, certifications and regulations that are internationally agreed upon, there would be more potential. So it would work better if unsustainable types of tourism (non-eco) would be prohibited or taxed to some degree, and more tourists would go eco. In the near future however: There is much potential in (eco)tourism for countries and the first who would follow Costa Rica's approach would likely benefit in the same ways. This has to some degree of course already happened in some places in the world.

Context dependence - To fully understand how Costa Rica's approach could be applicable elsewhere it is important to understand that Costa Rica is a unique and fortunate case for stimulation-measures and conservation policy in general. The country has relatively little poverty compared to neighboring countries, and created something like a social welfare state with relatively high levels of education and healthcare. Small landowners have been protected in the past and small (family) landownership is relatively well established, with little (very) large landownership in power. There have been good ties with the US which have helped with development and environmental international programs and cooperation. Geographically, there are many forest in inhabitable (mountainous) terrain which make many types of (harmful) forest use difficult. And there are not so many mineral in the ground (only gold) or fossil fuels present for extraction.

These conditions have created the perfect opportunity for a global South biodiversity hotspot to stimulate its landowners to participate in conservation-activities. They were better educated, and had relatively secure land ownership. And the political environment was, with its social past and errors, ready for this approach. The country has done investments in conservation institutions and research that took many decades to accomplish, and has build an environmental trademark. In many ways Costa Rica's conservation and development history and context made its current FCP possible, as was shown in this reserach. Another developing country in the South cannot just copy what Costa Rica did in a short time span, and is even on longer timeframes unlikely to have the same potential. But that does not mean other countries can look at what Costa Rica did well (and can do better) and take up some measures and parts of this approach. And with better international conservation agendas and funding such measures become more and more possible. Costa Rica really is an 'ecolaboratory' for sustainable development in the world.

On the next page the in this chapter stated solutions are presented as suggestions in an overview where issues and solutions are connected (see *page 85*).

Suggestions for further research and policymakers

Costa Rica's stimulation of landowners to pursue new sustainable livelihood strategies, conservation, sustainable forest production and ecotourism, have benefitted forest cover throughout the country. This overview presents the found issues of this approach, and suggest some solutions to these issues for further research and analysis by policymakers and academia. Lines are drawn to connect issues (left) and their possible solutions (right). Some less prominent connections were not drawn for clarity, since most issues and solutions connect in some way.



Conclusion

How did Costa Rica stimulate landowners to transition from farming to practices that conserved forests, and how did this impact sustainable rural livelihoods of landowners and other rural inhabitants?

Costa Rica is the first country in the world to have created a significant forest transition. Since the 50s, the country developed and dramatically changed its ideas on conservation policy and goals. It has put large effort in the past decades to recover from a deforested state into a country with half its land surface under forest cover. This effort was characterized for an important part by a neoliberal focus on markets for ecosystem services and biodiversity, through stimulation of landowners to participate in activities that conserve or restore forests. Regarding the importance of forests in biodiversity hotspots for both national and global environmental goals, the Costa Rican case is a potential ecolaboratory for sustainable development in the South.

This research has analyzed how Costa Rica's approach of landowner stimulation has created adaptation issues for landowners and has impacted the rural population. It does so from a bottom up perspective, using a sustainable (rural) livelihoods framework. This framework provides a perspective on rural inhabitants access to resources, their strategies of living and working, and the outcomes of these strategies. The framework is holistic and comprehensive because it looks at these dimensions but also incorporates context and transforming processes such as government policy. This research thus analyzes how specific policy, the stimulation of landowners to conserve, relates to the dimensions of resource, strategies and outcomes for these landowners and other rural inhabitants, while it takes into account the specific context of Costa Rica. It focuses particularly on the issues for sustainable rural livelihoods that have arisen, in an attempt to provide constructive criticism for improvement of policy and further research. This research is a desk research that makes use of case studies and academic literature, but also has an empirical angle using interviews with actors who have different perspectives on forest conservation in Costa Rica.

Stimulation measures - The research began with three chapters that found information necessary to use the SRL framework and answer the main research question. This information was on context, forest conservation policy and specific stimulation measures to realize a proactive forest sector in which landowners take action and start new livelihood strategies that sustainably use and protect forests. It was found that such sustainable strategies relate to a diverse array of (stimulation) measures: 1) The PES system is a market mechanism (though it behaves as a subsidy) that incentivizes landowners to conserve or reforest with multiple contracts for different practices. Conservation-contracts are most issued, but there are also forest plantation and agroforestry contracts (natural forest regeneration contracts have been hardly issued). 2) Multiple institutions, both governmental and non-governmental, have further supported sustainable uses of forests: FONAFIFO and SINAC provide (skills) training for landowners, general research and most importantly technical advice and financial help. State-support however is limited and complemented with many NGO's and research institutions (like CATIE) that provide education and training on sustainable practices, and technical and administrative support, throughout the country, and specifically for landowners. They work closely and locally with communities to help them participate in new strategies, but also in collaboration with and as advisors for the state and its (conservation) institutions. 3) The ecotourism sector has been promoted by the state as part of a proactive forest sector, in which landowners start ecotourism activities on and off their land, create income and conserve forests at the same time. The state did not so much directly support, as facilitate the participation process by creating favorable market conditions with regulation, infrastructure and a green trademark. 4) Several regulations and disincentives have created a rural environment in which farming became a less viable livelihood strategy. Perverse incentives (that led to deforestation) were removed, a deforestation ban emerged, and with many regulations forest uses was restricted and made sustainable, like with sustainable management plans, impact assessment and monitoring. Furthermore small farming lost state protection, and trade liberalization further decreased the viability of traditional farming strategies. Such measures, though not only created to incentivize forest protection, made it more likely for a farmer to transition to new strategies.

The new (sustainable) strategies that were stimulated by the above mentioned measures were diverse: A landowner who lost income and sustainability of livelihood in traditional farming, could switch strategy or

diversify within the forest-sector. He/she could apply some forest land under conservation contracts, or start a forest plantation or agroforestry practices (with or without PES). He/she could also start some ecotourism activity, on-farm or off-farm. Migration was also possible, either to find forest related opportunity elsewhere, or other types of employment often in the city. The selling of land gave additional (starters) income. Of all these strategies, combinations in diversified strategies was possible.

Impact and success of stimulation-measures - The fourth chapter analyzed the impact of stimulation-measures using actor interviews, case studies and other literature, while the discussion chapter reflected on this impact and the overall success of Costa Rica's approach from a SRL-perspective. This research has showed that the measures that stimulated new strategies and forest conservation have changed rural Costa Rica and its opportunities and issues for the livelihoods of rural inhabitants. While these measures have been, environmentally speaking, highly successful (forest cover increase), the success for sustainable rural livelihoods is limited and very conditional. Most certainly there has been rural development, through infrastructure, employment, flows of foreign currency and investment. There have been many success stories in conservation, agroforestry and particularly ecotourism. But the opportunities the new rural economy created have not been for everyone: they were often inaccessible and created new inequalities and poverties. Adaptation of farmers who had to transition to new strategies was complicated, particularly for the poor. Furthermore, strategies have been limited in their scale and benefits, and not successful due to low profitability, income insecurity and failure. Lastly, there have been negative impacts due to measures and stimulated strategies that have created issues for many rural inhabitants.

Traditional farming strategies have been in decline due to many reasons. Stimulation-measures (particularly disincentives and regulations) have made it even more difficult for (particularly small) farmers to expand agriculture and make ends meet. Whereas traditionally farming was an easy access strategy, the new strategies that have been stimulated are relatively exclusive, which makes the current approach limited in its ability to combine conservation and rural development (poverty elevation). Access to livelihood strategies has been limited because of low access to resources (land, financial capital, knowhow and administrative capacities, good strategies). This is a problem particularly for the poor who often lack resources: Their small land size and relatively high transaction cost make PES-strategies less viable. It has made it difficult for the poorest to adapt to the new rural economy, which has meant they often had to sell land and migrate.

Strategies have been limited but different in both scale and overall success: (PES) conservation-contracts have helped forest owners to get some benefits out of their protected forest. It has also been a step-up for them to find complementary strategies and find additional income. But the payments are low and there is some income insecurity later on. Furthermore the contracts are quite useless for farmers with productive land or small landowners. Forest plantations (with or without PES) are an unprofitable business with late returns, uncertain income and lacking late support. There have been too few indications of success to claim that it creates sustainable livelihoods. Agroforestry has given mixed results: There is success, but it requires good support and program (PES) application. It provides however additional benefits (food, employment, certainty) and opportunity when it is combined with community development and ecotourism. Additionally, the above mentioned strategies are all limited in their success also due to small supply of contracts and limited funding. Ecotourism has had more widespread success but is also a risky strategy, due to its competitive market and requirements. If resources and good strategies are present, it can provide SRL. But the market would require some protection and regulations to make income from this strategy more secure and failure less likely, since failure has highly impacted SRL.

The biggest negative impacts of stimulation-measures are found in the way they have changed the rural economy and made inhabitants adapt to these changes. While biodiversity has become somewhat of a new resource, other resources have been under pressure: Land access is reduced due to pressure from changing flows of money and people of tourism and forest conservation. Other resources, mostly water, have also been pressurized. Food availability has been decreased although most reasons for this are outside of FCP. Other changes are in social capital: Communities and local relations had to face new flows of people and money which has led to erosion of traditional social capital and some falling apart of communities. At the same time much effort has been given in new institutional social capital, which has helped many landowners though not everywhere. The biggest positive impact, next to conservation and income creation,

is that natural resource sustainability is increased for the future in a country that has to deal with low soil fertility from intensive practices. At least in some places, traditional strategies simply could not go on.

Opportunity and solutions - All of this is not to say that Costa Rica's approach is bad. The perspective of this research was on SRL, but from other perspectives (like environmental) the approach is very successful. Most importantly here: This research has found many possibilities to improve stimulation-measures and make them more socially successful and inclusive. The solutions given are suggestions for further research, both for policymakers and academics, and need to be supported with empirical research. An overview of issues and solutions found was given on *page 85*.

In the *Discussion Chapter* suggestions were given that could improve the inclusion of the poor in the PES program and for general uses of forest. There should be more attention for poverty reduction and social inequalities in programs, next to environmental considerations. Payment could be distributed differently so that small landowners get a bit more income and large owners (who have advantaged positions) less. Requirements for PES could be lowered, such as transaction cost. Or they could scale more fairly with land size. Grey areas in land ownership should not form a barrier, and clear land tenure should be enough for participation, instead of official land ownership certificates. Costa Rica could do a great deal not necessarily by lowering all costs, but by distributing them better to not create new inequalities. Other measures that can distribute benefits better are tax exemptions for poor landowners, which could be compensated for higher tax for wealthy participants, like large landowners or investors (in ecotourism).

Some suggestions were meant to direct people more to practices that were more favorable for SRL. Forest-plantation-contracts could be stopped (no new contracts) due to their limited viability. Furthermore, when institutional support is really lacking in an area, contracts should perhaps not be issued there. This could create room (funding) for more emphasis on other contracts in the right places, like agroforestry. This contract could be expanded, given higher payments, but also requires better support beyond the contract. There could also be more focus for self-reliance and diversified strategies: of which agrotourism and community based projects are a good example. There could be special contracts for them, which requirements such as providing subsistence farming or community employment. Flexibility of programs and the right support is important for these practices: Such support must focus on creating better and safer strategies for landowners. Such strategies are diversified and are about risk assessment and livelihood security, particularly for ecotourism. They could also focus on the transition from farming to new strategies, in e.g. farmers cooperatives. For good strategies it is essential to listen to local farmers and their struggles and ideas.

Landowners require secure livelihoods. They need clarity on contract duration, support and renewal. It is fair to renew those contracts of the people that really depend on them. If contracts cannot be renewed, some training for creating strategies to move on without contracts and be self-reliant could help. Ecotourism as a sector provides currently too little security of income for participants with few resources: This could be improved by decreasing competitiveness in the market, by limiting foreign investment with taxation, protection for small and local activities and perhaps quota for larger companies to hire local employees. Ecotourism should also not be promoted too much (as a hype), and land ownership (not selling) should be further stimulated, e.g. stimulation alternatives like agrotourism.

The South needs the North - Really, Costa Rica has done fairly well, considering its effort to find a better approach to conservation and its limited funding. A new approach to conservation is a development in progress. The country can work on some of the issues and inequalities it has created, and distribute its available funding better. But there is only so much a developing country can do on its own: Costa Rica's stimulation-measures could be much more effective for SRL, since many incentives are limited by funding. In the end it is up to the world to provide further funding in a working carbon market: A global system in which the North compensates the South for its biodiversity protection and creates funding for rural development and decrease of (global) inequalities. The success of Costa Rica's approach and adoption in other countries depends on this system, depends on the world. It would be an effective measure to many issues: Climate change, ecosystem collapse, poverty and inequality. It is up to us to compensate conservation in the South and save the last pieces of living Eden on this planet.

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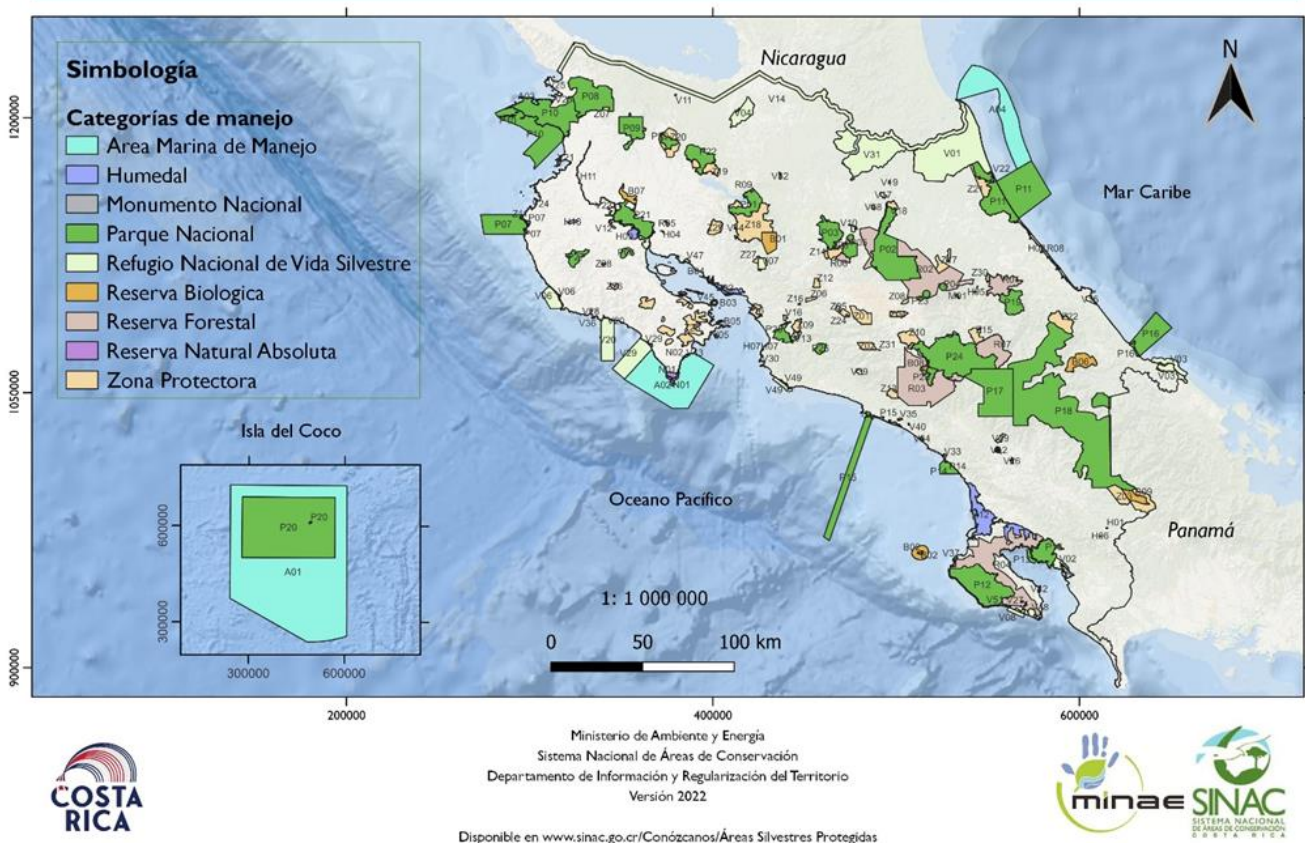
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Appendix 1.

This is the (Spanish) map of protected area's in Costa Rica in 2022 (SINAC, 2023).

Áreas Silvestres Protegidas de Costa Rica



Appendix 2.

Interview 1: Jur Schuurman

This interview was done online using Microsoft Teams, on April the 19th 2023. The answers were given in Dutch. Jur Schuurman is consultant in development and agriculture, former lecturer political geography of the University of Costa Rica, involved with LANDac, and researcher of rural (agricultural) development and land tenure security in Costa Rica.

Bedankt dat u met mij wil praten over mijn onderzoek. Vind u het goed als ik het gesprek opneem zodat ik het later nog kan terugluisteren? En vind u het goed als ik in mijn onderzoek naar uw antwoorden in het interview, eventueel zou verwijzen as informatiebron? Ik gebruik verscheidene interviews om mijn onderzoek als het ware richting te geven en verdere data te zoeken.

Ja, dat is prima. Waarvoor was het onderzoek ook alweer, een master these?

Het is een masterthese aan de UU.

Korte uitleg onderzoek: Ik analyseer hoe in Costa Rica landbezitters op het platteland gestimuleerd zijn door de overheid om hun land te herbebossen, of als er al bos op staat dit te conserveren. Bijvoorbeeld met het PES systeem, stimulatie van ecotoerisme, duurzaam gebruik van bossen, etc. Vervolgens wil ik kijken (belangrijkste deel van

onderzoek) wat de impact is van deze maatregelen en de daarmee resulterende transitie naar meer geconserveerd bos voor sustainable rural livelihoods (zowel van landeigenaren als de rest van de rural population).

Even over u: U bent consultant voor de onderwerpen 'development, particularly agriculture, farmers organizations and land governance'. U heeft gewerkt aan de Universiteit van Costa Rica als lecturer Political Geography. U gaf les over onderwerpen zoals international geopolitics, globalization and inequality; state and territory in Latin America; and the electoral geography of Costa Rica. U heeft artikelen geschreven over food security, rural (agricultural) development, agricultural cooperatives. U bent betrokken bij LANDac: the Netherlands Land Academy (land governance for equitable and sustainable development) als representative en researcher. U heeft gekeken naar land issues in Guatemala: land ownership and tenure, urban and rural land use, the (non-) governmental institutional setting.

Klopt dit allemaal?

Ja, klopt helemaal! Alleen voor ik in Guatemala woonde was ik ook al betrokken bij LANDac.

Met betrekking tot jouw expertise zijn er een aantal belangrijke aspecten die in mijn onderzoek naar voren komen waarvan ik graag wil horen wat jij ervan weet en of jij ideeën hebt over waar ik naar moet gaan kijken voor mijn onderzoek:

Het gaat dus vooral om: waar moet ik op letten om te analyseren wat de impact van dit beleid is op de levens van mensen in rural areas?

Ja.

1. Wat weet u over het algemeen van de staat van land (in)security en property rights in Costa Rica?

Nou, in mijn werk (als docent in Costa Rica) vergeleek ik de situatie van land tenure security in Costa met die van Guatemala. Ik kwam tot de conclusie dat het in Costa Rica, hoewel niet perfect, wel beter geregeld is dan in Guatemala. Er is iets meer een rechtsstaat met regelgeving waarop je je kan beroepen voor problemen rond land (in)security. Belangrijk om te noemen is dat je in Costa Rica heb je een speciale vorm van rechtspraak voor grondconflicten. Dit heet volgens mij de tribunales agrarios, als ik me niet vergis. Dat is een belangrijk instrument waardoor een zekere rechtszekerheid bestaat.

Het is echter met name de oorspronkelijke bevolking die last heeft van landconflicten en onteigeningen. Er zijn vonnissen van het internationaal hof van de rechten van de mens, waar ik toevallig zelf ook in zit, waaruit blijkt dat de Costa Ricaanse staat gronden zou moeten teruggeven aan deze inheemse volkeren. Maar daar zijn ze heel langzaam in, dat doen ze niet, en dat creëert dan weer allerlei conflicten. De inheemse bevolking wordt ongeduldig, ze bezetten het land. De boeren die inmiddels (volgens het gerechtshof illegaal) daar inmiddels zitten vinden dat weer niet leuk. Er zijn inmiddels twee inheemse bewoners doodgeschoten in de afgelopen tijd.

Het is vooral verbijsterend dat de Costa Ricaanse overheid dat soort vonnissen van het internationaal gerechtshof, niet respecteert.

2. Je verteld me interessante dingen over de inheemse bevolking: Omdat het beleid dat Costa Rica voert, bijvoorbeeld met PES, dat is erop gericht om landeigenaren te stimuleren meer bossen te creëren. Maar als inheemse volkeren bijvoorbeeld willen participeren hierin is dat best lastig als ze geen legal claims tot land hebben, of als daar conflict over is.

Precies. Terwijl zij bij uitstek op hun voorouderlijke gronden veel natuur hebben. Dat is een interessante invalshoek. Daarbij is 'green grabbing', grond die in het levensonderhoud van mensen voorzag bestemmen voor natuur) een probleem in Costa Rica. Een goed voorbeeld is de ontwikkeling van natuurpark Corcovado op het Osa-schiereiland. Het drama voor de goudzoekers die daar oorspronkelijk woonden is goed beschreven in de mooie documentaire 'Nosotros las Piedras', die ik gerecenseerd heb voor het ERLACS.

[Het gaat over lokale bevolking die in een gebied woonde en naar goud zocht dat vervolgens natuurpark is geworden, waardoor hun levensonderhoud en woonplaats verdwenen.]

3. Ik vind het een interessant voorbeeld. Als Costa Rica bijvoorbeeld beleid geeft en regulering voor het extraheren van forest resources, met het doel om het gebruik van bossen te verduurzamen, dan zijn er natuurlijk ook consequenties voor de lokale bevolking als ze niet de legale of financiële middelen hebben om in dit duurzaam gebruik en die regulering te participeren?

