UTRECHT UNIVERSITY

Forest Transitions

A driver analysis based on the cases of Vietnam, Laos, Costa Rica and Nicaragua

3940616
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To my parents

Summary

The following Thesis is a qualitative research on the state of forests and its importance for providing economic and environmental services in four selected countries: Costa Rica, Nicaragua, Vietnam and Laos. As a theoretical framework the forest transition theory developed by Mather is used. The main aim is to assess the performance of the four countries in their transition from net deforestation to net reforestation. The first chapter presents the forest transition theory, the importance of forests on both local and global level as well as the design of assessment categories. The second chapter presents the methodological approach and the conceptual framework. In chapter 3 the forest sectors in the selected countries are presented. The last chapter gathers the results of the research based on the theoretical and conceptual frameworks. The leading method used in this research was the analysis of scientific articles, grey literature and governmental documents. In addition 22 interviews with key stakeholders from governments, intergovernmental organizations, NGOs and think tanks were performed.

It was found that particularly socio-economic drivers are of importance for a forest transition. These are: intensification and land specialisation, as well as the improvement of opportunities outside the farming sector. However, without an extensive and efficient institutional framework a transition is not likely to happen and the success of governmental efforts in combating deforestation will remain limited. Lastly, a strong conviction towards a change is needed by policymakers and the civil society. This was proved from the side of successful countries as from the unsuccessful ones. Costa Rica and Vietnam did experience a forest transition and Nicaragua and Laos did not.

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List of abbreviations

5MHRP	Five Million Hectare Reforestation Programme (Vietnam)
ADP	Ad Hoc Working Group on the Durban Platform for Enhanced Action
CONAFOR	National Forestry Commission (Nicaragua)
COP	Conference of the Parties
FONAFIFO	National Forestry Financing Fund (Costa Rica)
FLA	Forest Land Allocation (Vietnam)
FLEGT	Forest Law Enforcement, Governance and Trade
INAFOR	National Forestry Inventory (Nicaragua)
IPCC	Intergovernmental Panel on Climate Change
LFA	Land and Forest Allocation Programme (Laos)
MARD	Ministry of Agriculture and Rural Development (Vietnam)
NGO	Non-governmental organization
NTFP	Non-timber forest products
PES	Payment for Ecosystem Services
PFES	Payment for Forest Environmental Services (Vietnam)
PSA	Environmental Systems Payment (Costa Rica)
REDD	Reducing Emissions from Deforestation and Forest Degradation
UNFCCC	United Nations Framework Convention on Climate Change
USD	United States dollar
VPA	Voluntary Partnership Agreement

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Acknowledgments

This Thesis would not be possible without the help of other people. To start, I would like to thank my parents for all the support they gave me making this research possible and enabling me to be in the place I am right now.

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In this place I would also like to thank people who helped me during my fieldwork in Vietnam in 2013, because that was the moment when I decided to focus on forestry issues. Especially I would like to thank Mr Burgers, my former supervisor, Mr Tran Nam Tu, my supervisor in Vietnam and Thien, with whom I conducted research in the field.

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Introduction

The idea for a Thesis on Forest Transitions arose after completing my fieldwork in Vietnam in 2013. The research that focused on the effects of reforestation programmes in two selected villages grew my curiosity on the importance of forests, the process of reforestation and how this process is driven. Also, I was aiming at gaining experience in inter-governmental organisations which I hoped could provide me with a unique inside on policymaking and its underlying rationale. These hopes were to a large extend realised, but the process of crystalizing the main concept of the Thesis and collecting data was marked with a large number of steps and challenges that, however, resulted in a complete and extensive final product.

The concept of a forest transition, being a change from net deforestation to net reforestation, driven by land specialisation was initially proposed by Mather (1992). However, land specialisation, i.e. the specialisation of agricultural practices on highly productive land and the emergence of forestland in low-productive and scarcely populated areas is not the only driver. During the research several other drivers, including good governance, the position of a specific country on the global market and its general development were identified.

While countries of the Global North experienced a forest transition between the 18th and 20th century (Mather & Needle, 1998), most of the tropical countries of the Global South did not, although such a transition would be highly desirable. The rationale behind this is twofold. Firstly, forests provide important environmental services at a local level such as water retention, preventing soil run-off and providing timber and non-timber forest products (NTFPs) for the local population (Grebner et al., 2013). And secondly, at a global level forests are, besides oceans, the most important sink of CO_2 (IPCC, 2014b) and deforestation and forest degradation is responsible for more than 17% of the total human-based CO_2 emissions (IPCC, 2007).