Absoluut. Absoluut. De bestaansgrond voor deze mensen is op deze manier weggeslagen. Door het hele project. Dat is de prijs die betaald is voor conservatie.

4. Ja en met name als dat (gebruik van bossen) duurzaam wil organiseren, dat lijkt me heel lastig. Die goudzoekers leven al hun hele leven op een traditionele manier en doen dit op de manier zoals ze dit altijd al doen.

Absoluut. Klopt ja. Dus dat zijn allemaal conflicten die er in potentie zijn in Costa Rica. Maar je hebt niet in Costa Rica die enorme tegenstelling tussen grootgrondbezitters en kleine boeren. Dat is in andere landen veel extremer. De gezinslandbouw heeft een wat stevigere plaats veroverd in de landbouw, met name in de koffietee.

5. Nog een andere vraag, over die kleinschalige landbouw vooral: Die is sterk verminderd de afgelopen jaren, vooral door het conservatie-beleid van PES onder anderen, waardoor veel boeren wat anders zijn gaan doen of in ieder geval op een deel van hun land wat anders zijn gaan doen. Wat je veel ziet is dat er bossen gecreëerd zijn door boeren waar ze dan wat geld voor krijgen en dat ze vervolgens ergens anders werk gaan zoeken. Dat kan wage labour zijn, dat kunnen tourismeprojecten zijn. Wat voor problemen voorzie jij voor zó grote verandering en zó verdwijning van de landbouw: Er is veel farm abandonment. Wat zouden de consequenties kunnen zijn voor de mensen die in zó rural area leven, vooral ook als je niet land bezit. Voor bijvoorbeeld werkgelegenheid, food security?

Ja, ja. De bestemming van veel van die mensen, zoals in veel Latijns-Amerikaanse landen, is natuurlijk de migratie naar de stad, met alle bestaansonzekerheid die dat weer met zich meebrengt, op een andere manier dan op het platte land. In steden zie je grote contrasten tussen arm en rijk, daar wonen heel veel mensen in heel precare omstandigheden in zogenaamde 'cuarterias'. Dat zijn van die huizen die onderverdeeld zijn in kleine kamertjes met houten schotjes, die je kan huren. Dat zijn echt mensonwaardige manieren van leven. En dat zijn mensen van het platte land inderdaad. Die hun geluk beproeven in de hoofdstad. En dat zijn echt geen prettige leefomstandigheden, en dat waren ook brandhaarden voor de verspreiding van het corona-virus bijvoorbeeld.

Kijk. Ik denk wel: dat mensen uit de landbouw verdwijnen, dat zou minder erg zijn... Kijk, uiteindelijk is het wel de onderdeel van elk ontwikkelingsproces, dat het aandeel van de beroepsbevolking in de landbouw steeds minder wordt. In elk land dat zich ontwikkelt zie je dit. Dat hoort er gewoon bij. En het is niet zo erg als die mensen in plaats daarvan waardig werk kunnen vinden, begrijp je? Dat is natuurlijk het grote probleem in veel landen: dat de bevolking ook niet goed genoeg georganiseerd is om daar zelf hun best voor te doen. Wat we in Nederland hebben meegemaakt: Hier is ook een grote uitstroom uit de landbouw geweest de afgelopen 100 jaar, maar heel veel van die mensen hebben zelf werk kunnen vinden in coöperaties die de boeren zelf hebben opgericht. Waardoor die mensen zelfs een stapje omhoog schoven in de hiërarchie van de beloning van het werk. Want in de verwerking van landbouwproducten en industrie eromheen verdienen je misschien wel meer dan toen ze zelf een kleine boer waren. En dat is uiteindelijk de weg die de landbouw in ontwikkelingslanden ook zal gaan, alleen met het verschil dat de boerenbeweging in veel landen, zeker ook Costa Rica, niet sterk genoeg is om zó proces van transformatie van de economie, van verbinding van beroepsbevolking en landbouw, om dat proces een beetje in eigen hand te nemen. Om te zorgen dat hun eigen achterban niet per See hoeft te migreren, door ze bevredigende alternatieven te bieden, om toch dichtbij de landbouwproductie te blijven. En dat is niet zo in Costa Rica, zó sterk is die boerenbeweging niet, die is ook heel erg verdeeld, zoals elders in Latijns America. Dus het is maar sterk de vraag wat er met al die mensen gebeurd is ja, ik denk niet dat ze allemaal goed terecht zijn gekomen, laat ik het zo zeggen.

6. Wat ik tegenkwam in mijn onderzoek: De helft van Costa Rica is inmiddels bos, en een heel groot deel hiervan wordt via het PES-systeem geconserveerd. Er zijn 18.000 families die binnen dit PES-systeem vallen, maar er zijn bijna een miljoen mensen die wonen in rural areas. De landeigenaren binnen het PES-systeem zullen misschien goed terecht gekomen zijn, maar wat is er met al die andere mensen gebeurd?: Mensen hebben misschien weinig land, of vallen niet binnen de regels of voorwaarden voor beleid. Of hebben niet de financiële middelen om in alternatieven mee te kunnen doen in alternatieven zoals bijvoorbeeld ecotoerisme.

Ja, dat inderdaad. En hadden sowieso misschien geen land: ze kunnen dan ook geen land verkopen of hiervan profiteren. Nee inderdaad, ik denk dat dat juist is en een probleem kan zijn. Plus het feit, wat ik veel heb meegekregen toen ik daar zat, dat Costa Rica zich heel veel zorgen maakt over de zelfvoorzienendheid van het land voor basisvoedsel-bestanddelen erg achteruit gaat: Vooral de rijst, die moeten ze veel meer importeren dan voorheen. Daar maakt men zich wel zorgen over ja.

7. Ik heb ook gelezen dat met name de prijzen van voedsel, door de noodzaak van het importeren, erg zijn gestegen. Ik ben ook tegengekomen dat, en dit is wel een beetje een probleem in heel Latijns Amerika, onder andere door Structural Adjustment en dergelijke, dat de landbouw veel meer export-georiënteerd is geworden.

Ja, dat klopt.

8. Waardoor eigenlijk in het eigen binnenland minder beschikbaar is voor de eigen voedselvoorziening, en de prijzen meer omhoog zijn gegaan?

Dat klopt. En kijk dat is natuurlijk ook allemaal een kwestie van verdeling. Want als die export-landbouw op z'n manier georganiseerd wordt dat alle mensen daar de vruchten van plukken dan is het nog wat anders weetjewel, dan kunnen ze daar zelf ook weer voedsel van kopen. En wat ze verder nodig hebben. Maar dat is vaak niet zo. Het zijn vaak met die export-landbouw, hoe zeg je dat met een mooi woord, extractivistisch he. Dat zie je vaker, in de mijnbouw maar zeker ook in grootschalige landbouw, dat zonder al te veel aandacht voor de toekomst van die grond en van de mensen die er wonen er zo snel mogelijk heel veel producten uit gehaald worden. In Costa Rica heb je van oudsher bananen, en ook ananas is z'n exportproduct, die je in gigantische rijen langs de heuvels ziet in het noorden van het land.

9. En dat zijn vaak natuurlijk grootschalige bedrijven?

Meestal wel ja. Meestal wel. En die hebben ook weinig... Bij bananen is het nog wel iets anders: Bij bananen, kijk dat is wel een arbeidsintensieve vorm van productie. Daar moet veel handmatig werk bij gebeuren. Bij ananassen weet ik het eigenlijk niet zo. Ik heb nooit de indruk dat daar veel werkgelegenheid door gecreëerd wordt. Wat bij bananen dan nog wel gebeurt. Alleen wat je dan wel weer leest is dat dat ook gepaard gaat met bijna feodale werkomstandigheden. En dat de mensen die daar werken weinig te vertellen hebben en als ze protesteren zegt de baas: "voor jou een ander". Dus het is allemaal. Nee het is niet het... Dat is een model dat ongelijkheid in de hand werkt ja.

Dan heb ik nog een laatste vraag, of laatste onderwerp eigenlijk: In ons mailcontact hadden we het al een beetje over de land-market, en hoe in Costa Rica de vraag en markt van land veranderd is, met name ook door het belang of de waarde van niet alleen bossen maar ook ecotoerisme. Je hebt natuurlijk kleine landowners en mensen die participeren in ecotoerisme, maar je hebt ook grotere partijen, uit de stad, maar ook bijvoorbeeld uit Amerika. Die grotere projecten hebben op het platte land in bosgebieden.

Ja.

10. Wat denk jij dat invloeden hiervan zijn op de land-market, met name de vraag en prijs van land? En hoe dit zich relateert tot land grabbing, onteigeningen, en over het algemeen de mogelijkheden van vooral arme mensen om land te bezitten?

Hmm... Nou het is wel een heel uitgebreide vraag moet ik zeggen. Maar ik denk dat veel mensen, die grond bezitten zoals boeren, toch hun grond gaan verkopen. En waarschijnlijk leidt dat tot hun eigen nadeel. Dat zien we vaak dat dat het geval is. Dat komt dan wel voort uit armoede en ongelijkheid he. Want als jij een rendabel bedrijfje hebt op de hectares die je hebt, dan is het makkelijker om weerstand te bieden aan een bod van toeristisch bedrijf, of van de overheid, of van wie dan ook. Om dat bod naast je neer te leggen. Maar uit armoede, en uit de wil om toch wat meer cash in hand te hebben, zullen toch veel mensen z'n verkoop aanvaarden. Zonder al te veel de lange termijn consequenties te overzien. Wat dat betekent voor de markt als zodanig, of dat soort ontwikkelingen ook de prijs van land omhoog brengen, dat weet ik eerlijk gezegd niet.

11. Oke. Maar het kan dus wel vooral een impact hebben op de sustainability van de levens van mensen omdat ze eigenlijk hun bezit, of hoe zal ik het zeggen, hun middelen om een leven op te bouwen eigenlijk dus verkopen en op de lange termijn zijn ze dus wat kwijt: ze hebben op korte termijn misschien wat geld maar op de lange termijn verliezen ze hun levenswijze?

Ja, precies. En dan moet je echt er vanuit gaan dat dat gebeurt uit pure nood. Want wat wel zo is, dat zie je hier in Nederland ook met de stikstofdiscussie en boeren die zich tegen uitkoopregelingen verzetten, is dat los van alle economische argumenten, boeren nou eenmaal een grote hechting hebben aan hun grond. Het is niet alleen het economische punt voor hen. Het is de plek waar hun grootouders en ouders hebben gewerkt. En dat emotionele argument zal niet voor iedereen zo sterk gelden, maar het geld ook hier, en het geld ook zeker in Costa Rica. En dat betekent dat als mensen dan toch dat land verkopen, dan is dat echt een hele stap, begrijp je? Dat is echt uit nood

geboren, anders doe je dat niet zo snel. Dit verschilt natuurlijk per land en per regio. Ik was erg getroffen toen ik een keer was in Burundi, en een vrouw verbouwde daar kool op een hectare grond. En wij vroegen haar wat ze in de grond stopte, qua fertilizers en andere kosten, en wat ze voor de producten kreeg op de markt. Dat legde ze uit, en we begrepen dat ze verliesgevend werkte. Ze kwam niet uit. Dus wij zeiden van: "waarom gaat u dan niet iets anders doen, want hiermee verliest u alleen maar geld?". Waarop ze zei: "Ja met het is mijn grond. Dit is het enige wat ik echt heb." Dus uit emotionele overwegingen, maar misschien ook wel omdat het het enige bezit was wat ze had, waarvan ze kon zeggen dat is van mij. Dat is ook een belangrijke culturele overweging waarom boeren liever niet verkopen. Er is, ook in Costa Rica, dus een soort overweging tussen economische nood en deze emotionele en culturele overwegingen. Dat zijn de afwegingen, die ook per boer en per regio verschillen, of per cultuur. Want in Costa Rica zijn ook nog allemaal deelculturen.

12. Ik ben ook tegengekomen, op iets grotere schaal, dat traditionele leefgewoontes en hele communities, en ook de cultuur in veel rural areas, op een bepaalde manier ook verdwijnt. Doordat er zoveel veranderingen zijn doorgevoerd. Dat kan zijn het verkopen van land, dat kan zijn, wat je al eerder aangaf, migratie, van mensen naar de stad. Maar ook migratie naar het platteland van misschien mensen die ook willen participeren in ecotoerisme, grotere bedrijven...

Ja. Dat klopt ook, dat gebeurt ook veel.

13. Dus ik kan me voorstellen als je een klein dorpje hebt ergens in een bos, en daar komt een ecotoerisme bedrijfje, en er komen mensen van buiten, en er gaan mensen die er al wonen migreren naar de stad of elders, en de oude leefgewoonten mogen niet meer want er is nieuwe regulatie van gebruik van bossen en dergelijke. Dat zou hele community dan in ieder geval verandert, en misschien wel (deels) verdwijnt.

Ja, dat kan gebeuren ja. En daar zijn de mensen dan ook, daar zijn dan dubbele gevoelens bij. Aan de ene kant kan de komst van een bedrijf betekenen dat er meer werk is, dat ze dingen of diensten kunnen gaan verkopen. Aan de andere kant kan het ook ten koste gaan van de samenhang die ze hadden in de gemeenschap.

Interview 2: Henry Ramirez Molina

This interview was done in written form on April the 19th, 2023. The answers were given in Spanish, and translated to English using Google Translate. Henry Ramirez Molina is head of SINAC's department of conservation and sustainable use of biodiversity and ecosystems services.

First, I would like to ask your permission to use your responses in my research. Due to your role in SINAC, I would like to use the responses as a source of information. The purpose of this is to analyze how Costa Rica has encouraged landowners to conserve forests and what is the impact on the livelihoods of the rural population.

My questions to you are the following:

1. Could you explain to me what your specific role is in SINAC?

My name is Henry Ramírez, I am the head of the department of conservation and sustainable use of biodiversity and ecosystem services. It is the technical instance at the level of the Executive Secretariat of SINAC, where support is given to the strategic and operational management of conservation areas. So, in terms of preparing technical standards, legal standards, monitoring projects, etc., it is the way in which we influence forestry within SINAC.

2. SINAC provides support to landowners so that they can participate in conservation and create management plans for the sustainable use of forests. What types of support does SINAC provide to encourage these owners to participate in conservation?

The participation of the landowners in different conservation initiatives, is at different levels. We, as SINAC, operate from the local level, regional level and national level. Through governance mechanisms at the local level, for example, there are local forestry committees. At the regional level there are the regional environmental councils and at the country level there is the National Council of Conservation Areas. These are 3 instances in which land owners can participate. Also through the management of the regional offices, since SINAC provides support and does promotion work. Perhaps not as marked, but some accompanying work is done so that these landowners can participate in conservation projects.

On the subject of forest management, we elaborate the management standards. But the forest owners, for example, have the obligation to hire a forest regent, so that he can prepare his management plans. We are also entering into this work, in a regulatory improvement phase, where we could be supporting the entire paperwork phase for the approval of sustainable forest management plans: Platform automation, inspection, follow-up mechanisms and traceability of the wood in these lines. We can help them directly.

3. How does SINAC encourage the change to sustainable uses of forests, such as agroforestry, silvopastoralism and forest plantations?

Due to country regulations, the use of the forests cannot be changed towards systems like the ones you have identified. Or I don't know if I misunderstood the query; but the areas that are forest have to be kept in forest because there are protected by us. Votes of the constitutional chamber of the country and our legislation does not allow the change of use.

Now, if the question is the other way around, what happens or what is done to encourage agroforestry or forest plantations to become forests? As I said, we do promotion and we have some incentives that reward these efforts. But it goes beyond the possibilities you make.

SINAC generates conservation processes, but the final decision is made by the owner of the Land. He values whether or not he participates in these conservation schemes.

4. How have the livelihoods of landowners changed after SINAC assistance and after the transition to sustainable use of forests (such as agroforestry, silvopastoralism, plantations and conservation)? How have rural areas changed?

It seems to me that the queries you make are a little biased because SINAC is an instance of technical support. Where, effectively, what is sought is that the owners of the forests can have access to better living conditions, but that they do not depend entirely on SINAC. There are other institutions that must be inserted into this process. These institutions can help, so that these small producers have a transition to sustainable use of forests, and can obtain benefits.

Interview 3: Bas Louman

This interview was done online using Microsoft Teams, on May the 3rd 2023. The answers were given in Dutch. Bas Louman has been researcher at CATIE for 20 years and advisor in conservation policymaking in Costa Rica.

Bedankt dat u met mij wil praten over mijn onderzoek. Vind u het goed als ik het gesprek opneem zodat ik het later nog kan terugluisteren? En vind u het goed als ik in mijn onderzoek naar uw antwoorden in het interview, eventueel zou verwijzen als informatiebron? Ik gebruik verscheidene interviews om mijn onderzoek als het ware richting te geven en verdere data te zoeken.

Dat is prima. Maar ik wil wel graag controleren wat je hebt geschreven. Dus als je dat naar mij toestuurt eerst dan is dat goed.

Korte uitleg onderzoek: Ik analyseer hoe in Costa Rica landbezitters op het platteland gestimuleerd zijn door de overheid om hun land te herbebossen, of als er al bos op staat dit te conserveren. Bijvoorbeeld met het PES systeem, stimulatie van ecotoerisme, duurzaam gebruik van bossen, etc. Vervolgens wil ik kijken (belangrijkste deel van onderzoek) wat de impact is van deze maatregelen en de daarmee resulterende transitie naar meer geconserveerd bos voor sustainable rural livelihoods (zowel van landeigenaren als de rest van de rural population).

Over CATIE en u: CATIE is een internationaal instituut voor ontwikkeling in de landbouw en bescherming van bossen. Ze promoten onderzoek en training voor tropische duurzame landbouw en agroforestry, en hebben veel invloed of (conservatie) leiderschap en beleid in Costa Rica.

1. U heeft 20 jaar voor CATIE gewerkt als bosbouwer: kunt u vertellen wat u daar precies deed?

Ja, natuurlijk. Ik heb voor CATIE gewerkt voornamelijk in het onderwijs, advies en onderzoek. Die drie dingen. We zaten dicht bij de beleidsmakers en deden mee aan consultaties. En we hadden ook met onze studenten veel contact binnen de bosbouw, met studenten die onderzoek deden hierin, ook voor stakeholders. De onderwerpen waar ik mee bezig was waren alles wat te maken had met beheer van natuurlijk bos, voor hout en niet hout producten. Dan kijk je naar ecologie van bossen, naar de impact van houtextractie, en van andere producten. Waar ligt de bedreiging voor ontbossing? We keken ook naar de economie van de branche, op nationaal niveau, bedrijfsniveau en het niveau van communities. We keken ook naar community forestry, sociale gevolgen van bosbouw op communities, zowel voor houtproductie als niet houtproducten. Onze bevindingen over community forestry en de sociale gevolgen daarvan op communities waren niet eenduidig: Dit hangt veel af van lokale omstandigheden, en vooral van governance, af: hoe wordt met de rechten over boom, bos en land omgegaan? Wat is de achtergrond van de lokale dorpsgemeenschappen? Hoe worden ze behandeld in de markt? Dit is eigenlijk een heel interview apart.

2. En u vertelde dat u heeft deelgenomen aan beleidsbepalende bijeenkomsten: kunt u daar meer over vertellen? Wat voor soort beleid ging het over?

Er zijn verschillende geweest. Een aantal gingen over REDD+: dat ze een REDD+ strategie aan het uitvoeren waren: Wat voor soort dingen moet je dan op letten. Ook hebben we studies gedaan naar de impact van beleid: Met de uitvoerende autoriteiten hebben we het daarover gehad. Ons onderzoek heeft ook invloed gehad op bepaalde details van het beleid: de regels van hoe het uitgevoerd zou kunnen worden. We kunnen zien dat dat over de tijd toch wel wat invloed heeft gehad.

3. Ik wil het eerst met je hebben over 'de manieren waarop Costa Rica landeigenaren, veelal boeren, heeft gestimuleerd om duurzamer bossen te gebruiken. Dit soort duurzaam landgebruik kan zijn herbebossing, duurzame forest plantations, agroforestry, silvopasture. Veel boeren hebben bijvoorbeeld een stuk bos op hun land dat ze conserveren (ook naast traditionele landbouw). Kun je mij in het kort vertellen hoe deze vormen van duurzaam gebruik van bossen zich hebben ontwikkeld in Costa Rica de laatste 20 jaar?

Nou het begon eerder dan dat. Eigenlijk moet je helemaal terug naar de economische ontwikkeling van Costa Rica: In tegenstelling tot veel omliggende landen, zeker in Zuid Amerika, heeft Costa Rica eigenlijk nooit groot grondbezit gekend. Dus die grote veeteelt bedrijven, dat is daar nooit geweest. Eigenlijk alleen voor bananen zijn er wat grote bedrijven geweest. Maar je hebt eigenlijk nooit echt over groot grondbezit kunnen praten. En dat heeft een grote invloed gehad erop. De landbouweconomie was vooral opgebouwd rond koffie: dat waren vooral kleine plantages, familiebedrijven. En dat zie je terug in de manier waarop beslissingen genomen worden.

In 1948 was er een civil war, daarna is het leger afgeschafte: dat geld is gebruikt voor sociale voorzieningen, gezondheid, onderwijs, elektriciteit. Dat speelt op de achtergrond mee. Dat heeft het makkelijker gemaakt om beslissingen te nemen: je hebt een beter opgeleide bevolking dan in buurlanden. Dat heeft meegespeeld. Tussen 1940-1980 was er enorme ontbossing, vooral in de laaglanden. In de jaren 80, vooral in het noordwesten, heeft dat geleid tot een sterke economische en ecologische crisis: overstromingen, droogte. En tegelijkertijd ging de vleesprijs omlaag, dus de boeren konden het niet meer uithouden. En toen zijn ze gaan kijken naar de oorzaken daarvan: een van die oorzaken was ontbossing. Dat zorgde dat het land minder draagkracht had.

En toen zijn de in de jaren 80 al begonnen met wetten en beleid om naar restoratie toe te komen. Dat was toen nog een beetje weinig doordacht: vooral plantages, vooral exoten werden gepland. Er werd geen aandacht besteed aan wat er daarna met die plantages gebeurde. Dus het grootste gedeelte van die plantages zijn ook weer verdwenen, zonder dat er iets mee gebeurd is. Maar tegelijkertijd zijn er ook groepen ontstaan, zoals NGOs, die ook de technische assistentie gingen verlenen aan de boeren. En dus agroforestry gingen doen. Proberen om de boeren te helpen om de subsidies op te pakken die beschikbaar waren voor het planten van bomen, en proberen dat ook op een betere manier te doen. Die samenwerking van subsidies die beschikbaar waren, redelijk goed onderwijs, en NGO's die actief waren om dat allemaal samen te brengen en te doen: dat heeft er toe geleid dat in bepaalde gebieden van Costa Rica flink vooruitgang is geboekt in herbebossing. Dat was dat met plantages maar ook met natuurlijke gebieden. Later is dat als voorbeeld genomen van oke, als je dat zo kan doen, dan kunnen we dat ook in andere gebieden doen. Toen is natuurlijk in '96 een nieuwe wet aangenomen met PES, en waar ook verboden kwamen voor ontbossing. Dat is ook heel belangrijk geweest. Die wet is ook gekomen in samenspraak: ook met wat toen ook de bosbedrijven waren.

4. Welke vormen van duurzaam bosgebruik zie jij als meest belangrijk om zowel bescherming te bieden aan bossen als rural development en sustainable livelihoods te creëren?

Ja ik denk dat je dan in de eerste instantie moet kijken naar waarom mensen bossen, of bomen, zouden willen hebben. Ik zou zeggen dat als je conservatie wil combineren met landbouwproductie met je naar agroforestry kijken. En dat

moet je dan binnen een landgebruiksplan doen. En dat is ook gebeurd: Je hebt biologische corridors in Costa Rica, waar niet alleen maar natuurlijke vegetatie staat, maar er zijn ook koffieproductie met bomen. Dat gaat om flexibiliteit over wat zon corridor is. Er moet een inkomen van komen, dus biologische corridors zijn een goeie optie voor hun. Maar eigenlijk moet je beginnen met land use planning: wat is er mogelijk binnen een gebied, en waar zien de boeren zelf heil in? Dat kun je ook zien in Costa Rica: er zijn dorpsgemeenschappen die zich hebben geconcentreerd op bepaalde vormen van landbouw, zoals wortelgewassen die kunnen groeien in de schaduw: Dat kun je combineren met stukken bos, of met agroforestry met bomen tussen de gewassen. Maar als je echt kijkt naar biodiversiteit, ja dan moet het bos worden: dan moet je je meer richten op de niet houtproducten van het bos. Als je ook aan ontwikkeling wil bijdragen. Of aan toerisme, maar daar moet je in Costa Rica heel voorzichtig mee zijn want dat wordt al gauw te intensief. Of je gaat in gebieden zitten waar toerisme eigenlijk niet loont: er zijn zoveel plaatsen in Costa Rica waar je makkelijk naar toe kunt. Dus als je verder weg gaat zitten dan moet je echt iets leuks te bieden hebben om toeristen aan te trekken. Maar dan moet je je inderdaad op niet hout-bosproducten richten of toerisme.

5. Ik heb gelezen dat PES contracten bijna alleen gelden voor conservatie. En er maar weinig contracten zijn voor agroforestry bijvoorbeeld. PES inkomsten, vooral voor conservatie-contracten, zijn niet heel hoog: Zeker voor boeren die afhankelijk zijn van landbouw voor inkomen: Ik kan me voorstellen dat andere contracten (zoals voor agroforestry) meer oplossingen bieden omdat ze buiten het contract zelf (PES) inkomen geven, omdat producten verkocht kunnen worden. Denkt u dat instanties, FONAFIFO in dit geval natuurlijk, te weinig contracten geven voor manieren voor duurzaam bosgebruik die wat meer inkomen geven, zoals agroforestry? Of denkt u dat dit juist weer resulteert in minder biodiversiteit omdat dit toch weer gebruik is van bos?

Je moet ook kijken naar 'wat ga je doen met het PES systeem', wat is het doel? Een van de problemen waar ze tegenaan gelopen zijn was dat ze op een gegeven moment te veel doelstellingen hadden: Inclusiviteit, biodiversiteit, livelihoods. Daar kwam uiteindelijk uit dat dat allemaal te verwaterend werkt: dat kun je niet allemaal tegelijkertijd doen. Dus ze hebben op verschillende momenten hun criteria aangepast: wie wel en niet mee kunnen doen. Het hangt ook van de regering van dat moment af.

Wat dat betreft: Agroforestry bestaat al veel langer in Costa Rica, onder andere met de koffieproductie. Het is maar de vraag of PES daar echt invloed op gehad heeft: de subsidies per boom zijn ook uiteindelijk maar laag. En je moet best een hoop doen voor zon contract. De mensen die iets in agroforestry zien, die doen het waarschijnlijk zonder PES ook nog wel. En er zijn veel organisaties die het ook promoten: er wordt steeds meer onderzoek naar gedaan. We hebben wel studenten gehad van andere landen in Zuid-Amerika, die namen we dan op excursie: Dan vroegen ze: 'waar zijn alle arme boeren'? Ja die heb je niet zo veel in Costa Rica. Tenminste, die zijn er natuurlijk wel maar relatief gezien minder dan in omliggende landen. Daarnaast: over het algemeen zijn de armere households niet boeren, of mensen met een boerenbedrijf, maar mensen zonder landeigendom. Een boerderij bezitten betekend in ieder geval wat meer kans op inkomen in vergelijking met andere rurale beroepen. Dit is ook zo in omliggende landen.

Dus een PES-subsidie is niet heel waardevol voor veel boeren. En je kunt ook niet verwachten van de overheid dat ze nog meer geld ervoor geven. Dus daar heeft het wel iets mee te maken. Ik zou niet zeggen dat de contracten gewoon niet zo effectief zijn.

6. U stelt dat er andere manieren zijn waarop duurzaam gebruik van bos wordt gestimuleerd. Bijvoorbeeld door allerlei organisaties. Wat is de rol van CATIE in het stimuleren van duurzaam bosgebruik? Ik las bijvoorbeeld op hun website dat ze training en educatie geven aan landeigenaren.

Ja, dat gebeurd inderdaad ook. Met onderzoek hebben we aangetoond dat het de moeite waard is, en dat het verbeterd kan worden. Het leuke van CATIE is dat ze continu onderzoek aan het doen zijn en dat dat dan ook meteen in onderwijs opgenomen wordt: ze geven cursussen voor NGO's en boeren en dorpsgemeenschappen. Door het contact met die boeren leren ze ook wat er speelt. Maar wat ook meespeelt in Costa Rica, ik heb daar zelf ook onderzoek naar gedaan, is het vraagstuk: waarom hebben sommige boeren wel bomen op hun land en anderen niet? Boeren willen graag extra inkomen hebben, dat is het uiteindelijke doel. Maar er zijn ook veel andere factoren die bepalen of ze bomen planten. Een daarvan is bijvoorbeeld cultuur, of waarden: Er was een man die had meer land die hij zelf kon bewerken voor koffie. De vertelde dat hij een stuk reserve land had: Daar had hij bos staan. En hij vond het heerlijk om, als hij overstuur was, daar naartoe te gaan om tot rust te komen. Zulke factoren, heel eenvoudig, tellen mee. Dat wordt ook besproken in de maatschappij. Ideeën en denken van boeren over natuur en bomen zijn heel belangrijk: veel mensen vinden bescherming gewoon belangrijk. Met silvopasture heeft CATIE ook bijvoorbeeld kunnen aantonen dat bomen op land schaduw geven die goed zijn voor koeien, waardoor ze beter eten en groeien. Dat soort informatie wordt besproken door boeren en beïnvloed hun keuzes. Dit is afhankelijk van eigenwaarden van

de boeren en wat zijn/haar economische activiteiten zijn. Dat moet je goed herkennen als je effectief bomen wil promoten in het landschap. Er zijn organisaties die dat ook in de gaten houden en daar mee bezig zijn.

7. Wat u zegt: het gaat niet alleen om subsidies, maar ook om het culturele of het gedachtegoed van mensen. Is het dan ook heel belangrijk dat mensen, niet per se financiële maar ook andere middelen hebben om dit soort dingen te doen. Bijvoorbeeld kennis, knowhow, technische hulp, de juiste materialen die ze nodig hebben. En ook administratieve hulp om te kunnen participeren in dit soort regelgeving.

Dat is precies. We hebben verschillende studies gedaan: Een onderzoek keek naar het effect van certificatie en PES op bosbeheer. Daar kwam uit dat de combinatie van financiële stimulans samen met de aanwezigheid van een NGO die daarmee bezig was, dat is heel belangrijk. Die NGO gaf technische assistentie, administratieve assistentie om PES aan te vragen, en die bemiddelde bij de verkoop van hout zodat de landeigenaren ook hout konden verkopen. Dat was heel belangrijk. De studie die ik eerder noemde die keek naar welke boeren bomen hadden op hun land en welke niet wees ook uit dat de aanwezigheid van instanties zoals NGO's heel belangrijk waren. Wat ook belangrijk was: boeren die deel uitmaakten van lokale organisaties hadden ook meer bomen op hun land. Dus sociale hulp en inbedding is ook heel belangrijk. En ook algemene ontwikkeling van een gebied bleek belangrijk, bijvoorbeeld educatie. Veel boeren vertrokken omdat ze het niet meer konden bolwerken. Dat zagen andere boeren. Veel jongeren gingen weg van hun boerderij en ouders, op zoek naar werk buiten de boerderij. Dit maakte de druk op nieuwe landbouwgrond kleiner. En de boeren die bleven die hadden communicatie met hun kinderen en kregen zo meer interesse voor het milieu, wat die kinderen door educatie meekregen. En dus niet alleen maar het economische. Dus algemene ontwikkeling is ook heel belangrijk.

8. Denkt u dat landeigenaren genoeg support hebben om over te stappen op het duurzaam gebruik van bossen. Wat denkt u dat op dit moment de grootste barrières of problemen zijn, in capaciteiten van mensen?

Ik denk dat wat kwantiteit betreft er genoeg hulp is, maar de kwaliteit is soms niet genoeg. Bijvoorbeeld als je bos wil beheren, voor gebruik van natuurlijk bos, dan zijn er administratieve barrières. Aan de ene kant wat je moet doen om aanvraag te doen, maar ook om, als je dat dan doet, dat er een zekere resistentie is binnen de bosbouwadministratie om dat goed te keuren. Zeker als je hout wil produceren. Daarvan vinden ze vaak dat het niet klopt binnen hun beleid van milieubescherming. Terwijl er in Costa Rica toch heel veel ervaring is om dat op een goeie manier te doen, dus dat zou wel moeten kunnen. Daar zit een barrière.

Over het algemeen is het administratieve proces van landeigendom ook nog altijd een barrière. Ook al is er in Costa Rica heel veel gedaan op het gebied van het kadaster, is er nog steeds iets van 20 of 30 procent van de boeren waarbij hun landsgrenzen niet duidelijk zijn.

9. Want voor bijvoorbeeld het PES systeem moet je aangeven dat je het land legaal bezit?

Ja, precies. Verder wat ecotoerisme betreft is er eigenlijk een te grote hype, enthousiasme, en te weinig echte kennis. Van wat zou je moeten doen, hoe doe je dat, hoe trek je mensen aan en hoe houd je ze ook. Er zijn veel te veel initiatieven. Maar er zijn eigenlijk niet zo veel initiatieven die ook echt werken.

10. Ik kom ook veel tegen dat er eigenlijk een soort sprake is van een goudkoorts, dat er een ecotoerisme boom is waar iedereen in wil stappen. Veel landeigenaren en boeren ook. Die dan bijvoorbeeld hun land verkopen, of zelfs gaan migreren, en zich helemaal inzetten voor ecotoerisme. En vervolgens niet de resultaten daarin boeken, ook omdat er veel competitie is, die ze willen. En vervolgens met een schuld zitten en niet meer eigendom bezitten en dergelijke, en daardoor in de problemen komen. Dus dat het ook een vorm is eigenlijk van onzeker inkomen.

Ja. Ja. Ja, maar dat komt eigenlijk ook omdat ze niet echt goede strategieën hebben. En geen goede begeleiding hebben daarvoor.

11. Het lijkt me ook wel lastig, als je lang op een traditionele manier geleefd hebt, als individu of als community of als familie. En dat moet je toch, ook deels door beleid of veranderingen in de economie, je aan gaan passen.

Ja, dat is het ook. Dat is een groot probleem. Maar dat zit hem ook in het feit dat de traditionele landbouw niet zo veel meer opbrengt. Ik heb stukken land gezien waar de traditionele landbouw gewoon het land uitput. Dan gaan de opbrengsten omlaag, het kan ook zijn dat de markt niet meer zo goed werkt. Als boer moet je eigenlijk altijd kunnen veranderen. Als je dat niet kunt, dan kom je in de problemen. Daar kun je als overheid natuurlijk wel iets aan doen.

Maar als er inderdaad heel veel reclame gemaakt wordt voor ecotoerisme, heel veel organisaties daarmee bezig zijn, dan krijg je toch altijd dat de boeren daar ook op springen. Zonder te weten ook waar ze mee bezig zijn.

12. Ik wil het hebben over hoe dit soort duurzamere vormen van landgebruik impact hebben gehad op landeigenaren, maar ook andere mensen in Costa Rica. Ik wil vooral ook kritisch kijken naar, en dus vooral ook letten op de problemen die er zijn en barrières die er zijn voor de rurale bevolking om hun manieren van leven aan te passen aan die nieuwe werkelijkheid. En bijvoorbeeld ook mee te doen aan conservatie. In het algemeen, hoe is rural costa rica veranderd door het duurzaam gebruik van bossen? Welke ontwikkelingen hebben regio's doorgemaakt?

Dat hangt natuurlijk van de regio af ook. Ik heb zelf naar drie regio's gekeken: Eentje is een wat ouder landbouwgebied dat wat hoger ligt. Daar wordt vooral tuinbouw gedaan. Daar zie je dat er weinig herbebossing gebeurt, de tuinbouw is gewoon gesetteld. En dat gaat goed over het algemeen. Er worden wel te veel chemicaliën gebruikt. Een ander gebied was het gebied dat in de jaren 80 zo veel bos is kwijtgeraakt. Dat is helemaal veranderd: Het was 10% bos toen, en nu is het 40 of 50% bos. De mensen zijn er heel bewust met de landbouw bezig. Er is nog wel veeteelt maar veel minder, en het wordt op een andere manier gedaan, zoals silvopasture. Mensen zoeken naar alternatieven. Sommige mensen planten bomen aan voor houtproductie en zaadproductie. Er is ook wat industrie ontstaan gebaseerd op die boomplantages. Het is een heel ander landschap geworden, als ecosysteem ook. Mensen zijn bewuster geworden. Er is meer organisatie en samenwerking om dit te realiseren. Het gebied in het noorden, daar wordt wat meer individueel gewerkt. PES is daar wel belangrijk. Het is daar wat opportunistischer: mensen switchen veel van landbouw producten en manieren, om te kijken wat wel kan en wat niet. Dus daar zie je een combinatie van verdere ontbossing, maar tegelijkertijd ook weer restauratie van bossen. Er zijn een hele hoop initiatieven gaande tegelijkertijd, een landschap in beweging.

13. Het CATIE promoot, dat las ik op hun website onder andere, een weg richting inclusive green development. Waarbij bosgebieden beschermd worden, maar ook gebruikt worden voor development waar iedereen bij betrokken moet zijn. Hoe draagt de transitie naar duurzamere landbouw en bosgebruik hieraan bij tot zoverre? Wat is er veranderd op het gebied van bijvoorbeeld werkgelegenheid? Wat voor nieuwe banen zijn er?

De inclusive green growth: waar CATIE bijvoorbeeld nu mee bezig is is het beschikbaar maken van financiering van kleine boeren om die transitie te doen. Dat is ook wel heel belangrijk voor boeren, en om duurzamer gebruik te krijgen van bossen.

Wat betreft de werkgelegenheid: In dat gebied dat ik heb onderzocht in het noorden zijn industrieën opgezet, zijn kwekerijen opgezet. Dus er zijn alternatieve bronnen van inkomsten, maar er is niet per See meer of minder werk. Het is gewoon ander werk.

14. Onderzoeken wijzen erop dat door allerlei factoren (beleid, markt etc.) de landbouw is verminderd: En dat veel boerderijen leeg staan. Denkt u dat de werkgelegenheid die daardoor is verminderd goed is opgevangen door nieuwe manieren van leven zoals door middel van ecotoerisme of duurzaam gebruik van land?

Ja ik denk dat er meer dingen meespelen daar. Boerderijen staan niet altijd per See leeg omdat het niet meer ging, maar ook omdat veel mensen niet meer willen. Of bijvoorbeeld omdat de kinderen niet verder wilden en dat de ouderen niet meer kunnen. En dan zie je toch een trek naar de steden toe: mensen blijven vaak niet lokaal. Dat is ook iets waar CATIE ook bezorgd om was: Ik weet niet of ze daar nu ook echt mee werken. Maar het nieuwe programma dat ze dan nu hebben voor die financiering dat is daar ook een beetje op gericht: om kleine bedrijfjes in rurale gebieden een startkapitaal te kunnen verschaffen. In de vorm van een lening dan. Dat ze andere dingen kunnen gaan doen. En dat hoeft ook niet per see iets in de bosbouw te zijn, dat kan ook duurzame landbouw zijn. En ik denk dat dat ook een heel belangrijk punt is: Je kunt niet alleen van duurzame bosbouw of duurzame bossen spreken: Je zit in een landschap, daar wonen mensen. Die hebben eten nodig, die hebben inkomen nodig. Dus je moet ook naar het landschap kijken, en het duurzaam gebruik van bossen moet daarbinnen passen. Dus ik kom dan ook terug op de lokale planning van het landgebruik: dat is heel belangrijk. En elke gemeenschap zou dat eigenlijk moeten doen, de gemeentes: die moeten een landgebruiksplanning doen, maar dat gebeurt niet in alle gemeentes of regio's op dezelfde manier.

15. Er zijn ook meer traditionele manieren van leven en werken in Costa Rica: Veel van deze manieren van leven kunnen zijn verdwenen door de transitie naar meer bos en meer regelgeving. Inheemse bevolking bijvoorbeeld gebruiken traditioneel bossen voor hun basisbehoeften zoals hout voor energie of als

constructiemateriaal. Zijn er door de regulering van bossen ook problemen gekomen voor mensen die afhankelijk zijn van zulke oude leefgewoonten en zich moeten aanpassen?

Wat goud betreft weet ik dat niet precies. Maar in de boswet staat wel heel duidelijk dat de inheemse bevolking hun land mogen gebruiken: zij mogen ook hout kappen voor hun eigen doeleinden. Waar het probleem voor hen komt is als ze dat ook commercieel wilden doen. En er zijn groepen die dit wilden, maar dat mocht dan niet. Hetzelfde gebeurt ook met koolstof: Daar is ook rekening gehouden met de behoeftes van de lokale bevolking, en de bossen die ze daarvoor moesten gebruiken. CATIE en andere instanties zijn daar wel mee bezig geweest: hoe kijken inheemse groepen aan tegen bosgebruik en bijvoorbeeld REDD+. En daar zijn dan cursussen over geweest en consultaties. Om dat met elkaar te linken. Over het algemeen, ondanks dat de inheemse bevolking ook maar een klein percentage is in Costa Rica, is er wel rekening mee gehouden. Soms met het averechtse effect dat boeren het hier niet eens mee zijn, en zich achtergesteld voelen ten opzichte van de inheemse bevolking. Dit gaat met name over de hoeveelheid land die de inheemse bevolking bezit.

16. Een ander onderwerp dat te maken heeft met het verdwijnen van landbouw: Dat noemt CATIE ook: Is het belang van food security. CATIE wil dat bereiken met agrobiodiversiteit onder andere. Ik ben in interviews tegengekomen en heb ook gelezen dat de overheid zich zorgen maakt over food security: Met name ook omdat er minder agricultureel land is, en er dus meer druk is op food security. Er is natuurlijk ook meer landbouw voor de export gekomen. Denkt u dat duurzamere vormen van landbouw en bosgebruik genoeg kunnen voorzien in de voedselbehoeften van Costa Rica?

Dat is een goede vraag. Ik werk nu bij Tropenbos International in Nederland, en wij zitten met hetzelfde vraagstuk. En wij zeggen ook: agrobiodiversiteit dat is een ondersteuning van de voedselvoorziening. Maar om ook te zeggen dat het de voedselvoorziening ook verzekerd, dat gaat een beetje te ver. Want ja ook de vraag naar voedsel veranderd ook: En eigenlijk wordt voeding steeds diverser. Er wordt meer gekeken ook naar wat je zou moeten eten. Het is niet alleen dat je genoeg te eten hebt maar het gaat ook over de kwaliteit. En natuurlijk als je kijkt naar agrobiodiversiteit dan gaat het vooral toch over lokale voedselzekerheid. En ja voor de steden wordt het dan toch moeilijker om het daarmee te verzekeren. Maar die hangen er ook niet zo vanaf: die kunnen hun voedsel van een hoop verschillende bronnen krijgen. Maar voor de lokale voedselzekerheid is agrobiodiversiteit zeker een bijdrage. En dat is ook het risico van als ze bijvoorbeeld alleen maar koffie verbouwen met een paar schaduwboompje erboven, en geen voedsel meer hebben: als de koffieprijzen omlaag gaat hebben ze ook geen geld om voedsel te kopen. Waar leef je dan van?

17. En tegelijkertijd gaan natuurlijk ook de voedselprijzen erg omhoog. Niet alleen omdat je alles moet importeren, maar ook omdat bevolking toeneemt en klimaatverandering en dergelijke.

Ja.

18. Ik las in een artikel ook dat de grote verandering in de rurale economie, onder andere ook door toerisme: Er komen nieuwe stromen van mensen en geld, niet alleen toeristen maar ook mensen van de stad of investeerders van buiten. Misschien de Verenigde Staten.

Ja, zeker.

19. Die dan in een gebied komen, om erin te investeren. Bedrijfjes beginnen. Dat geeft natuurlijk een grote druk op de lokale economie: De vraag naar allerlei dingen gaat omhoog, zoals voedsel, bouwmaterialen.

En land, dat is ook heel belangrijk.

20. En land natuurlijk. Land is ook heel erg belangrijk. Ik kan mij voorstellen dat dat ook wel weer zorgt dat veel dingen die vroeger heel beschikbaar waren voor mensen die in die gebieden woonden, dat dat nu heel beperkt is. Bijvoorbeeld land ja: Als je zelf land bezit is dat mooi, want dan wordt de prijs daarvan hoger. Maar als je geen land bezit, of misschien, wat u ook al aangaf, als je geen 'legaal' land bezit: Dan ben je daar misschien juist de dupe van want dan kun je misschien geen eigendom bemachtigen.

Ja, en ook iets wat je eerder zegt: De boerderijen die leeg staan, mensen die de landbouw achterlaten om ecotoerisme te doen. Dan is toch ook vaak de drijfveer niet om ecotoerisme te doen, maar om het land te verkopen omdat de landprijs zo hoog is. Dat mensen denken: Ik verkoop het, en dan heb ik zo veel geld dat ik er iets anders mee kan doen. En dat is heel vaak tegen gevallen. Dat heeft echt een grote impact op sommige mensen.

21. Dat is natuurlijk ook eigenlijk een soort korte termijn tegenover lange termijn winst: Korte termijn is er geld uit het verkopen van land. Maar op de lange termijn, ook kijkend naar de volgende generatie misschien, verlies je toch bezit en middelen om je leven te ondersteunen.

Ja. Het hangt er vanaf wat je met dat geld doet, en of dat lukt natuurlijk. Want op zich als je je land verkoopt, en aan de ecotoerisme gaat en dat werkt, dan zit je goed. Maar als het niet werkt, en vaak werkt het niet, dan heb je eigenlijk verloren.

22. Je vertelde net ook al over migratie naar de stad.

Ja. Dat hangt ook daarmee samen ook.

23. Ja. Want Costa Rica heeft natuurlijk heel erg geprobeerd om van bosgebieden een soort proactieve sector te maken. Waarin ook ontwikkeling ontstaat. En daarvoor is natuurlijk de hele economie aangepast: ecotoerisme en dergelijke, duurzaam gebruik van bossen. Tegelijkertijd is er een grote migratiestroom naar de stad: 30 jaar geleden woonde nog 50% van de mensen op het platte land, en nu is dat maar 20%. Denkt u dat die grote veranderingen op het platte land, en ook de strengere regels voor het gebruik van bossen, ook hebben bijgedragen aan deze migratiestroom. Ook misschien door problemen: Verlies aan werkgelegenheid bijvoorbeeld. Of denkt u dat het meer de normale gang van zaken is in zich ontwikkelende landen dat men gewoon werkt zoekt in de stad en ook werk wil in de stad. Dus de vraag of het noodzaak is of wil?

Ik denk dat het allebei is een beetje. Het is wil van veel mensen, die gaan naar de stad. Maar daardoor, net zoals in Europe gebeurd, krijg je een vergrijzing. Het is niet aantrekkelijk meer om bepaalde dienstverlening te verlenen. Het wordt gewoon moeilijker om boer te zijn ook: En Costa Rica heeft wel geprobeerd daar wat aan te doen natuurlijk. Dat is gewoon belangrijk.

Je moet ook kijken naar die data: hoe wordt rurale bevolking gedefinieerd. Want het is natuurlijk ook zo: In die rurale gebieden: daar vind ook verstedelijking plaats. Dus dat mensen eigenlijk niet eens zo ver verhuizen, maar gewoon wat dichterbij de voorzieningen gaan wonen. Maar nog wel hun boerderijtje onderhouden tegelijkertijd. Dus die cijfers weerspiegelen niet helemaal de migratie naar de grote stad. Maar wel een verstedelijking van het platte land waar kleine dorpjes grote dorpen worden.

Interview 4: Adriana Porras and anonymous colleagues

This interview was done through written questions and answers by email, on May the 6th 2023. The answers were given in Spanish, and translated using Google Translate. 3 actors from SINAC have answered here: In orange are the answers from Adriana Porras, in blue and green the answers from two anonymous colleagues of Adriana Porras. Adriana Porras is coordinator for the National Forest Inventory of Costa Rica (a department of SINAC to guide the analysis of forestry and forest resource information and evaluation for REDD+).

1. SINAC provides support to landowners so that they can participate in conservation and create management plans for the sustainable use of forests. What types of support does SINAC provide to encourage these owners to participate in conservation?

From my perspective, SINAC provides support in different ways, including through training for owners, forest regents, students, community leaders, forestry organizations, etc. It also participates by supporting the development and implementation of different types of projects, such as those financed with the First Debt for Nature Swap between Costa Rica and the United States.

It also contributes with the training and financing of equipment and risk policies for Forest Firefighters and ad honorem inspectors of natural resources.

The process of investigation and generation of knowledge is developed in different topics; restoration, biodiversity, fire management and others.

In fire management, training is provided to volunteer brigade members, officials from other institutions and interested groups from other countries, who have recognized our country as a school.

On the subject of restoration and forestry (I don't have the data), but we have contributed to the training of national students (all the country's forestry schools take their students) and international students (international courses, exchange of experiences, accompaniment), for more than 30 years, in ACG at the local level and now with the EN5R at the national level. I remember working closely with the communities of Bolaños, Cuajiniquil and Santa Cecilia, to teach them and help them establish their own native nurseries, because exotics are easier to find on the market.

Precisely, the issue that I was addressing is to make available to our country the knowledge that is being generated freshly about the cultivation of native species (I recommend browsing for a while through this ACG news section <https://www.acguanacaste.ac.cr/noticias/noticias-de-restauracion-y-silviculture>, we have made a great effort to make the information available to Costa Rica), for now there we find all the information from the first symposiums, soon we will be publishing the third).

SINAC does not program a budget for extension activities, which is a limitation to work more on issues of project development and training for conservation and sustainable management, however, thanks to international cooperation projects, NGOs, communities and academia, it is possible to carry out activities that contribute to motivating forest owners to conserve them and make sustainable use of them.

Examples:

Forest owners located in biological corridors understand the importance of this and conserve their forests and apply sustainable production measures through ecotourism.

Organizations that support the restoration of mangroves, contributing to the economy of women who are dedicated to extracting shellfish.

With these examples, SINAC acts as coordinator and technical adviser.

2. What is the role of educational, financial, technical and administrative support and how does SINAC provide it to the owners?

Educational: Training at different levels: students, forest regents, owners, indigenous peoples, etc.

Financial: with cooperation projects, non-reimbursable financing has been provided for the preparation of management plans and environmental feasibility studies for small forest owners.

Technical Advice: in the review of management plans and in the field supervision of forest harvesting operations.

It is not within the powers of SINAC to provide financial resources, at least in the forestry issue, this is a spring of FONAFIFO by law. In addition, we do not have a structured process like that of the MAG (with its extension agencies) to do so, but in many cases CA officials (subregional offices, biological corridor liaisons, environmental and biological educators, etc.) carry out communication, knowledge transfer and extension.

SINAC, through the knowledge of its officials, carries out environmental education and technical advice within the framework of its possibilities. From the administrative point of view, it acts as a coordinator to carry out activities with NGOs, academia or international cooperation and the communities or owners. I would say that we are a bridge between the stakeholders interested in carrying out conservation and sustainable management with the forest owners. We provide support when requested, because due to the difficult institutional budgetary situation, we (SINAC) cannot formulate and develop projects as important as your questions frame it.

3. How does SINAC encourage the change to sustainable uses of forests, such as agroforestry, silvopastoralism and forest plantations? How do owners learn skills and obtain tools/resources?

I believe that, with positive stimuli from environmental education and tax exemption through the Forest Regime.

It seems to me that producers learn from the training, although most of it is received by producer organizations.

I also highlight the work we do jointly with other institutions such as academia and research communities on issues of forest management, wildlife, training for tour guides, bird and bat identification marathons, restoration, and others.

It seems to me that this is promoted more by the National Forestry Office (ONF), CODEFORSA and the Chamber of Forestry, Wood and Industry, because they constantly publish training or activities with producers on social networks.

4. How have the livelihoods of landowners changed after SINAC assistance and after the transition to sustainable use of forests (such as agroforestry, silvopastoralism, plantations and conservation)? How have rural areas changed?

Although no specific studies have been carried out and there are no indicators, there are known cases where the income generated by forest management has been used to buy machinery to make work more efficient in the agricultural part of the farms, there are also known cases where University studies of the children of forest owners have been financed, in other cases families have migrated from subsistence agriculture and livestock to ecotourism ventures.

I cannot refer, since I have not worked on experiences like these. But it seems to me that the work of supervision of forest exploitation that the SINAC colleagues do, plus the advice of forestry organizations that provide support, the owners understand how forest management means good silvicultural treatment and how it represents economic gains, in addition to the fact that now the People have included tourism activities that add value.

Interview 5: Femke van Noorloos

This interview was done online using Microsoft Teams, on May the 15th 2023. The answers were given in Dutch. Femke van Noorloos is assistant professor International Development Studies at Utrecht University. She did her PhD on residential tourism and transnational property investment in Guanacaste, Costa Rica. She is also affiliated with LANDac.

Bedankt dat je met mij wil praten over mijn onderzoek. Vind je het goed als ik het gesprek opneem zodat ik het later nog kan terugluisteren? En vind je het goed als ik in mijn onderzoek naar uw antwoorden in het interview, eventueel zou verwijzen als informatiebron? Ik gebruik verscheidene interviews om mijn onderzoek als het ware richting te geven en verdere data te zoeken.

Ja hoor dat is goed.

Korte uitleg onderzoek: Ik analyseer hoe in Costa Rica landbezitters op het platteland gestimuleerd zijn door de overheid om hun land te herbebossen, of als er al bos op staat dit te conserveren. Bijvoorbeeld met het PES systeem, stimulatie van ecotoerisme, duurzaam gebruik van bossen, etc. Vervolgens wil ik kijken (belangrijkste deel van onderzoek) wat de impact is van deze maatregelen en de daarmee resulterende transitie naar meer geconserveerd bos voor sustainable rural livelihoods (zowel van landeigenaren als de rest van de rural population).

1. In je tekst (Transnational land investment in Costa Rica: tracing residential tourism and its implications for development) leg je uit dat toerisme niet direct zorgt voor grootschalige land grabbing, maar wel druk uitoefent op lokale land markten. "It endangers access to land for local and poor migrant groups, as land is increasingly becoming an object of speculation rather than production." Kun je uitleggen welke impact (eco)toerisme heeft gehad op Guanacaste, en de mensen die er leven? Wat zijn volgens jou de grootste problemen?

Het hangt er een beetje vanaf over welke vorm van toerisme we het hebben. Residentieel toerisme is niet hetzelfde als gewoon toerisme of ecotoerisme: Daar komt een hele real estate en vastgoedmarkt bovenop, wat voor juist landbezit negatiever kan uitpakken. Dus het toerisme zelf heeft ook wel veel opgeleverd qua werkgelegenheid. In Guanacaste maar ook wel op andere plaatsen in het land. In Guanacaste waren bossen lang geleden al gekapt vanwege een geschiedenis van grootschalige veeteelt. Toerisme is daar hand in hand gegaan met een beetje herbebossing. En landbezit was daar ook al erg ongelijk verdeeld in veel gebieden, dat heeft het toerisme niet veroorzaakt. Als het toerisme geleid wordt door de bevolking zelf en niet te veel druk zet op hulpbronnen dan kan het heel positief uitwerken. Maar in Guanacaste heb je ook wel veel van dat massale toerisme met golfbanen die bijvoorbeeld superveel water verbruiken. Dus water is eigenlijk een van de grootste problemen daar wat betreft ook het toerisme, en dat is natuurlijk in andere gebieden in Costa Rica weer heel anders. Net als in Cor Covado in het zuiden, Golf Azur, daar heb je nog veel meer bos en meer nationale parken. En verschillende andere issues met kleine boeren en zo. Dat ligt dus heel erg aan de regio.

2. Je zegt ook: "Als toerisme geleid wordt door de bevolking zelf". Is er een veelvoorkomend probleem dat mensen juist van buiten naar zón streek toekomen. Misschien uit de VS, maar ook rijkere mensen uit de

stad, die ecotoerisme als een opportunity zien. Die hebben natuurlijk land nodig en plek om dat soort dingen te doen, en dat kan dan misschien ook wel weer druk uitoefenen?

Ja, zeker ja. Veel van de succesvolle ecotoerisme ondernemers zijn ook of mensen uit San Jose, of mensen uit de centrale vallei of uit de VS of uit het buitenland inderdaad. Of het zijn wel lokale mensen maar die dan net de juiste connecties hebben met mensen van buitenaf. Dus die echte hulpbronnen hebben en de juiste kennis van wat toerist wil zegmaar. Dus dan krijg je wel een soort ongelijkheid met de lokale mensen die dat niet hebben en die niet die mogelijkheden hebben. Dat klopt wel ja.

3. Je stelt dat land een object van speculatie is geworden, in plaats van productie: Zie je in Guanacaste duidelijk terug dat landbouw als belangrijkste manier van leven en werken is verminderd, en plaats heeft gemaakt voor nieuwe vormen van werken en leven?

Ja zeker voor de smallholder landbouw. Maar dat komt niet door het toerisme, dat was eerder al in de jaren 80. Dat heb ik beschreven in mijn onderzoek, ook op basis van het werk van Mark Edelman die die historie van Costa Rica helemaal heeft beschreven. Dus dat is al eerder gebeurd. En er zijn ook meer grootschalige landbouw, bijvoorbeeld veeteelt bedrijven daar. Maar gebieden waar je veel residentieel toerisme hebt, daar heb je wel meer druk op land. Omdat bijvoorbeeld grootschalige woonprojecten of resorts worden opgezet. Maar dat is lang niet overal in de provincie zo. Dat is echt op specifieke plekken waar die toeristen dan willen wonen. Daar heb je wel dat soort issues dat mensen uit de markt worden geprijsd bijvoorbeeld. Of dat kinderen niet meer in hetzelfde dorp kunnen wonen omdat het niet meer betaalbaar is, ja.

4. Veel landhouders, vooral boeren, hebben zich moeten aanpassen aan nieuwe (door beleid gestuurde) veranderingen. Je schrijft in dezelfde tekst: "These processes (of pressure on land markets because of tourism) take place in a broader context: the sidelining of smallholder peasant production has characterized Guanacaste since the 1980s (Edelman 2005), and the lack of viable alternatives for smallholders plays a role in current land and economic conversion". Deze kleine boeren hebben het dus moeilijk gehad, en kunnen moeilijk alternatieve vormen van werk en leven vinden: Denk je dat (eco)toerisme een bijdrage heeft geleverd voor deze smallholders om viable alternatives (livelihood strategies) te vinden? Bijvoorbeeld door toeristische activiteiten aan te bieden op hun land?

Ja het is natuurlijk een heel langdurig proces geweest, al sinds de jaren 80 al. Dus over de tijd moeten mensen zich daar wel op aanpassen inderdaad. Of moeten ze naar de stad verhuizen voor werk. Of ze moeten inderdaad hun livelihoods ter plekke diversifiëren. En dan is het natuurlijk altijd ontoereikend voor al die smallholders: sommigen kunnen zich daar niet aan aanpassen. Maar veel ook wel. Veel mensen wonen in extended families, en dan heb je wel altijd mensen binnen die families die in het toerisme werken. Of mensen die een baan hebben in het toerisme of in een ander bedrijf. Of dat ze zelf iets toeristisch kunnen gaan doen op hun land. Dus het hangt er vanaf waar ze wonen: Sommige dorpen zijn helemaal niet geschikt voor toerisme. Die liggen te ver weg en daar komt niemand. Daar kan je gewoon heel weinig. Maar op andere plekken is het juist enorm geboomed, dus daar zijn dan wel mogelijkheden om een restaurant op te zetten, tours te organiseren, allerlei soorten werkgelegenheid. Dan moet je natuurlijk wel weer kijken: wat is de kwaliteit van werkgelegenheid. En er komt vaak wel een tweedeling van diegenen die zich daar wel aan kunnen aanpassen en alle connecties of kennis hadden, of de entrepreneurship. En aan de andere kant diegenen die zich niet kunnen aanpassen. Bijvoorbeeld omdat ze niet de juiste landrechten hebben, dus eigenlijk heel weinig kunnen op hun land. Dat is natuurlijk met PES ook een probleem, dat weet je natuurlijk.

5. Je hebt het over kwaliteit van werkgelegenheid. Wat zijn dan problemen waar je aan denkt?

Seizoen gebondenheid van het toerisme natuurlijk. Al moeten we dat ook wel weer relativeren want, Costa Rica is een heel duur land voor toerisme. Tours kunnen flink in de prijs lopen en mensen kunnen ook echt veel geld verdienen daaraan, als je juist gepositioneerd bent daarin. Dus dan hoeft je helemaal geen medelijden te hebben met iemand die een half jaar lang prima verdient. Maar ja dat geld natuurlijk niet voor iedereen. Vooral in het residentieel toerisme heb je veel banen in het huishoudelijk werk, in het tuinieren bijvoorbeeld of in de bouw. En dat werk wordt vooral door Nicaraguaanse migranten gedaan, die arm zijn en niet de eisen kunnen stellen. Costa Ricanen willen vaak het werk niet doen, dat zegt al wel genoeg. Dus dat zijn wel lage kwaliteit banen maar wel mensen die ook heel erg een baan nodig hebben natuurlijk.

6. Je geeft aan dat soms werkgelegenheid onzeker is, door seizoenen. Ik kan me ook voorstellen dat bijvoorbeeld Covid een grote invloed gehad heeft voor dat soort banen.

Ja zeker wel. Overal ter wereld in de toeristische sector. Waar het om gaat is dat als je een familie hebt die veel verschillende activiteiten heeft, niet alleen toerisme, dan heb je nog niet z'n groot probleem. Maar als je afhankelijk

bent van toerisme dan wel. Maar ik moet zeggen dat ik geen onderzoek heb gedaan in de regio na of tijdens covid, dus ik kan daar niet heel veel over zeggen.

7. Je onderzoek gaat veel over residential tourism. Zijn er veel smallholders die in die sector hebben gewerkt. Niet per se als tuinman of wat dan ook, maar echt dat ze residences hebben aangeboden op hun land. Of is dat iets wat allen grote toeristische bedrijven kunnen doen? Van wege investeringen bijvoorbeeld?

Ja het zijn vooral wel de grote landowners en bedrijven die dan wel de connecties en de kennis hebben daarvoor om dat te doen. Maar er zijn ook echt wel smallholders die bijvoorbeeld kleine huisjes uitverhuren aan allerlei mensen. Zij kunnen er wel van profiteren. Maar wat je gewoon vaak ziet is dat ze hun land verkopen: wat dan een eenmalig inkomen is dat dan juist later weer voor problemen kan zorgen natuurlijk. Als ze geen land meer hebben. Maar de smallholders in toeristische gebieden, als je een beetje kan investeren, kunnen op zich wel profiteren door op kleinschalige manier wat te bouwen om uit te verhuren of dat soort dingen.

8. En als je dat dus niet kan, als je bijvoorbeeld een smallholder bent en arm bent, of in ieder geval niet de financiële middelen hebt om te investeren: Dan is verkopen van land dus vaak een optie geweest?

Ja.

9. En dat geeft, zoals je zei, het probleem van korte termijn tegenover lange termijn: Dat je even snel geld verdient, maar uiteindelijk je eigendom en land verliest. En misschien daarmee de mogelijkheden om op lange termijn dat inkomen uit te halen.

Ja, precies. Je kunt natuurlijk zeggen dat als hun kinderen in toerisme gaan werken, dan heb je geen land nodig. Maar als back-up is het soms heel belangrijk.

10. Ik heb gelezen dat een groot probleem is geweest dat veel landeigenaren hun land hebben verkocht, zijn gemigreerd en hebben van het geld geïnvesteerd in ecotoerisme bedrijfjes. Die zijn vervolgens niet succesvol geweest, omdat er bijvoorbeeld competitie is of omdat mensen niet de juiste kennis of strategieën hebben, zoals je al eerder aangaf. Er is een soort ecotoerisme boom, bijna een soort goudkoorts, waarin iedereen aan mee wil doen maar niet iedereen is daar succesvol in. En zo zijn mensen hun land/eigendom en werk kwijt geraakt en zitten ze bijvoorbeeld met schulden. Heb jij hier voorbeelden van gezien?

Ja zeker. Het is wel een rare sector op een of andere manier. Met heel veel doorloop ook. Je ziet ook als je naar dezelfde plekken terug keert na een tijd, dat sommige hotels er al na een paar jaar later niet meer zijn. Er is heel veel verandering, met businesses die failliet gaan, of dat de eigenaar dan toch iets anders gaat doen. Dus het is ook een beetje een bijzondere sector wat dat betreft. Maar dat geldt niet alleen voor lokale smallholders, dat geldt ook voor die 'gringo's', buitenlanders, die zon hotel bijvoorbeeld beginnen. En dan bijvoorbeeld alcoholist worden ofzo... Er gebeuren allerlei van die dingen in dat soort businesses.

11. Dus eigenlijk verandert het platte land dus heel snel. Er komen zo veel nieuwe veranderingen, het gaat zo snel, dat mensen zich soms kunnen aanpassen maar vaak ook niet.

Je vroeg ook in je email over de veranderingen op het platte land, in de cultuur, de leefgewoontes. Maar spelen heel veel verschillende dingen mee. Want het is niet alleen toerisme, maar ook natuurbescherming, NGO's die er zitten, de overheid, de private sector die er komt, nieuwe gewassen die opeens booming zijn, immigratie door allerlei groepen wat al langer gaande is, criminaliteit speelt ook in die gebieden. Er speelt zo veel, historisch gezien ook, in die rurale gebieden dat ze door al die invloeden altijd al veranderen eigenlijk. En over het algemeen zijn de Costa Ricanen ook wel open voor verandering, bijvoorbeeld tegenover Gringo's zijn ze best wel verwelkomend, tegenover buitenstaanders. De cultuur is al best wel veranderd, ook bijvoorbeeld door invloed van de VS: dus die uitwisseling is er al heel lang. Maar wat je wel ziet op specifieke plekken: Er waren bijvoorbeeld veel waterprotesten in Guanacaste sinds een jaar of tien, omdat er gewoon heel weinig water is en dan komt het toerisme daar nog bovenop. En zeker het residentieel toerisme, met nog meer water demand. Daar kreeg je toen wel protesten. Maar niet dat mensen tegen andere invloeden zijn: maar meer qua hulpbronnen dat ze niet willen dat dat er niet meer is.

12. Als laatste: wie zou je zeggen dat het meeste negatieve impact hebben ondervonden? Wie zijn de dupe van zo veel ontwikkeling van ecotoerisme in Costa Rica? Wie kunnen het minst goed daarin mee?

Ja je zou sowieso zeggen de smallholders die geen landrechten of duidelijke landrechten hebben die kunnen natuurlijk moeilijk van dit soort ontwikkelingen profiteren. Ik heb ook wat vissers-families gesproken waar het ook moeilijk voor was, omdat daar ook steeds meer regels voor zijn: moeilijkheden en beperkingen voor overbevissing. En die zijn

ook niet altijd op een goede plaats om zich aan te passen en in het toerisme te gaan werken. En de Nicaraguaanse migranten: op de een of andere manier profiteren ze ervan natuurlijk omdat het thuis nog erger is, maar ze worden ook wel flink uitgebuit vaak. Dus dat is ook een beetje een divers beeld.

13. En je noemde zojuist ook bijvoorbeeld alcohol en criminaliteit. Denk je dat dat soort problemen verergerd zijn door de ontwikkelingen in rural areas, en ecotoerisme?

Nou ik denk dat criminaliteit niet zo heel gerelateerd is aan toerisme. Dat ligt meer aan andere dingen: de drugshandel vanuit Zuid-Amerika die ook daarlangs komt. Daar kun je met toerisme niet zo heel veel aan doen. Je zou zelfs kunnen zeggen dat als een gebied meer bezocht wordt door toerisme en meer aandacht krijgt, dat het dan juist moeilijker is om criminele activiteiten (met drugs) te doen. Dus dat denk ik niet. Maar wel natuurlijk de hele entertainment industrie die erbij komt: alcohol, drugs, prostitutie. Dat zijn wel dingen die erbij komen kijken, dat is wel zo.

Interview 6: Koen Voorend

This interview was done online using Microsoft Teams, on May the 16th 2023. The answers were given in Dutch. Koen Voorend is researcher at the University of Costa Rica on the topics of migration, social policy, inequality, poverty and (rural) cost of living.

Bedankt dat u met mij wil praten over mijn onderzoek. Vind u het goed als ik het gesprek opneem zodat ik het later nog kan terugluisteren? En vind u het goed als ik in mijn onderzoek naar uw antwoorden in het interview, eventueel zou verwijzen als informatiebron? Ik gebruik verscheidene interviews om mijn onderzoek als het ware richting te geven en verdere data te zoeken.

Ja, dat is prima.

Korte uitleg onderzoek: Ik analyseer hoe in Costa Rica landbezitters op het platteland gestimuleerd zijn door de overheid om hun land te herbebossen, of als er al bos op staat dit te conserveren. Bijvoorbeeld met het PES systeem, stimulatie van ecotoerisme, duurzaam gebruik van bossen, etc. Vervolgens wil ik kijken (belangrijkste deel van onderzoek) wat de impact is van deze maatregelen en de daarmee resulterende transitie naar meer geconserveerd bos voor sustainable rural livelihoods (zowel van landeigenaren als de rest van de rural population).

1. Over U: U heeft een PhD in Development studies, en doet onderzoek aan de Universiteit van Costa Rica naar migratie, ongelijkheid, social policy, living wage. Kunt u hier wat meer over vertellen?

Mijn werk is vooral gefocust op migratie en sociaal beleid. Ik heb onderzoek gedaan naar de manieren waarop Nicaraguaanse migranten gebruik maken van de zorgsector. Daarnaast werk ik met de Global Living Wage Coalition en het Anchor Research Institute: Hierin kom ik meer in contact met het platte land in Costa Rica. Daarbij doen we studies van de kosten van levensonderhoud, op basis van bepaalde standaarden. Ik ben nu directeur van een onderzoeksinstituut aan de universiteit: Hier doen we onderzoek naar verschillende dingen, waaronder rurale conflicten, land grabbing, dat soort dingen. We hebben een onderzoeker die zich heeft gespecialiseerd op het onderwerp van jouw studie: Hij heet Alonso Ramirez en ik zou met hem ook gaan praten.

2. 30 jaar geleden woonde nog 50% van de mensen op het platte land, en nu is dat maar 20%. Kun je meer vertellen over rural-urban migratie in Costa Rica: Wat zijn de drijfveren? Waarom besluiten mensen naar de stad te trekken? En is dit succesvol of problematisch?

Costa Rica is in de jaren 40 een bepaalde weg ingeslagen, waarbij ze hebben besloten om veel te investeren in het sociale netwerk, onderwijs, een beetje het social state of developmental state idee. Ze hebben een bijzondere weg ingeslagen: Het is een van de weinige landen in de Global South met een vrij sterk sociaal stelsel. Daar hebben ze ook heel veel profijt van gehad. Er zijn hiervoor veel instituties hiervoor gecreëerd. State instituties die op heel veel gebieden steun boden aan de bevolking. Dat ging door tot de jaren 80, toen er een grote debt crisis was die alles een beetje op z'n kop zette. Toen is dat sociale systeem komen te vervallen door structural adjustment, neoliberal policy... Toen werd van de staat gevraagd zich terug te trekken. Dat is in Costa Rica niet hals over kop gegaan maar geleidelijk, daar zijn ze nog steeds eigenlijk mee bezig.

Tot de jaren 80 was er ook heel veel steun voor de landbouw, vooral voor kleinere boeren. De landbouw was erg versnipperd, veel meer dan het nu is. Kleine boeren hadden kleine stukjes land en kregen subsidies van de staat, en konden zodoende redelijk overleven. Dat is allemaal weggefallen in de jaren 80 en 90. En nu moeten boeren het allemaal op een andere manier doen. Je hebt daardoor eigenlijk een landbouwsector gekregen waarbij maar twee routes mogelijk waren: De ene was grote schaal productie voor de export. Er zijn maar een paar boeren die dat kunnen, want het vereist veel kapitaal. En de andere route: Costa Rica is op een gegeven moment met bepaalde stimulans gekomen om te zorgen dat boeren ook wat meer ecotoerisme en dat soort andere activiteiten konden gaan doen. En tegelijkertijd kon Costa Rica zich profileren als een 'groen land', naar buiten toe weten ze dat heel goed te verkopen. Dat is best knap hoe ze dat doen. Want als je kijkt naar bepaalde indicatoren, bijvoorbeeld de hoeveelheid pesticiden die worden gebruikt per hoofd van de bevolking, dan is dat het hoogste van de hele wereld. Dat zijn dingen, die staan in sterk contrast met het idee dat ze zich kunnen profileren als een groen land met veel ecotoerisme, renewable energy, etc. Terwijl er allemaal dingen zijn die er gebeuren die eigenlijk helemaal niet zo OK zijn.

Op een gegeven moment is er inderdaad staatssteun gekomen om te zorgen dat er ook een route is voor boeren waarin ze kunnen kiezen voor het niet kappen van bos. Op een gegeven moment was er sprake van wat ze noemden de 'McDonalds Boom', waarin er een enorme vraag was in de VS naar vlees. En toen zijn er heel veel bossen gekapt in Costa Rica om land vrij te maken voor de veeteelt. Dat hebben ze proberen terug te draaien door andere incentives voor boeren te creëren, waarmee ze bossen gaan conserveren. Daar zijn ze wel mee bezig inderdaad. Mijn collega heeft wel veel kritiek op dat model (Alonzo Ramirez): Hij beargumenteerd: Er zijn inderdaad wel maatregelen of incentives die bepaalde boeren en lokale mensen helpen om inderdaad een stap te maken. Maar het blijft heel erg een soort neoliberal beleid volgen, en er komt er prijs op het bos, op een common good. Hij maakt het in zijn lezing best problematisch: De benefits die ontstaan van dit soort activiteiten zijn niet voor iedereen toegankelijk, waardoor er ook weer nieuwe ongelijkheden ontstaan. Dat moet je aan hem allemaal verder vragen, hij is een goede bron.

3. Wat je verteld: De overheid heeft met incentives geprobeerd alternatieve manieren van leven en werk te vinden, vooral voor kleine boeren die geen (staats)steun meer krijgen zoals vroeger. Dat soort alternatieven kunnen zijn ecotoerisme, of het conserveren van bossen. Denk je dat mensen, vooral kleine boeren, die het niet lukt om in dat soort alternatieven mee te doen: Denk je dat voor hun migratie dan een veel voorkomende oplossing is. Denk je dat dat een driver van migratie zou kunnen zijn?

Ja zeker, ik denk dat, en het feit dat het 'dual model of production', dat je een deel van de producten die je verbouwt kunt verkopen op de markt maar ook een deel zelf kunt consumeren: Dat is een beetje weggefallen met de subsidies die er niet meer zijn. Daardoor is de landbouw op kleine schaal, als alleenstaande manier van werken, niet zo aantrekkelijk meer voor mensen. Omdat het gewoon niet genoeg oplevert. Het inkomen is te laag. Dus mensen hebben naar andere opties moeten kijken. Urbanisatie was al een tendens, maar is zeker versterkt door het model dat op zijn kop is gegooid. Vooral voor jongeren zijn er gewoon veel meer opportunity's in de stad, en minder in de landbouw. De landbouw is nog steeds een hele grote werkgever, maar het soort werk dat je er krijgt is meer in functie van een model waarbij er op grote schaal wordt geproduceerd voor de export. En dat maakt toch dat veel mensen naar de grotere dorpen en de steden trekken.

4. Dat is dan ook een probleem voor de voedselvoorziening? Als de landbouw produceert voor de export, en niet voor de eigen markt?

Ja zeker. Als je kijkt naar waar nu de rijst en de bonen vandaan komen: veel komt nu uit Mexico. Er wordt steeds meer geïmporteerd. Bonen is bijvoorbeeld toch het eten dat ze hier massaal consumeren. Maar het is voor boeren lastig om dat alleen maar te gaan verbouwen en daar een leven omheen te bouwen. Dus het klopt helemaal: Je ziet dat steeds meer dingen uit het buitenland komen, en ook goedkoper in het buitenland kunnen worden gehaald. De subsidies bestaan niet meer, dus er is nu keiharde concurrentie en ze kunnen Mexico moeilijk bijbenen.

5. Je hebt ook onderzoek gedaan naar living wage. Wat kun je in het algemeen vertellen over armoede in Costa Rica? Want het is natuurlijk niet het meest arme land in de regio. Ik heb in meerdere interviews gehoord dat boeren over het algemeen relatief niet arm zijn in vergelijking tot omliggende landen. Ik heb ook vernomen dat in de steden heel veel hele arme wijken zijn waar heel veel arme mensen wonen, veel mensen bijvoorbeeld die van het platte land af komen. Is er in de steden meer armoede dan op het platte land?

Nou armoede op het platte land is hoger dan in de stad, volgens de officiële cijfers. En deze armoede is vooral ook heel hardnekkig: het lukt ze niet deze cijfers naar beneden te krijgen. Het is al jaren, in de stad, ongeveer 20%. En in de rurale gebieden is het ongeveer 27%. Als je dit vergelijkt met landen als Guatemala, Honduras of Nicaragua, dan zit je hier prima. Maar het ligt er maar net aan waar je het mee vergelijkt. Wat vooral heel zorgelijk is zijn de

tendensen: als je kijkt naar de laatste 10 jaar en hoe de arbeidsmarkt informeler is geworden bijvoorbeeld. Costa Rica zit nou rond de 45% op nationaal niveau, van informeel werk. Dat zijn cijfers die op Costa Ricaans niveau echt heel hoog zijn, en het lijkt erop alsof het alleen maar erger wordt. Dat zijn zorgwekkende dingen. Waardoor je ook kunt verwachten dat poverty ook gaat volgen, en verergert.

Wat wij doen met ons werk en onderzoek naar living wages, is dat wij kritiek hebben op de poverty line. De poverty line werkt op de volgende manier: Je hebt een basispakket voedsel, dat heeft een bepaalde prijs. Dan kijk je naar de markt, wat dat ongeveer kost. En aan de hand van dat pakket heb je een bepaald inkomen dat je kan berekenen: Dat is wat een persoon zou moeten krijgen per dag. Als je daaronder zit zit je onder de extreme poverty line. Maar die poverty line, dat vermenigvuldigt je met een bepaalde factor. Die wordt bepaald met secondary data. In die factor zit housing, onderwijs, healthcare, clothing, recreation, etc. Alles zit daarin. Wat is de kritiek daarop: Ten eerste is het basispakket voor voedsel, de poverty line diet, die wordt gebruikt in veel landen zoals Costa Rica: die is niet heel goed. Het is geen goed dieet, wat betreft voedselwaarde. Wij maken een ander, beter dieet, bijvoorbeeld met minder suikers en meer proteïne, groenten en fruit. Ten tweede, als je de factor gebruikt waarmee je de extreme poverty line vermenigvuldigt, waarmee je van de extreme poverty line tot de poverty line komt, dan kijken we naar de grootste expenditure waar deze factor uit bestaat: dat is Housing. Als je dat bepaald op basis van secundaire data, dan heb je het probleem dat er niet goed wordt gekeken naar wat voor soort huizen voor betaald wordt: Hierdoor ontstaat de kans dat een bepaald bedrag bepaald wordt wat eigenlijk een hele slechte vorm van housing representeert: slechte leefomstandigheden. Wij kijken met onze eigen standaarden naar dit soort aspecten van poverty, zoals (betere) housing.

Om terug te komen op je vraag: Als je kijkt naar de poverty line: dan heb je 20% tot 27% poverty, wat inderdaad vrij laag is (relatief). Maar als je kijkt naar de living wages: Er is een best groot gat tussen de living wage in Costa Rica en de poverty line wage. Maar tegelijkertijd hebben heel veel mensen het toch wel heel lastig om goed, degelijk leven te kunnen betalen met het inkomen dat ze hebben. Dus de poverty line vertekend en laat niet alle armoede zien. Er is een gray area waarin veel mensen niet officieel arm zijn, maar het niet goed hebben. Dat is best verontrustend.

6. En komt dat ook omdat de kosten van deze levensbehoeften: voedsel, housing: Ik heb veel gelezen dat de prijzen op land en huizen bijvoorbeeld flink omhoog zijn gegaan. Onder andere door nieuwe stromen van mensen en geld naar rurale gebieden. En dat dat ook weer problemen veroorzaakt voor land eigendom.

Ja zeker. Zeker op plekken waar veel toerisme is, is er een enorme hoeveelheid mensen die met geld van buitenaf land kunnen kopen. En dan inderdaad de prijs opdrijven. Ik denk dat dat een deel van het probleem is. Een ander deel van het probleem is dat er een enorme concurrentie is met die grote schaal landbouw. En wat veel gebeurd is dat kleine boeren een deel van hun land tijdelijk verhuren aan grote bedrijven. Dan verdienen ze even snel best veel geld: Maar het land wordt dan zo intensief gebruikt over 3 of 4 jaar, dat het land daarna eigenlijk onbruikbaar is geworden. En die bedrijven gaan dan weer door naar de volgende. En de boeren worden vervolgens niet verder gecompenseerd. En wat er dan gebeurd is dat de boeren dan dat land moeten verkopen, om geld te krijgen. En daardoor verliezen mensen inderdaad hun land, voor de lange termijn. En het andere aspect dat het verhaal wel lastig maakt is dat er nogal veel belastingen zitten op allerlei (import) producten. Importbelastingen, die ene probleem vormen als je als land niet zelf heel veel dingen produceert. Omdat ze zelf niet heel veel voedsel maken voor eigen consumptie, hebben de supermarkten bijvoorbeeld ook een monopolypositie hier. Het eten is hier gewoon heel duur. Dat maakt dat het leven best duur is in Costa Rica, en armoede ontstaat.

7. In Costa Rica heb je veel grootschalige landbouw, zoals je zegt. Ananasproductie bijvoorbeeld, of productie van andere export producten: Daar zijn veel agricultural workers voor nodig. De condities waarin deze mensen werken zijn vaak heel slecht, heb ik in een ander interview vernomen. Ook veel migranten uit Nicaragua bijvoorbeeld.

Ja zeker waar. De migranten hebben een hele duidelijke functie, macro-economisch gezien, om de salarissen laag te houden. Ze zijn nodig. Dat zagen ze ook in de pandemie: De koffiesector had bijvoorbeeld 70.000 werknemers nodig, en die konden niet binnen komen omdat de grens dicht was. En toen was er een enorme lobby en werd de grens alsnog open gedaan gedurende de pandemie, omdat de sector gewoon die mensen nodig had. Maar het heeft ook het effect dat er veel werk informeel wordt aangenomen. Deze mensen vallen dan niet binnen het sociale stelsel en zijn niet beschermd met ziektekostenverzekering, dat soort dingen. Ze werken onder slechte omstandigheden. Waar tijdens de pandemie veel aandacht voor kwam is dat mensen op die grote farms en rondom die farms echt in erbarmelijke omstandigheden leven en wonen. Dat zijn echt verschrikkelijke omstandigheden. Op de landbouwsector hebben wij daarom ook veel kritiek, op de grote boeren, die het niet zo nauw nemen met de regels.

8. Dus dat is natuurlijk ook structural adjustment geweest. Dat de kleine boer vervangen is door de grote boer, en dat die veel mensen in dienst heeft en op intensieve wijze produceert waar werknemers de dupe van kunnen worden.

Ja en grote boeren en bedrijven hebben ook een hele sterke lobby. Als je kijkt naar bijvoorbeeld de bananensector: Een typerend geval was dat een oud-president direct betrokken was bij een grote bananencorporatie. Grote bananenboeren organiseerden zich samen in de vorm van een soort kartel om het zo maar te zeggen van grote producenten. Ik denk dat iets van 10% van de bananenboeren ongeveer 90% van de bananenproductie in handen heeft. En de Arias-familie bijvoorbeeld, ook een oud president, hebben bijvoorbeeld veel van de koffieproductie in handen. Je ziet hoe belangrijk die lobby is van die grote producenten: die hebben wel veel macht.

Dan heb ik wel alle vragen gesteld die ik wilde stellen. Bedankt!

Interview 7: Victor Meza-Picado

This interview was done through written questions and answers by email, on May the 23rd. The answers were given in Spanish, and translated using Google Translate. Victor Picado is a forest engineer who has been working at the National University of Costa Rica for 25 years, facilitating forest management courses and projects.

Victor Picado works for INISEFOR: “The Institute of Research and Forest Services of the National University carries out research, extension, teaching and production activities, with the purpose of generating knowledge and innovative and applied technologies, which contribute to the socio-economic and environmental development of the country, through comprehensive management of forest ecosystems, with the participation of actors from the national and international forest sector.” (INISEFOR, 2023)

Thanks again for your willingness to answer my questions. I would like to use your responses in my research so I know what to look for and potentially refer to them as a source for my research.

That is fine.

1. First of all, could you explain your profession and experience in INISEFOR?

I am a Forest Engineer, I have been working at the National University for 25 years, where I facilitated forest management courses, participated in the execution and coordination of projects.

The article you send me [this article was send personally through email: it is a study of Mr. Picado on ‘Factors that influence the behavior of the farmer for the adoption of productive systems in subsistence farms in Costa Rica’, see Romero-Mora et al., 2022] explains some interesting things about people’s motivations for starting sustainable practices. I have some questions about these sustainable practices and (forest) land use, particularly about the impact of these practices on the sustainable rural livelihoods of landowners and others in rural Costa Rica. I am more interested in the negative impacts and issues because I would like to give constructive suggestions on how things can be improved.

2. Sustainable practices, such as agroforestry, sustainable forest plantations or ecotourism activities, can potentially combine conservation and rural development: they can increase forest cover and also provide income for rural people. Do you think that in Costa Rica sustainable practices/uses of forests have contributed to rural (socioeconomic) development?

Yes, I believe so although the percentage is low. Because implementing sustainable practices are expensive, being legal in Costa Rica is very expensive, which is why people prefer illegality. Sustainable practices are not competitive in Costa Rica compared to other land uses: See <https://www.revistas.una.ac.cr/index.php/ambientales/article/view/17722>.

[Picado referred to one of his researches, in which he stated that:]

“[Introduction]: Part of the success of conservation programs is focused on the economic sustainability that they provide to the people who own the forests, within an increasingly aggressive productive landscape matrix. However,

currently the economic relationship between land use and their respective productive activities lacks empirical data to explain it. [Objective]: This study designed a model to evaluate the opportunity cost of forest management in natural forest, taking as a reference the primary productive activities that take place in its adjoining areas. [Methodology]: A data set of 24 sites with a forest management plan in natural forest, approved by the forestry authorities of the Arenal-Huetar Norte Conservation Area, Costa Rica, was used. Likewise, geographic and productive information on alternative land uses was used. [Results]: With these data, an opportunity cost map was generated, which shows a marked segregation of the forests into 2 main zones: a) zone of high opportunity cost, located to the south of the study area, with a range of \$1 000.0 to \geq \$4 000.0 ha⁻¹ year⁻¹; and b) medium zone and zone of low opportunity cost, to the center-north of the site of interest, with a range of \leq \$0 to \$1 000.0 ha⁻¹ year⁻¹. [Conclusions]: It is concluded that, currently, the ideal areas for timber harvesting are restricted to places far from the market, and characterized by their low opportunity cost.”

[The article is titled: Opportunity cost of forest management in natural forest in the Arenal-Huetar Norte Conservation Area, Costa Rica ; see Zuniga-Mendez et al., 2022].

3. What sustainable practices are the most important?

The use and right implementation of principles, criteria and indicators for sustainable forest management. See: https://www.researchgate.net/publication/319253298_Estandares_codigo_de_buenas_practicas_y_manual_de_procedimientos_administrativos_para_el_manejo_politiciclo_de_bosques_naturales_en_Costa_Rica

[Picado refers to the following document from CATIE: Here the summary of the document is given:]

“Summary: In Costa Rica, the forests that can be submitted to forest management are on privately owned land. In this context, the logic of our conduct is governed by the maximization of the income of its individual owners in common agreement in the safeguarding of ecological integrity and minimizing the impact of forest exploitation. However, the asymmetry in power, legitimacy and urgency of the third parties interested in the forest resource (Government, Environmental Groups, NGOs and Civil Society), with respect to its holders, has caused the latter to be excluded from the process of designing solutions around the problems concerning use, conservation and development of forest resources; paradoxically imposing over-regulations on forest management and an administrative ban reflected in the high costs of access to legality that affects the use of private forest resources, thus limiting sustainable productive use and its economic viability. This leads to the deforestation of those properties where the rent from the forest is less than the income from alternative agricultural uses, this even in the presence of the land use change prohibition and the Payment for Environmental Services programs. This situation will be aggravated by the pressure that the production of biofuels will exert on the availability of productive land, which will be reclaimed from the recovered and remaining forest areas.

The National Forest Sustainability Commission (CNSF), together with the Polycyclic Management Commission and the National System of Conservation Areas (SINAC), react to this panorama with the readaptation of the Sustainable Forest Management Standard following a strategy of improvement of the competitiveness of forest use with respect to alternative uses. The objective is expected to be achieved by integrating into the Standard mechanisms that provide legal certainty, fundamental element for any activity that is carried out in the long term, through the geographical and historical documentation of forestry activity. Also, by reducing the cost of transaction through the simplification of procedures and the unique presentation of requirements, valid for the different instances involved in the approval processes of management plans. All this without neglecting the health of the forest, by determining thresholds of impact of the activity, whose determination was based on scientific knowledge.”

[The document is titled: Standards, code of practices and administrative procedures manual for the polycyclic management of natural forests in Costa Rica ; see Navarro et al., 2009]

4. How are the livelihoods of landowners affected by sustainable practices in Costa Rica?

The country's forestry institutions have taken it upon themselves to establish barriers that go against the forestry business and the profits for the forestry producer.

5. Are there also negative impacts?

In the case of legal use, the reduction in income is identified, due to the costs associated with legality, in many cases the owner of the forest resource receives little from the sale of the wood.

6. What are the problems they face?

Meza (2012) mentions that "the trend towards over-regulation and restriction in the use of forest products limits the access of market niches, which is the case of unofficial measures of obstruction, excessive requirements and procedures (Vargas, 2007) developed in Costa Rica -in recent years- to obtain permits for use in natural forests. This situation has generated the idea that there is an "administrative ban" on the processing of forest management plans (Barrantes, 2009), which according to Ulate (2008) has caused the intensification of illegal logging, thereby limiting the rights of ownership and access to the resource, conditions that impair the development of optimal forest regimes. Thus, for example, when smaller volume harvests are required, the profitability of forest management is reduced (Zea, 2003), or when government agencies demand the implementation of additional safeguards such as hunting control or soil conservation, there are higher transaction costs that are assumed by the producer". Consequently, the producer perceives that the activity is unprofitable (Zúñiga, 2018).

7. Are there people who have not been included in the transition to more sustainable practices?

The small producers and producers who do not have property title.

8. Have these people been excluded due to certain barriers or lack of access to resources?

Yes, due to both barriers and lack of resources: There have been cases where producers have reforested on their land with incentives or PSA, but could not take advantage of it because they do not have a property title.

[Picado referred to a quote off one of his articles, in which he states:]

*"A new modality of the Environmental Services Program (PSA) was created in 2018 that seeks to recognize the environmental services that are generated on farms of less than 10 ha. With the intention of evaluating the effectiveness of the new modality, work was done on three pilot projects in different regions of the country. One of these has been developed by the National University in a settlement called Asarias Maria located in the Huetar Norte Region, with an average farm size of three hectares. The main purpose is to contribute to the improvement of the economy of small producers through the cultivation of superior clones of mahogany (*Swietenia macrophylla*) in agroforestry systems (SAF); supported with the PSA. It was observed that producers are willing to plant an average of 30% more trees on their farms in order to access the PSA. However, there has been a low response from the institutions in charge of certifying the requirements of the producers that are requested by FONAFIFO. The organizations do not show interest in promoting this new modality due to the low income it means for them. Requirements that are presented in the other PSA schemes that are very profitable to implement by the organizations were maintained, for this reason the new PSA scheme reduces competitiveness. Consequently, there is a great challenge for the current institutions to change their rigid structures towards more adaptive structures that can promote the implementation of the new scheme, recognizing the particularities of small producers."*

[the article is titled: Challenges of forest governance related to paying for environmental service, directed at subsistence farms in Costa Rica ; See Romero-Mora et al., 2017]

9. Who could not participate and get benefits?

Producers in the Osa Peninsula, in San Carlos, INDER producers who tried to enter the PSA and were unsuccessful.

[‘INDER producers’ are producers who work on sustainable agriculture and other practices through the Rural Development Institute of Costa Rica. This institute promotes sustainable rural development in agriculture and livestock.]

Interview 8: Alonso Ramirez

This interview was done online using Microsoft Teams, on May the 24th 2023. Alonso Ramirez is professor political economy and geopolitics at University of Costa Ric. He worked on conservation policies for a decade, especially on market-based instruments (like PES) for promoting indigenous communities in Costa Rica. He has a PhD in Development Studies and Agrarian and Environmental Studies.

Well, first of all: Thank you for wanting to talk to me about my research. Is it okay if I record this meeting so that I can get back to your answers later? So I use interviews from actors with different perspectives to guide my research and the search for data. Is it okay if in my research I refer to your answers as possible source of information?

No problem at all. Yes that is perfectly fine if you want to refer to my answers.

Let me first tell you something about my research: I analyze how in Costa Rica landowners in rural areas have been stimulated by the government to conserve and restore forests. The state has promoted this for example with the PES system, stimulation of ecotourism and regulations for sustainable use of forests. I then want to analyze, which is the central part of my study, what the impact is of these stimulation measures (and the resulting transition to more forest) for sustainable rural livelihoods. For both landowners and the rest of the rural population.

1. About you: In your email you explained you have worked on conservation policies in Costa Rica for about a decade, mostly regarding the use of market-based instruments for promoting conservation. Particularly in relation to indigenous and Afro-Caribbean communities. Can you tell me more about this work?

Correct yes. Of course. I have been working on conservation policy since my masters degree in the Netherlands at Wageningen University. I studied the interaction between conservation policies and indigenous claims to protecting and consolidating their territories in Costa Rica for my PhD. I focused on the PES system in the context of REDD+. And the another project I focused on was on a project to promote the cultivation of organic cacao in indigenous forests, as a way of making forests a little bit more diversified in terms of economic product. This was in order to make conservation more appealing for indigenous communities.

2. Okay, and was this organic agriculture or more like agroforestry?

It was a combination of both. It was organic cacao culture, but within an agroforestry project. Both are not separated, it was combined. It was growing cacao trees at the lower level of the forest, while keeping the trees that protect the higher level as forest cover.

3. My research is about sustainable rural livelihoods: The way rural inhabitants work, their livelihood strategies, and how they can maintain qualitative living conditions with these strategies. Now rural Costa Rica has changed rapidly over the past decades, which has been an intentional development plan of the state to create a, what they call, proactive forest sector in which forests are protected and sustainably used. Where landowners in the past mostly used to farm, now they often have been stimulated to find alternative more sustainable uses of their land, that help conserve forests. What, according to you, are the most important alternative forest uses to you?

Well. In my opinion tourism still remains the most successful type of sustainable use of forests that Costa Rica develops right now. It is not to say that it is extremely successful, because it is not. There are a bunch of success stories that are very famous, and well documented. But in reality it's a tough time for people to engage in this type of production. There is a very high learning curve for it. And eventual division of the actual benefits that are gained is quite uneven. When very poor farmers or peasants engage in tourism, they usually get at the bottom of the chain. Their benefits are a bit better, but not to a degree that it will get them out of their poverty for example. They will remain poor, but they will have a little bit more income. My personal experience in the alternative uses of forests that are the least useful: These are the use of forests that still deal with agricultural production or the forestry sector. If you engage in these types of sustainable forest uses, with an emphasis on actually selling cacao or actually selling food, these are the least successful. What I have seen in my experience is that these projects in Costa Rica end up being complete failures. And in my case I believe it has to do with how the commodity chain is established in Costa Rica. There are no big protections for agricultural production, especially if you are a small farmer. And you are from the start subjected to very strong interests from either the guys that transport the items to the market, the people who are gatekeepers of eventual market destinations, and the export and import, the people who are actually involved to getting the goods out of the country. Its very difficult to make it in these types of projects. Except if you are one of those success cases that are actually held up by international cooperations. Those are in my experience the only ones that actually have success: The ones that are defined by cooperation of by the ministry of agriculture. Because they are the ones that get ahead on the line. To get a cooperation in. So it is the 'development practitioner tourism', you know: People from Europe or the US who come in as international cooperations: when they get their money in to cooperate in those projects: They get to these farms that are selected as the successful cases: These farms get that money first. They are not pushed out by the projects and stuff like that. They are the ones that are successful, the other people not.

Just one disclaimer: these are the cases that I have seen with cacao production and forestry production that I have studied. Okay. I cannot talk about my experience all over the country.

4. And is this also the case with the PES-system. For example with agroforestry contracts or forest plantations?

Yes. You probably already have the data with your right. Payments of environmental services for forest plantations and agroforestry often have very few demand right. There are not that many people wanting to get in those types of contracts. And this is because these types of contracts are really a bad deal. They do not help you engage in the cost of actually getting a plantation going, the trees that you need to start for example. Payments are set up very far behind each other, so you don't see much revenue in the first 5 to 7 years of the plantation. So it's a bad deal! That's why, in my experience, although I cannot get actually registered data about this because its an illegal practice: Many of the farmers that I have interviewed who are engaging in forest plantations through PES: these farmers often end up cutting the woods a couple of years before they finalize their contract. Because there is no money, they are not seeing any revenue, and they just need to get out of the program and pay whatever they need to pay FONAFIFO in order to get the wood out. Because the program is not useful. That is why you don't see that much demand. The program, for the moment, its useful only if you are in one condition that is very important for understanding how PES works. Condition: You have a forest that is already established as a forest legally. Therefore you cannot cut it down. And in this case, yes PES works because it is a little help of some money for that part of the forest in your farm that you cannot use and cut down anymore. Outside of this condition, it does not work. It does not link up nicely with business alternatives with these people to actually engage in and get some money.

5. Is this also the reason why you see a lot of illegal logging? Because people have on the one hand an alternative, such as PES, which does not pay much. And on the other hand they have all these regulations and the deforestation ban. So they end up doing it illegally?.

Yes. However that will depend because, something that happens with illegal logging in Costa Rica is that yes there is illegal logging happening. But you never can identify where it is happening. You can see it happening around the areas where you have the expansion of agroexport commodities. Right now we are working in the North plains region, and you see a lot of illegal logging there because it is more profitable to engage in land either farming pineapples, or selling the land to people who are interested in farming pineapples. Because that is the biggest pressure to have much more economic benefits: to get inside of that type of commodity chain. In those cases yes, there is illegal logging. But in other cases there is no point in cutting down forests illegally. In Guanacaste, in Talamanca, you don't see much deforestation, because it is a very very remote place. However you have a lot of funding coming from PES to protect this forest that nobody is going to cut down actually. So there is also that problem: where do you use the PES protection policy, and where should you not use it.

6. Do you think there are any solutions or possibilities still to stimulate people to do things like agroforestry or forest plantations or conservation. Is there a solution to this problem of lack of profitability of these sustainable forest uses?

No! You can do it, it is possible. But you need to rethink two things, regarding the political economy of Costa Rica's agricultural and forest production: First, rethink the PES-system. You need to think of it not necessarily as an environmental service for forests only, but for ecosystem services in a wider range of services that you can pay for. That is the first part. And especially try to engage PES in a way that it actually becomes like this credit that actually allows you engage in productive possibilities. Actually giving credit, financial credit, to people so that they can actually develop reasonable alternatives to forest uses. That is the first part: you cannot think of PES, either in conservation, agroforestry or plantations, without thinking actually about what are the main barriers of entry for this type of productivity. You need a much more commodity chain oriented PES. To actually think about 'what do these people need to make plantations happen'. That is one part.

The other part: we need to rethink a little bit about how we make agriculture in Costa Rica. We cannot do agriculture in a country that is quite expensive regarding production costs. Without actually thinking about a little bit of protection: market protection of some types of commodities. You cannot do it. I mean, in the case of cacao: Producers were keeping one hectare of trees to keep the cacao plantation going. But when the trees were big enough for production, local prices of cacao were less than a dollar. For one kilo of cacao. I mean, what is that? One dollar for 1 kg of cacao! We did a survey of these producers, but the Ministry of Agriculture did a much bigger survey too. That survey ended up explaining that if a family was growing cacao in one hectare of land, completely devoted to cacao production, no agroforestry or anything... This farm with one hectare will yield considerably less than the minimum wage paid by whatever what activity in the country. Right? So you are pretty much condemning these people to

poverty. I mean, for them to engage and actually make just the minimum wage, no social obligations, no payment of taxes, no anything: Just to make minimum wage they needed to engage in the production of at least 5 hectares. Because there is no protection for farmers. They are pretty much at the mercy of whoever is going to pay, is going to buy their production. You need to protect them! There is no way of engaging in sustainable production or forestry commodity chain if you are not protecting the people who are actually making the first progress and profit. You have to guarantee the prices you know, just prices.

7. It's quite striking what you say I think. Because in the past the state used to subsidize farmers, right. And then eventually the state got more neoliberalism, under Structural Adjustment, and opened up markets and everything an stopped subsidizing.

Yeah. That is the one interesting thing that happens with PES. Because these payments of environmental services: it was actually a subsidy. It originated as a subsidy for the forestry sector, because this sector had a very long and difficult argument and fight with the government to actually maintain subsidies. They just only changed the ideological framing of the whole thing, saying that it was an environmental service program and not a subsidy. But it actually works as a subsidy today, that's the whole thing. It is a subsidy, they just don't want to call it that a neoliberal state.

8. There is one thing I really wanted to discuss with you: I spoke some time ago with someone from INISEFOR: (The Institute of Research and Forest Services of the National University). He was very critical about conservation policies and the forestry institutions. He says that overregulation and restrictions limit the access of people to natural resources, and that there are intentional barriers in the form of an 'administrative ban' (making application very difficult) and transaction cost. For small producers, it has become impossible to become profitable. So they will not begin with sustainable practices even if they want to, because alternative practices like normal agriculture or unsustainable logging are more profitable. What do you think about this?

I believe that there is a lot of truth in what he was saying, yes. There are quite a bit of expenses that have to be engaged with before entering one of these programs. I do not know if it effects most of these small farmers because they engage the program often through kind of like NGOs that organize these farmers in order to engage the program. And while you need to pay some type of money to these organizations as small scale farmer, they help to reduce the overall cost because they do some of the hassle of engaging in the program. There are nevertheless some limitations for small farmers, the smallest of smallest farmers, the poor farmers, to actually engage. In the cases I studied, the state needs to do more with the property rights of these people to their land. Because for example with PES you need to have not only a certificate given by the government to say that it is their land, which is already a problem if you land is set up within already established programs for already keeping land to farmers to actually exploit. For example we have still a bunch of programs for agrarian reform that are set up by the institute of national rural development (INDER). For these farmers it is kind of like a very grey space regarding what are their land rights. Because they cultivate the land, but it is still held in a way which is not necessarily private property. Its more like a 'governmented private property', which is a grey space within property rights. And for these people it would actually be very helpful to engage in the program, which they do not have the chance to now.

So that is that. There are quite a bit of expenses that you need to engage with: getting those certificates, but also the monitoring that you need to pay for people to come around and check the property. This last thing is often very questionable: There is quite a bit of discussion whether the PES is not really for farmers but more for liberal professionals who are engaging in engineering, forest engineers and stuff like that. These people are actually getting a bit chunk of the program for just looking around the forest and saying whether you are fulfilling with the obligations or not. That was a very strong point of debate with indigenous PES beneficiaries. In these cases the monitoring people were getting about 20% of the entire amount that was given for the program. And they only came once a year to do monitoring. So yes there are quite a bit of administrative hassles that complicate the program. Yet, the forestry law established some very strong incentives to get inside the PES program: the deforestation ban, that is one incentive. If you're land is half farm half forest, you cannot use that forest-half of the land. So you need to get a bit of money out of that from half your land, and that is an incentive to get into PES. Even with all the administrative hassle that is going on. So the incentive is still there.

What you notice however is that there is a lot of incentive for conservation with PES, but not so much incentive to actually engage in sustainable businesses, use of forests. But yes, I agree with these remarks you mentioned.

9. This is then, I guess, also a problem: Such incentivizing of participation in PES through a deforestation ban is good for the forest. But the local population does not really benefit from it. Because if there is a deforestation ban, and you have forest on your land, you are just participating in PES because you cannot do anything else with the land. And not necessarily because it is a good income opportunity for them. It is just very small compensation for the damage of the ban.

There is a lot of demand for conservation PES still. If there is a lot of demand, there is also benefit. People would not do it otherwise. These benefits come from the very constraints that were set up by the forestry law's incentives and bans. But also, what is going on in agriculture in Costa Rica right now? Commodity chains for small farmers are not that beneficial. Getting some money for your forest with minimal concern for maintenance, that doesn't strike as a bad deal. For many peasants in Costa Rica. There is not a massive or a great deal because it's very little money. But you are getting something out of it. Without engaging in what is a very risky place for peasant farmers. My case is not that there is no benefit at all: there is some benefit. And that is shown by the fact that there is a strong demand still for conservation contracts. It is perhaps not that beneficial for some PES users or beneficiaries who are not that poor. And who maybe think there is a chance for actually getting some money going, or there is some change to engage in some other type of sustainable production. People who have a little bit more money to spend in other types of businesses that could be more profitable if the regulations were not that tight, right. That will be my say, my perspective regarding the issue.

Because that is something we need to take into account as well: not all PES beneficiaries are poor people. I would say: a lot of participants or beneficiaries are poor people, but many are also not in that qualification. Because the very obligations that the program requires from you at the get go, entails you that you have a bit of money to pay for the requisites, to get inside the program. So PES participants are not the poorest of the poor. That is something we need to take into account. And I believe that those less poor people are the main interests, that are getting their say in these types of forestry policies. However, I have not done much research on this statement specifically, so take it with a grain of salt.

10. So about the poorest of the poor: You mention that farming is quite difficult nowadays, especially small scale farming. It is hard to make a living. For the poorest farmers: I have read a lot of articles that say that there is a lot of farm abandonment: people selling their farms, leaving, migrating to other places. Where do people that are poor farmers and that have to stop because they cannot make a living anymore. Where do they go? What are the alternatives for them?

Hmmm. Well, what I have seen... You cannot discard rural to urban migration. That is taking place. There is also migration within rural regions. That someone who lives in an area where there is agricultural export and cannot create a living there and then moves to another area with other opportunities. So rural-rural migration. Or people shift regarding productive sectors: stop doing agriculture and then engage in the services sector, or some people from your family for example. What I have seen is that in Talamanca that is pretty much what you see. So you have a farming family, with an old guy who is a farmer, 50, 60 or 70 years old, that works the land. And you have his children, and they are thinking about either getting an English education, getting to talk English, because their perspective is not staying at the farm. It is actually going outside and working as a tourist guide. And when their father dies, they give up the farm and they sell. And then they have a little bit of money and you can think about working for example in the service sector. That is pretty much what I see. So you get this interesting perspective right, regarding who it is who is engaging in this type of programs, like PES. Old people that still have the farm but are too old to work to actually shift in sectors. But if you actually talk to their kids: they are not really keen to do agriculture like their parents are. They are thinking about the new sectors of the economy, or even migrating to other places. So the demographics of the situation are really important.

11. You explained that ecotourism as a new livelihood strategy often fails, but that it is also an opportunity for many people. What do you think about the combination of farming and this opportunity of tourism in the form of agrotourism? Do you think this has a big potential? Because then people can still do farming and maintain their traditional lifestyles while also create some additional income. For example with lodges on their farm. Has this helped people in the past?

It helps, in my experience, but only because the farming part on its own wasn't good enough. This is what I have seen. When I was studying the people who did cacao, organic farming and agroforestry, what I earlier mentioned right: After the 5 years it takes the tree to grow they eventually came head to head with the cacao prices. It was very difficult to actually sell them. They were indigenous people so their farm is much more multifaceted than just growing cacao. They always have this sort of insurance, because they also grow beans, rice, livestock, corn. So they can live

of their farm. But what they started doing was getting additional activity: So they began establishing tourism as a little bit of extra income around for example tours of cacao farming. And that helped. That made the farm a little bit more productive. The farm was completely unproductive regarding coco, because there is no point in growing coco: Even if you are the most efficient producer, you are going to get a very very low price. But you can actually get a little bit out of it with tourism. And so there is an initiative to promote everybody to engage in coco-tourism. But what happens after you get 5,6,7,8, of these guys who start this type of tourism: You are selling the same stuff in the same small area. So eventually they will be competing to each other, reduce prices, which is what the hotels and the tour companies and all that want. So it is a good alternative right now. But I do not know if it is sustainable on the long term.

12. So you're saying the competition is actually making it an insecure and dangerous business for them. Participants can fail, can get into debt, they can get into a lot of trouble.

They cannot differentiate, yes exactly. Competition is difficult when you cannot differentiate you product. And that is the whole thing. So yes, it can help at this moment. But I do not see it as a long term solution that will help forever.

13. Yeah also of course tourism is very unpredictable. For example with covid there were a lot of problems of course.

When I followed up on those indigenous cacao producers I did research on after covid: It wasn't nice. You could see the their investments in tourism, for example they build a small house for tourists to stay there. They told me they had not rented the place out in two or three years. And so the room was already starting to fall apart and all that. It was very tough.

14. Just to get back to the topic of agroforestry and forest plantations. You said you don't think these practices are happening much or are contributing much to the issue or goal of gaining rural development in a sustainable forest sector. Is it not happening anywhere in Costa Rica, or you just think it is not successful?

Well the PES program has shown that it is, the way it is set up, not a successful thing for people who want to engage in forest plantations or agroforestry. Statistics show that these are the least demanded types of PES contracts. And there is a reason for that. Those contracts are not set up to actually engage in that requirements that the sector has. Furthermore, the whole forestry activity: planting trees, establishing forest plantations, or types of agroforestry, is not getting along that well in general. You can find the statistics of the [National] Forestry Office right (ONF): And they will tell you that there is a pretty much ongoing crisis for the past 20 years. You see the production of forestry getting smaller and smaller. It is very difficult for Costa Rican forestry products to compete with what you can import. They cannot compete with types of wood from Chile, or precious woods that are coming from Nicaragua, they cannot compete with those sectors. And conditions establish an obligation for farmers to actually try to produce in very small production cycles. That is another thing. There is much more incentive to produce cheap wood that you can use very cheaply, and without much treatment, then precious would. Cheap wood would actually engage you in a much more comfortable commodity chain. What you want to do is produce cheap wood for boxes for example for pineapple export. Those are the sectors. So you are producing cheap wood for cheap prices, but getting like a very small business cycle. Cause you can get those teca trees going in only 5 years, you cut it down and you sell a pineapple box to the pineapple companies. That is where you can be profitable. So there is a promise there: they are not engaging in much more useful commodity chains that are more profitable. Because they cannot compete with what is getting imported. So they need to set up in a part of the commodity chain, producing small wood that you can sell very quickly, which is very dependent on the comings and goings regarding pineapple or banana production.

That sector it's a very much 'crisis' sector. So there is an amount of crisis in the forestry sector. Not just necessarily PES: People who do not engage in PES is just a part of a bigger ongoing crises with the forestry sector in its entirety.

15. Reflecting back on this interview: Costa Rica has stimulated landowners to reforest, conserve forests, and use them more sustainably. Not always successfully as you have explained. They aimed to create a forest sector that could protect forests and create rural development and decrease poverty. Do you think Costa Rica has succeeded in this? Do you think rural development and poverty have improved in recent years?

Well. I believe that Costa Rica has succeeded in certain areas. There is this tendency regarding discussions of conservation in Costa Rica that pretty much try to remove the state. And try to focus on much more market-based initiatives. But if you get to actually engage in evaluation of the whole of Costa Rica's conservation policy sector, you see that: At its core, at its center, the most successful project that we have is that we have a very good, and still good although underfunded and undermanned and problematic, but at least a very well established system of public

protected areas. And that is the core of Costa Rica's conservation policy. That's where we have seen some really big triumphs. I believe that the PES program is interesting and has helped a lot as well, especially within those incentives that I told to you about earlier on. But there is also a potential!: The PES program has more potential but you have to rethink its objectives. It is very much focused on maintaining forest cover, a conservation policy. That is the main objective. An I believe that that is not enough: you need to engage more in poverty reduction. Or engage in social inequalities. So far the way in which they have done it is very much: It is all the same PES, but you also give a little bit more contracts to poor counties. Counties that have a low human development index. That is how they engage in poverty. But that is not enough. You need to engage in much more integral types of solutions for these farmers. Engage in PES or trying to link the PES to, for example, social safety nets and stuff like that. That is not done. So that part is a problem.

Overall, I will say that there have been attempts, and there are opportunities. Not everything has worked, but I believe that what has not worked is mainly that they have not been engaging with poverty reduction and social inequalities as a main objective. The main objective remains in other areas. So then they are pretty much engaging with sustainable development but just the environmental part of it and the economic growth part of it, but not the social development part of it. And that is what needs to change. And you could change it with the tools you already have. Those are the opportunities that the problem already give you. But then again you need to rethink it in many ways. That will be my answer to the question.

16. Okay. So you also are also thinking that poor participants or poorer people get more benefits from PES, more than fore example larger landowners?

Not only more benefits. But also get to say a little bit more about how the PES program works, how it develops and how they can engage in the program. I mean, one of the cool things that REDD+ actually gave you that eventually wasn't even incorporated: REDD+ gave you a chance, for the whole forestry sector, to actually engage in it and say what they actually needed from PES. So indigenous people make a very comprehensive proposal about what they need about PES, how it needs to work, how to engage in indigenous uses of the forest. Because this is something PES does not engage with. You had a peasant proposal as well, of actually engaging in different other types of PES contracting which would actually be helpful for producing in those farms. Which would help them produce sustainably and with profit. And even the entrepreneurs have tried to develop a different alternative. But all of these choices and opportunities of actually getting into a much more participatory way to actually stay out of the current PES problem scheme, should work for these types of different forest owners. They pretty much threw all of that in the trash. The first solution comes from making PES and these types of policies much more participatory. Actually engaging with these people and having them tell you what they actually need. What do they need to change and actually engaging in some types of changes to make it happen. If that will happen I believe that we will have a much more effective PES program and other types of conservation and stimulation policies.

Interview 9. Carlos Manuel Rodriguez

This interview was done online using Microsoft Teams, on June the 2nd 2023. The answers were given in English. Carlos Manuel Rodriquez is the former minister of the MINAE, who has finished 3 terms and has been the most influential policymaker of the PES-system, other (market-based) incentives and the general shift in conservation policy in Costa Rica. Currently, he is CEO of the world's largest environmental fund: the Global Environmental Fund (GEF). The GEF has also funded Costa Rica's conservation agenda.

Thank you so much for taking the time to answer some question for my research. Let me explain you what it is about:

It is a (master theses) research for the University of Utrecht, Netherlands. In my research I look into how in Costa Rica landowners have been stimulated by the government in multiple ways to create or preserve forests on their land. It has done so with the PES-system, but also with stimulation of sustainable forest use, like agroforestry, and promotion of ecotourism. My research aims to understand how these measures, and the forest transition that happened because if them, have changed rural Costa Rica and impacted the lives of people living there. I want to talk to you about this impact, from your perspective as former minister of Environment and Energy.

Is it okay if I record the interview so I can listen it back after? And is it okay if I refer in my research to your answers from the interview, as a source of information?

Yes of course. No problem.

You have been Minister of Environment and Energy in Costa Rica for three terms. During this period Costa Rica has realized a spectacular increase in its forest cover. One of the reasons for this is the stimulation of landowners to participate in forest conservation with market-based instruments. You have played an important role in the development of the PES-system, and other conservation policies. Many landowners have been stimulated to use their land differently and more sustainably. I want to ask some questions about these new sustainable land uses.

1. According to the UN, over 18.000 families have been supported through the PES-system. Most of the contracts have been for conservation of forest. Many farmers for example, who have had difficulty making a living in agricultural production, have participated in PES with some of their forest land to gain some income. How have the lives of landowners that have participated in conservation-contracts changed in general? Have they benefitted?

Okay. So, let me begin by putting some other elements in the mix. Because it is not just the PES-system or any positive incentives that help us do this. There is another element here which is very important, which has to do with the capacity of the soils. 50 years ago, Costa Rica thought that all soils in the country were good for agriculture and cattle ranges. Because in all of the areas of the country, there were a lot of forests and wildlife and water. So the assumption was that all land was fertile. But then, because of more research and impacts, people found that not all soils are fertile. So in the 50s and 60s, the government of Costa Rica gave land to the landless, to small farmers. They never needed a land use capacity assessment, and in many cases they gave land with forest to people for productive activities. But then, when you clear the forest, you lose productivity and fertility of the soils. There is too much rain, and it degrades the soils. And then all of a sudden you cannot live growing cacao or growing coffee. So that is another important element. Around 60 to 65 percent of soils in Costa Rica are not good for agriculture and cattle ranching. These are very fragile soils. And as soon as you take the forest out, your possibilities to create a livelihood out of that land are minimal. So that was also a driving element. So people who cut the forest, to plant coffee or put cows on their land: Ten years later many of those people were not able to sustain in their economic activity or that land and were forced to migrate to cities or wherever. So the payment for environmental services became something very attractive in those areas, because people were struggling in having an income. And most of the people who were there had a minimal income. So that element is very important. Because if the soils were good, a very different story would have happened: Because then people would keep cows and farming, which would be more profitable, instead of forest. So that element is also very important and in many cases not well understood or studied or recognized.

Then, there are other things. The PES is the second generation of forest incentives in Costa Rica. There was something before the PES which had a big influence on incentives in general: 1979 we began using incentives. Those incentives were tax breaks: so you won't pay your land taxes if you dedicate your land for forest activities. And you will be subsidized in your forest activities. And that was kind of the first generation of incentives. All of the resources came from the central government, with a high financial cost. The central government had to split their resources in many different areas and priorities. So one priority became forest conservation and restoration. But then the government was not able to maintain on that support because there were other priorities, like infrastructure, education and health. And then you had to deal with the fiscal health of the government: There were years where things were good and there were years where the things were bad and the government didn't have money. So when the government didn't have money, it had to do budget cuts: And you can imagine where those budget cuts begin: They don't cut by stopping education, they stop with incentives in the forest sector. So, we felt that the first generation of incentives was not sustainable: We came with the idea in 1996 of the PES-system, because this system does not depend on government money for the payments. The government recollects the money from the tax on fossil fuels, the water fees and other sources. So someone pays for the services they have been provided with. So that is the rationale. It is a very important element, and it is important for you to know.

Now, the other element that I wanted to share with you is that the PES-system is not the main reason why Costa Rica was able to revert the loss of forest, and restore forest. The PES-system came at the very end of the process: The main reasons are two: One is building the right institutions. We went from a forest service to a super strong ministry of environment with agencies that work at the landscape level. So that was one of the main reasons why Costa Rica was able to stimulate forestation and conservation. In many countries today the forest services are still in the ministries of agriculture, so they see the forest just as timber. As opposed to what happened in Costa Rica. The other reason has to do with the fact that Costa Rica did, and I played a role there, face out perverse incentives and subsidies

that promoted deforestation. So there were, I remember, 63 laws and policies that promoted deforestation in Costa Rica. And we changed them all! Let me give you an example: There was a tax, that was created in 1962, which was called: 'Tax on unproductive lands'. The idea was to force everybody to have your land under production. Because if you have your land under production you will fulfill the goals of the agrarian reform. The idea was simple: you chop the forest, get the land under production, you generate jobs and revenues and everyone is happy, the economy grows. So if you had forest and you don't cut it, you had to pay a tax. So people just preferred to deforest instead of paying the tax. It is just one example of the many policies that Costa Rica had in place.

So what Costa Rica did, I would say fairly well, was the facing out of those policies and incentives. Then the PES came later into the process when we were 'mature', in terms of agencies, thinking, experience. We did the experiments and already knew what worked and didn't work. The PES came at the very last. This is the unknown story about Costa Rica.

2. PES was created by the state to benefit the suppliers of ecosystem services, the conserving landowners, as a market-instrument. At the same time, there have been critiques that there are some issues with entry barriers, such as transaction cost, that make it difficult to participate. And with profitability because payments are too low. What is your perspective on this? Do you think PES has impacted, particularly the poorest landowners, positively?

There are many things there. One is that the demand exceeds the offer. With the tax on fossil fuels, with REDD+, carbon credits and all the other sources of funding: Its not enough. So there is people complaining. But well, that is actually a positive circumstance because it means people like the idea, like the concept of the program. So it is a problem in a positive context. So yes the government has to keep a portfolio of farms and projects, at the same time it increases the revenues. We are always being challenged. So the big problem is not that there is no ease to excess to the finance, it is because there are not much financial resources. You need to comply with some requisites: They are very clear in the guidelines to access. There are priorities, you need to fill in a small card, and you are being ranked because of that: Some people make it in the program and others don't. And you get selected you can be included in the program for 10 years, and when these years are over you need to hope that the situation in which you are in is good enough for you to continue. So this is where the government struggles in maintaining a consistent portfolio, because we have been changing a little bit. But yes, there are challenges there. Nevertheless 40% of the beneficiaries of the program are very poor people. So with a big part of the beneficiaries being also a big group of social interest: I think that that is another element there. Transactional cost: well the system covers the transactional cost because... well: what do you mean with transactional cost here specifically?

3. Well the cost of getting management plans, but also for example: One thing I red is that monitoring cost a lot of money as well. In general the application for participating in the program.

Well. You need to have a professional that certifies if what you are doing is accurate, and real. And then you need a professional to do the monitoring. And most of the people use the payment to pay for these things. And then, with other groups we work through cooperatives, form the agricultural sector, that help us to get to the very poor people. I don't think, at this point, that it is a big issue at all. Because we already have 8000 beneficiaries under contract right now, and we got another 8000 waiting. So that proves that transactional cost is not a big barrier for them, because they are there. So I think that the issue is more the issue of offer and demand.

4. You mention that there have been poor participants in the program. The government has introduced some newer types of contracts to make sure PES is also approachable especially for the poor: The agroforestry contract is the most important one. These contracts are interesting for poorer people because they not only provide payments through the program, but also make it possible for them to produce within the forest sector and generate income from selling products. Right?

As a matter of fact. Just before this call I gave a lecture and I was talking about this. I put the whole PES system in place with the ministry, but then after I was able to introduce some adjustments. So in, I think it was 2004, that expanded the program to agroforestry systems. And this was because there it was about time for the PES system to go 'outside of the forest'. Because initially we only had an interest in stopping deforestation and restoring forest. And then we realized that with the PES-system we can engage with the agricultural sector in best practices, and increase biomass at the farm level. So we decided that we should include agroforestry.

5. I had some interviews with researchers from the University of Costa Rica, and they stated concern of the opportunity and profitability of sustainable uses of forest. According to them, the forestry sector has been in decline in the past decades. Costa Rica has to compete with cheaper products from neighboring countries,

and sustainable forestry, even with PES contracts, is simply not competitive. What is your perspective on this?

But that is not bad news! Some people see this as bad news, but I don't see it like that. Because we have been using the forest in ways that are more profitable, without cutting the trees. So we went from about 50% supplying the countries demand of forest-products (timber), to about 5% what it is today. And I think that is good, because primary forest should not be logged. That is my own position. But the PES program, and particularly ecotourism, is what has made the profitability of the forest. That is what made the difference there.

6. So from the environmental perspective it is only a good thing, basically?

Yes. We are importing wood that is certified, so there is no leak effect over there. And people have been doing much better from PES and ecotourism, than just logging the forest.

7. One idea these researchers had was to provide market protection, to secure prices of forest products, and to provide credit at the start of programs for sustainable use, so people can invest in these practices and have a good start? Protection is of course a bit contrary to the direction Costa Rica's development has taken. What do you think about these measures?

I don't think that Costa Rica can do sustainable management of (old) grown forest. I think it is a myth that this is possible. Even though there are a lot of foresters that have a different opinion on this. For me that is impossible for one very simple reason: Costa Rica has a very fragmented forest, that makes it economically unviable to do sustainable logging. How can you do sustainable logging in 100 hectares? You need 10.000 hectares! Go on and see if there is a piece of forest of 10.000 hectares in private hands in Costa Rica. You will not find it! So these guys are talking about sustainable logging in small pieces of land of 50 or 100 hectares: that is impossible. It is impossible from a technical point of view, and it is impossible from the economic point of view. So my position has been very much against creating incentives for logging: you can plant whatever you want you can harvest everything you want if you plant it. But the old grown forest is too precious, because of the climate and all the other environmental benefits. So there is no sustainable logging in Costa Rica.

8. Of course landowner participation in sustainable use of forests and conservation is all about funding. You are an expert on international environmental negotiations and financing, as CEO of the Global Environmental Fund. I have read an interview (Euromoney) in which you explained that the future of conservation in Costa Rica partly depends on international cooperation and funding. Measures such as the PES-system are costly. According to FONAFIFO's data and documents they can only give contracts to half of the applicants, due to lack of funding. Do you think this could prove to be an issue in the future: where PES-contracts might not be renewed for landowners because of a lack of funding? Could this complicate the way in which new more sustainable livelihoods are supported, like forest conservation or uses like agroforestry?

Yes it continues to be an issue. Because as I said, REDD+ and the international carbon forest market is not working the way we would like with the conservation in Costa Rica. We hoped that these types of funding, from the voluntary carbon forest market, would be a financial complement for our conservation agenda. But it is not working as we had hoped. So yes we are concerned, that article 6 of the Paris Agreement is not working, that it is not being implemented. The carbon market is voluntary, not binding, so you can pay or not pay. So that has generated a big impact in our projections and planning of conservation in Costa Rica.

9. Is this also because many of these international agreements and funding initiatives are for certain periods, and then they stop. And maybe another one comes but there is some uncertainty in discontinuity in this essential type of funding?

Well, yes a little bit. Not that much I would say. It is mostly a matter of scale, and the fact that the carbon market is not there. It is as simple as that.

10. My last question: Some people I interviewed claimed that the downside of regulations and protections, which were very successful for forest conservation, is that people lost their access to forest resources and land for agriculture. This decreased food security and land ownership. What do you think about this?

Well I think that that may not be an issue, anywhere. As I said at the beginning of the conversation: I brought the issue of land use capacity: not all the land is good for agricultural productivity. So the only areas that will be dedicated for PES are those areas that are not attractive for agriculture. Because today the PES pays 78 dollars per

hectare per year. But if you have very nice soils, and if you have coffee: Coffee will pay you 5000 dollars per year. So you will never compete, in good soils, with the agricultural sector. So there is no conflict, in terms of food security. Because these instruments are only attractive in those areas that I will call 'marginal soils'. Because the good soils: you are not going to move the rice, the pineapple, the coffee, out of that because the cost of opportunity is super high compared to these incentives.

Thank you so much for your answers.

Appendix 3.

Here less relevant impacts and findings, that were found not important enough to be incorporated in the main research text, have been further explained.

3.1 Land conflicts and the indigenous

Schuurman, who is part of the international court of human rights, explains that there still are conflicts of land (grabbing) with the indigenous population. Statements of this court say that land should be given back to the indigenous, which the state ignores (or responds to late) (*Interview 1:1*). In the light of what was written above, the state could have legal and secure ownership of such territory, while it does not belong to them. These conflicts have led to protest and aggression between farmers and indigenous (*Interview 1:1*). Secure property rights do not reflect who has these rights. Green grabbing is a problem in Costa Rica: Schuurman also gives an example on the Osa Peninsula, where a community of goldminers has been relocated due to the establishment of PAs (*Interview 1:2*). Now not all these issues are of importance for this research, since it only looks at the issues (impact) for SRL of the measures of *Chapter 3*. Many landgrabs occur due to the PA system, and therefore these grabs are not analyzed further here. But it is important to show that while land ownership is high and secure in Costa Rica on paper, this does not say there are not issues of inequality, lack of access to land and land related issues in participation for alternative livelihood strategies.

3.2 Tax exemptions and sustainable practices

Tax exemptions have played an important role in conservation and development policies in Costa Rica for some time. In the time when deforestation as at its highest, forest that was cut to create productive land (for agricultural production and economic growth) was rewarded by the state with tax breaks (Brockett & Gottfried, 2002 ; see *Chapter 1*). This was reversed later when such perverse (anti-environmental) incentives were removed, and in the first generation of incentives new tax breaks came for doing forest activities on land (*Interview 9:1*). These exemptions of all land taxes came with some state funded (and financially unsustainable) subsidizing as well for these practices (*Interview 9:1*). While this first generation of incentives has stopped due to funding reasons, there still are tax exemptions with which the state aims to incentivize particular behavior. An example is how the ICT provides tax benefits when people have obtained their certificate (CST) and thus met the rules for it for sustainable tourism (ICT, 2023d ; see also *Chapter 3*). Of course the PES system is partly paid by one third of all revenues created by the fossil fuel tax, which shows that increasing taxes also could stimulate conservation through increased funding (*Chapter 2*).

There are really no negative impacts for tax exemptions from a SRL-perspective: It incentivizes people to certain practices by making them keep some more financial resources for their own consumption/livelihoods. They can invest the money in their livelihood strategies or support their families. Taxations of course, like the fuel tax, can make life more expensive for people, particularly when rural inhabitants are dependent on for example vehicles or other machinery for their strategies. But the main issue is that tax measures (exemptions) are negative for state budget, which (according to Rodriguez) made it an unsustainable approach (*Interview 9:1*). So the Costa Rican state could not really keep many exemptions up, which makes its use limited. This is of course different when the state compensates tax exemptions (for sustainable forest use) with higher taxation for 'bad' practices and behavior (more on this in *Chapter: Discussion*).

3.3 Citizen participation and decision making

Participation is a logical aspect of Costa Rica's conservation policies because landowners are aimed to be agents of conservation: They have been stimulated (*Chapter 3.*) to change their traditional livelihoods into more sustainable ones and their participation is necessary to reach this. Costa Rica's neoliberal approach is to present forests, their use and services, in a market and let the people participate in this market and willingly conserve (for certain benefits/income). Of course, as this chapter has shown, participation is not a given but a complicated struggle: It requires the access to many resources before people can participate.

This is not just about participation in sustainable practices, but also in policymaking itself. This research has shown how many institutions want people to be involved in decision making, like the FONAFIFO and ONF (*Chapter 2.*). The use of stakeholders as advisors in policymaking helps understanding what they need to participate, and to make conservation policy work. And once people feel heard and involved, this increases their willingness to conserve and reduces their opposition against FCP and sustainable practices. Reviewing the earlier mentioned aspects of social capital (Serrat, 2017): Participation in decision making can help landowners and other actors to gain 'relations of trust, understanding and support' for FCP and the state. It can also help them get certain 'shared values', and ultimately certain types of (sustainable) 'behavior'.

While the setup of institutions and the ways in which Costa Rica's (conservation) institutions incorporate ideas and opinions of rural inhabitants (landowners, stakeholders in the forest industry) is impressive, the relation of rural citizens and the creators of FCP is not always one of trust, support or understanding. The earlier named research of Allen & Colson (2019) that used semi-structured interviews to ask farmers about participation in PES, 24% indicated that they had some distrust in the government. Farmers stated that they believed the individuals of the government to be corrupt and aim to benefit from the program themselves. They also often felt that self-reliance was at risk: they didn't want the state to have control over their land/farm and what they do with it (Allen & Colson, 2019). This is connected to land ownership of course: The largest concern found against PES was that an 'untrustworthy government' would effectively become owner of their land (Allen & Colson, 2019). A similar sentiment has been explained by Schuurman: Land conflicts with the government cause indigenous communities to protest and occupy land (that was formerly theirs), with the result of two people being shot recently (by the police)(Interview 1:1).

Both examples are indications of also lack of trust with institutions. This is not strange since the state has created many policies and implementations that require the rural economy and its inhabitants to change: new regulation on land use, and control, monitoring and enforcement. So many landowners who formerly had everything to say about their land now see this land regulated and (at least partly) controlled by state law. This creates distrust. Another example of this is the earlier mentioned study of Arriagada (2009) where participants of PES were afraid the government would 'take their land' if it remained unused (*4.1.1: Land ownership and PES participation*). Such suspicions create negative sentiment and a lack of social capital towards the state: It means that landowners do often feel like they cannot rely and cooperate with the government. It decreases their chances of finding alternative strategies.

3.4 Decline of Agriculture

Agriculture is for many people in rural Costa Rica the central livelihood strategy. It is the largest employer in rural areas, which shows the importance of agriculture for rural development (31,7% of all employment in 2013: OECD, 2017, 55). In 2017, the total agricultural area (farmland, with pastures) was 47% of total land area. However, a third of this farmland is not being used for agriculture but is forest area (OECD, 2017). This also partly reflects the participation of farmers in conservation.

As was earlier discussed in *Chapter 1*: The agricultural sector has become dualistic with more export-oriented large scale farming and small scale farming that is often still producing domestic products. While the large scale sector contributes most to GDP, the small scale sector for domestic products is less dynamic, produces lower-value products and requires unskilled labour (OECD, 2017). Traditional agricultural has struggled to generate higher-skilled jobs, which is important for rural development (OECD, 2017). On the

other hand, such agriculture provides many jobs for people with low levels of education and low capacities: people without different forms of capital (see *previous paragraph*) might find employment here. It is important to realize that these people might not have alternative livelihood strategies due to this lack of capital. In the previous paragraph the importance of land ownership as type of capital to secure livelihoods, was elaborated on: Of the 266 465 people who were employed in agriculture in 2016, 24% were self-employed (OECD, 2017). The other 76% thus did not own the farm-land they worked on, which means they were most likely landless agricultural workers (OECD, 2017). Especially the livelihoods of these people are important, since they lack livelihood resources like land (natural capital) or education (human capital). It shows why it is so important to look at impacts beyond landowners themselves, when analyzing the issues of policies that aim to change the behavior of landowners.

As Galt (2020) explains, agricultural land as a percentage of total land area in Costa Rica declined since the 1980s, mainly for pasture land (figure 16.). There were a few factors that contributed to this decline: The earlier discussed crisis in the cattle sector, due to rising meat prices (see 3.4) and the conversion of agricultural land to protected areas (Isla, 2015 ; Galt, 2020 ; see also 2.2). Next to this, the deforestation ban made expansion of agriculture to forested areas impossible, even on private lands (Fagan et al., 2013 ; Breitling, 2012 ; Galt, 2020). This is very important because it means that, while land is scarce in Costa Rica and forestland (which is abundant) cannot be deforested, extensification as agricultural strategy is unlikely: A farmer could only choose for intensification (see figure 5.).

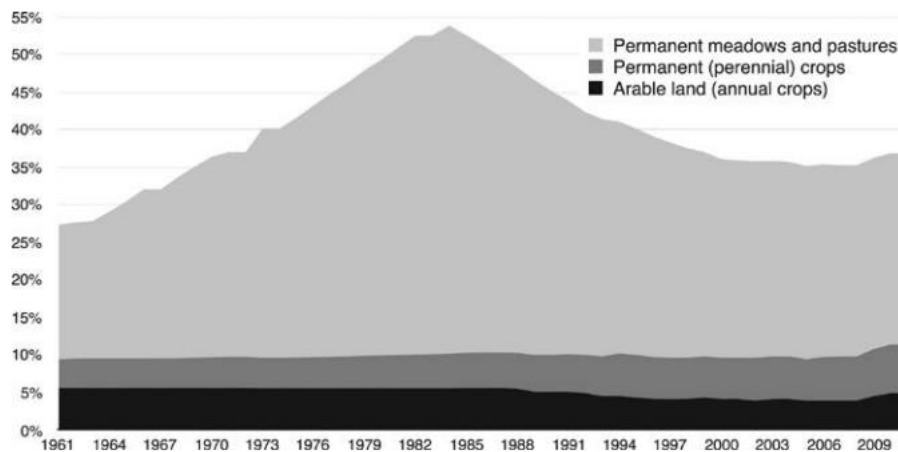


Figure 16. Stacked chart of agricultural land area as a percentage of total land area (Galt, 2020).

World Bank data shows that not only GDP-share of agriculture declined (as was discussed in *Chapter 1.*), but also employment declined from about 20% at the start of the foundational conservation policies (around 1995) to about 13% (see figure 17.). Employment is important for SRL because it is about livelihood opportunities (work) of people no matter the economic value (GDP). It simply shows that there is less opportunity for work within agriculture for rural inhabitants. In *Chapter 3.* it became clear how particularly small scale farming has been disincentivized by lack of state protection and support, (environmental) bans and trade liberalization (beef prices). Galt (2020) confirms this, stating:

Neoliberalism has undermined subsistence-oriented and environmentally benign staple-grain agriculture, and has increased the power of the largest farms in major export crops other than coffee. Thus neoliberal agro-export growth has largely excluded small- and medium-scale farmers. (Galt 2014)

Decline in agriculture is clearly connected to many factors other than FCP alone.

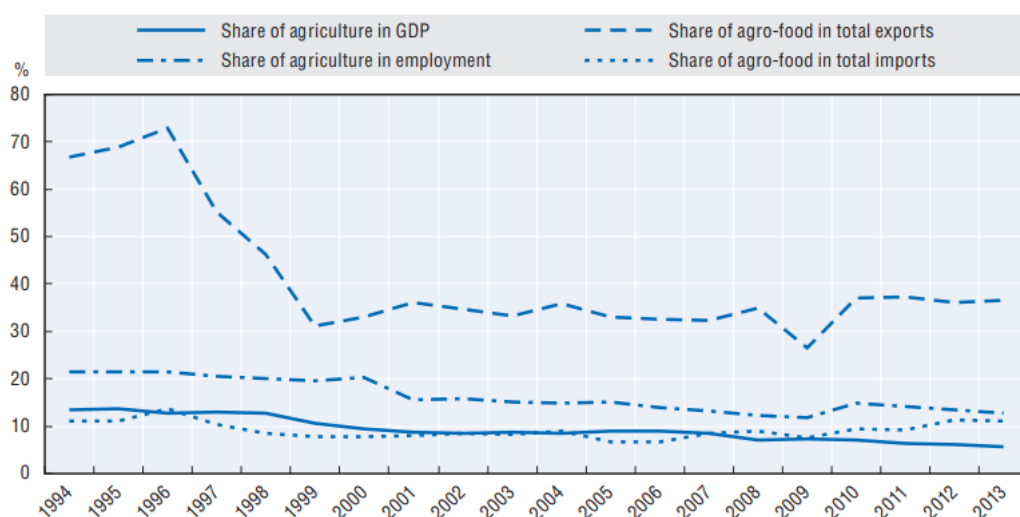


Figure 17. Agriculture's contribution to the economy between 1994 and 2013 (World Bank, 2016).

3.5 Estimation on lost agricultural-land-potential due to PES

A (conservation) measure can deny employment that would otherwise have been present, without necessarily declining the sector as such. This point became partly clear by analyzing a research by Ross et al. in 2007, where the macroeconomic impact of PES in Costa Rica was estimated using 'rigorous program evaluation methods that have been recommended for identifying the causal effects of conservation policies' (a so called dynamic CGE model of current and expected future land-use patterns). In this research it was estimated that (up until 2005) of 275.000 ha of (forested) PES-area most would have been otherwise used for agriculture, mostly pasture (Ross et al., 2007). Because PES restricts deforestation, it restricts the supply of land for agriculture which would have otherwise been greater (Ross et al., 2007). Now this research of course is fairly old, but its estimation of how land would otherwise be used is interesting. If we look at the UN statistic of 1.3 million hectare of PES-land by 2019 (UNCC, 2019), this agricultural potential becomes much greater.

This research however does not acknowledge the specific estimations on impact of PES of Ross et al. (2007). They were found to be scientifically vague due to a number of assumptions. Firstly, the research assumes that all PES-land is additional forest area. This is likely not true based on the earlier finding that landowners often use unused (empty) land for PES-contracts, which could easily be already forest (see 3.1 ; Fletcher and Breitling, 2012 ; Brownson et al., 2020). Secondly, Ross et al. (2007) assume that land, if it would not be (theoretically) enrolled in PES, would have been free for agricultural use. This is also unlikely since multiple measures found in *Chapter 3*. restrict deforestation (like the ban), and thus also agricultural use on forested land (not under PES). Nevertheless, the idea of reducing the agricultural employment (potential) is interesting: It means a potential lack of (household) income and livelihood strategies for farm workers.

There are potential negative impacts in employment if forest protection results in the abandonment of agricultural lands that could have created jobs for people (Porras, 2008). Logically, an estimation of 'how much agricultural employment would have been without PES' is very complex, and maybe impossible: In the end it depends on the behavior and psychology of farmers towards intensification of agriculture in combination with many regulations and other factors. According to Porras (2013), there is still no rigorous evaluation of the intangible benefits of PES. And there have no estimations been found in other studies (other than Ross et al., 2007) by this research.

3.6 Traditional cultural and emotional motivations

In the earlier mentioned research of Allen & Colson (2019) farmers were interviewed to understand agriculturalists preferences for PES and underlying drivers of participation. They particularly targeted

farmers who changed agricultural land (not empty land) to forest (Allen & Colson, 2019, 394). Farmers indicated that their participation in PES dependent strongly on the cultural barriers of changing from their traditional activities (farming) to new ones. Cultivating the land and a rural ethic were central values to these farmers. They preferred to participate in sustainable practices that looked like their old livelihood strategies: So not conservation-contracts but payments for example in agricultural practices like organic agriculture or agroforestry (Allen & Colson, 2019). Self-reliance, as indicated by the farmers (and as also was explained in the beginning of this paragraph), is also a key issue with PES: People feel like losing control or independence when they participate in a system that makes them dependent on state payments (Allen & Colson, 2019). This is a fair point, because continued long term payments are not secure and beyond control of participants, as will be explained in the next paragraph (4.3.1).

In line with this important impact on values and culture is a point made by Schuurman in *Interview 1*: Farmers have a large attachment to their land and practices. “It is the place where their grandparents and parents have worked.” (Interview 1:11). This emotional motivation or argument was already discussed in the previous paragraph (4.1.1: *Land ownership*), but it is important to mention it again. The change from traditional use to newer uses can have dramatic emotional consequences for the people who have lived there whole lives in a particular way.

3.7 Illegal logging and deforestation

Even though the governmental deforestation ban legally or theoretically means landowners cannot deforest and have no alternative to conservation and (approved) sustainable use, this is far from the practical truth. Landowners can just cut their forest illegally, and use the land for agriculture (again). While there is no clear (official) data on this and it is hard to ‘see’, it is most definitely happening in Costa Rica. This is something Ramirez for example also confirms from personal experience and talks with farmers (Interview 8:5). A report of CATIE (written partly by Carlos Manuel Rodriguez) estimated that between 28% and 41% of all timber sold in Costa Rica was illegally harvested (Campos Arce et al., 2007). Half of this timber comes from locations where landowners could have harvested legally, if they had the permits. The report concludes that it is the rules and requirements (expenses) that must be eased for people to stop logging illegally (Carpos Arce et al., 2007).

3.8 Other impacts of (eco)tourism

To get back to the study of Allen & Vasquez: The issues (shown in figure 15.) of land ownership, and changes to traditional (farmers) livelihood strategies were already discussed. The issues that Allen & Vasquez (2017) have found for ecotourism are listed in figure 18: These are found impacts according to responses of the earlier mentioned question (for interviewed farmers): “Has the tourism industry benefited the local community?”. Figure 18. gives an overview of mentioned impacts and their proportion of the total amount of responses.

Topic	Frequency
Economic Benefits	24.5%
Conservation	15.8%
Development (education, infrastructure)	16.5%
Farm Abandonment	10.1%
Drug Abuse	8.6%
Economic Instability	7.2%
Living Expenses and debt	9.8%
Increases in crime	5.0%
Water Pollution	2.9%

Figure 18: Responses to question, “Has the tourism industry benefited the local community and/or environment of the region?” In 87 interviews, 139 tourism trade-offs were listed. The frequency of appearance of each trade-off is listed. (Allen & Vasquez, 2017).

The most mentioned responses are positive: The economic benefits of (eco)tourism, conservation and developmental benefits such as education and infrastructure. Of course negative impacts and issues is the focus of this research. The negative impacts of farm abandonment and debt have already been discussed, and economic instability (though already discussed too) will be further discussed as well as living expenses (4.3.1). Water pollution and extraction are, according to interviewed farmers, an issue. Water springs have dried up, and ecotourism businesses dump polluted water in nature. This pollution then runs downstream and pollutes the water supply in other areas too. (Allen & Vasquez, 2017). This is a problem that Koens et al. (2009) and Noorloos (*Interview 5*) also have mentioned. So next to facilitating the protection of some ecosystem services (with forest protection), (eco)tourism also harms others (clean water supply).

The last impact that will be explained here is drug abuse and crime. Allen & Vasquez (2017) state that tourism creates a demand for drugs. And farmers who were interviewed explain that people who cannot (or will not) participate in one of tourism's employment opportunities, often start selling drugs to tourists or local people. It is not only tourists that consume nowadays, the Costa Rican youth does too. Farmers state that it is an incentive for crime, and insecurity in their communities. (Allen & Vasquez, 2017). Of course, changes in the rural society such as globalization, flows of people, and money can introduce new things such as drugs to a once quite community. But the link between crime and (eco)tourism remains vague. In the interview with Noorloos the topic of alcohol, drugs and crime was discussed: She believes that crime is not that related to tourism, and she points to other causes such as the drug trafficking from South-America that passes Costa Rica northward. She also makes the point that tourism puts attention on certain areas that are more busy: Criminal activity is harder to hide this way. Nevertheless, the tourism induced entertainment industry with alcohol, drugs and even prostitution has manifested itself in Costa Rica, which does create problems. So tourism is a factor, but there are many more factors at play.

3.9 Cuarteria (figure)

In this figure living conditions in a cuartería can be seen: Spaces of about 10 square meters, often without water, where many migrants from rural area's end up in.



Figure 19. A Cuarteria (Morales, 2023).

3.10 General state of poverty in (rural) Costa Rica

Voorend, who researches the topics of poverty, inequality and cost of living, gives an understanding of the general state of poverty in Costa Rica. Poverty is higher in rural areas (27%) than in the city (20%). Both these numbers are relatively good compared to neighboring countries. But at the same time, Costa Rica has some concerning trends: Employment has become more informal, which is usually an indication of following poverty and other issues (Interview 6:5). He explains that he does research on living wages and

the poverty line, and has critique on how poverty is estimated in Costa Rica. According to him, the number of 27% does not represent real poverty: Expenditures of basic needs, such as food, have gone up. The biggest expenditure is housing, and estimations of poverty often overlook the bad circumstances in which people in Costa Rica live. Taking into account the living wages of people in the country, and the expenses of basic needs, it has become very difficult to obtain a qualitative livelihood (with proper housing, nutritious food etc.) with the income people have. This shows that there is significant poverty in Costa Rica (Interview 6:5). It shows the importance of income, and expenditures such as food and housing, which will be discussed in here.

3.11 Export-agriculture and food insecurity

In *Chapter 1*. and *4.2.1* was explained how developments of neoliberalism and structural adjustment have resulted in a focus on large scale export-agriculture, and a disappearance of small scale farming due to a lack of protection. Schuurman agrees that this export-agriculture is one of the reasons of food insecurity, since they produce large quantities of food (in an extractivistic way) for other markets (pineapples, banana, coffee, cacao) and income is not distributed fairly, so local rural inhabitants cannot buy their food with the benefits of the rural export-economy (Interview 1: 7&8). Voorend adds to this: When protection stopped, small scale farming became less profitable and the traditional trend of producing small scale also for own consumption (subsistence farming) decreased (Interview 6:3). The products that farmers made, things like rice and beans (which are the most important components of Costa Rican diets), now have to be imported from other countries (Mexico). These products have import taxes, which make them even more expensive (Interview 6:4).

3.12 Adaptation in relation to crime and substance abuse

Adaptation to a new rural economy is not always simple if the changes and required strategies of alternative strategies are too big, or the support or resources are lacking. The availability of new harmful substances does not make this adaptation easier: As Allen & Vazquez claim, tourism is linked to drug abuse and theft: Tourism creates the demand for drugs.

One person explained, “there is always someone [in town] who doesn’t work on horse tours nor in taxis nor in the diner, but rather over by the bar selling marijuana, cocaine, etc. “ (Allen & Vazquez, 2017, 219)

It is not only the tourists that consume, it is the local rural population too. Many of the respondents of the study were concerned about drug consumption, particularly amongst the youth. People stated that drugs have changed their communities, and peoples mentalities (Allen & Vazquez, 2017).

Now of course, globalization and its rapid movements of people, products and information have made things like drugs available in many places in the world, even without tourism. And crime is present everywhere. Noorloos was asked about the above mentioned impacts in *Interview 5*. She explained that there were many factors that contribute to the changes of culture and lifestyles in rural areas in Costa Rica. Not just ecotourism but also conservation endeavors, NGO’s who are everywhere, the government and the private sector, new crops that have become important and immigration that has happened for a long time. Criminality has also been in Costa Rica for a while (Interview 5:11). According to Noorloos: Historically so much has developed that these rural areas have actually always had change, and Costa Ricans are in general open to change. Culture has already been changed by for example influences from the US. So there has an exchange (of culture) for a while (Interview 5:11). Noorloos believes criminality is not so much related to tourism: There is a drug trade from South-America that passes through. And in a way, if there is more tourism in an areas there is more attention to this area, and criminal activity might be more complicated. At the same time, she acknowledges there is a whole entertainment industry related to tourism: alcohol, drugs, prostitution. These things did develop with the introduction of tourism (Interview 5:13).

3.13 Vulnerability

Vulnerability, in the context of the Sustainable Livelihoods Approach, is about the insecurity of people in the face of a changing external environment. It is particularly about the process of change in poverty, more than poverty itself: It is about who can has the risk of becoming poor (or having other negative outcomes) due to changes (Serrat, 2008). Vulnerability has an external side (external changes and circumstances that people have to adapt to), and an internal side (a lack of ability and means to cope with these changes, which causes defenselessness)(Serrat, 2008).

Externally, this research has discussed many changes in the rural economy and the forest sector. State policies have introduced these changes, while there are also other factors at play. The stimulation of landowners to conserve forest, in many ways, has made it so that people must often leave traditional strategies and find alternatives ones. People have to adapt.

Internally, the SL-approach has helped identifying numerous ways in which people lack the ability to cope with these changes: Issues with resources, like land availability, financial capital, skills and knowledge and so forth. There have also been issues with livelihood outcomes: Ways in which the alternative strategies and the change in the rural economy (induced by the measures of *Chapter 3.*) have impacted people: Income insecurity, food insecurity, issues of wellbeing and so forth. It has been clear that many people, especially small and poor landowners and the landless, have not been able to participate in alternative strategies. These people cannot cope with the changes, and thus are vulnerable. *Chapter: Discussion* explains more on how these people can be helped.

3.14 Wellbeing

Wellbeing is of course a somewhat abstract and subjective concept: It is about how people perceive that their lives are going. It is about good living conditions: lack of poverty, good housing, food, etc. But it is also beyond material wellbeing: health, education, social connectivity, security, and the overall feeling of satisfaction and psychological wellbeing.

Most of these aspects of wellbeing have been discussed in other parts of this chapter: They are about something that is lacking for people, which could present in resources and outcomes, and even in livelihood strategies (because people might not be satisfied with the type of work they are doing, or the lives they are living). To give a few examples: This research has discussed the issues with land ownership and accessibility: Lack of land and proper housing opportunities effect the ways people are living and the wellbeing they are feeling. This research has discussed dissatisfaction of farmers who prefer their traditional ways of living and farming. This research has discussed a lack of food security, which could have strong impact on people's health and wellbeing. This research has also discussed the changes in the rural landscape, due to tourism, new development, flows of people and money and regulations. These changes have altered communities, towns and regions, with migration flows, have changed social networks people have. People might experience these changes as a 'falling apart of their culture and livelihoods, their neighborhoods and their families'. Others might see it as new opportunities for a better life.

Appendix 4.

List of interviewed actors and their relevance for the case:

Due to personal information this section is removed in the publication version.

Appendix 5.

Here is an overview of all the paragraphs in *Chapter 4*.

4.1 Resources	4.2 Strategies	4.3 Outcomes
<p>4.1.1 Natural Land ownership Land ownership and PES participation Large vs small landowners PES influence on land ownership Changes in land ownership and land prices Forest resources and basic needs Biodiversity and ecosystem services</p> <p>4.1.2 Physical Infrastructure</p> <p>4.1.3 Human Skills, knowledge and education</p> <p>4.1.4 Financial Financial barriers Financial support</p> <p>4.1.5 Social Citizen participation and decision making Traditional community relations versus new institutional support</p>	<p>4.2.1 Agricultural strategies The decline of farming Impact on farming potential Farm abandonment and flexible livelihoods</p> <p>4.2.2 Sustainable forest uses Forest conservation Sustainable forest production Limited success for sustainable forest production</p> <p>4.2.3 Ecotourism Landowner adaptation and participation in (eco)tourism New inequalities in tourism The ecotourism boom and lack of good strategies Landowner ecotourism activities and other impacts on livelihoods Agrotourism Scale and limitation of tourism</p> <p>4.2.4 Migration</p>	<p>4.3.1 Income and poverty Income from new livelihood strategies PES income and the participation of the poor Have the poor been included? Income and profitability of conservation and sustainable forest production Income (in)security Purchasing power</p> <p>4.3.2 Food security</p> <p>4.3.3 Natural sustainability</p> <p>4.3.4 Cultural sustainability</p> <p>4.3.5 Vulnerability and wellbeing</p>