For this research four countries of the Global South were chosen: Costa Rica, Nicaragua, Vietnam and Laos. Out of this group Costa Rica and Vietnam experienced a forest transition while Nicaragua and Laos did not. This choice was made on purpose, in order to present the different factors driving a forest transition or, contrarily, blocking this process.

The research had a stationary character and was performed during my internship at the UNFCCC Secretariat and at home. This type of research determined the research methods. The dominant method used was the analysis of scientific articles not only on the forest transition theory, but also on several aspects of the forest sector in the chosen countries.

Moreover, several reports and other forms of 'grey literature' were used. Although these materials lacked the purely scientific form, the authority of renown research institutes, to mention CIFOR or EFI as an example, provides a high degree of certainty regarding the veracity of the information provided.

Another tool, crucial for collecting data, was the contact established with several experts, academics, governmental and non-governmental organisation (NGO) employees with whom direct interviews and phone/skype calls were held or extensive email exchange took place. Last but not least, governmental internet sites and documents were read in order to get a better understanding of the governmental approach on forest changes.

The Thesis has been divided into four chapters.

- Chapter 1 discusses the theoretical and contextual framework of the Thesis presenting the concept of forest transitions and discusses the general importance of forests in the context of environmental services and climate change.
- Chapter 2 presents the methodological approach taken when working on the Thesis as well as presents the research questions and conceptual framework.
- Chapter 3 introduces basic information on the selected countries as well as introduces its forest sectors, including the presentation of the legal framework and main issues.
- Chapter 4 is a country-specific assessment and analysis of the case studies, following the factors presented in the conceptual framework. At the end of each of the country-specific sub-chapters an answer is given on the question what is driving the transition in the specific country.
- Finally, the comparison and conclusion gathers the results of the four selected countries drawing a broader picture of the factors and their importance.

As mentioned before a large part of motivation for this research came from my fieldwork conducted in 2013 in Vietnam. Single parts of that report were adapted and used in the presentation of Vietnam (*3.4*) and the discussion of shifting cultivation (*1.4.2.1*). The results of that research are used quite extensively in the analytical sub-chapter on Vietnam. Details can be found in: *Kulik, O. (2013). 'The impact of acacia and rubber tree plantations on the local population: A study on two villages in the North-Central highlands of Vietnam', Utrecht University*, available upon request.

Chapter 1: Theoretical and contextual framework

In this chapter the theoretical and contextual framework of the Thesis is presented. The key concept introduced are forest transitions. This will be followed by a part explaining the importance of forest transitions as a process having an impact on environmental services on the regional and global level. The regional level can be understood as protecting soils, regulating water balances and supplies, or providing timber and NTFPs, while the global impact of forest transition is the possibility to significantly reduce and absorb CO_2 emissions.

1.1 Forest transition theory

The theory of forest transitions was initially proposed by Mather in the beginning of the 1990s (Mather, 1992). As discussed by Mather and Needle (1998), in many developed countries the area of forests is increasing after periods of decline. Basically, in the course of development, a common characteristic followed by developed, and recently also by some developing countries (Barbier et al., 2010). In this process first the forest area declines in periods of massive population growth. This is connected with the growing food demand and the placement of settlements. After reaching a leverage point i.e. a place within the system where a small shift can produce big changes (Meadows, 1999) this trend gets reversed (Barbier et al., 2010). This process occurred in most of the developed world, with Western European countries having their forest transitions overwhelmingly in the second half of the 19th century (Mather, 2007), Japan in the 18th century and South Korea in the mid-20th century (ibid.).

This process, known as a forest transition, i.e., a long-run forest cover change (Perz, 2007) is driven by various factors introduced below. Especially in the time of growing environmental and climate concerns identifying these factors, or drivers, is crucial (Mather & Needle, 1998). Such a transition may occur on various levels, starting from a local level, going through a national and finally, a global scale (Pagnutti et al., 2013). In this research the national scale will be investigated.

1.2 Deforestation

Even since a few countries in the developing world experienced a forest transition, most of them did not, with the forest area declining each year, i.e. experiencing net deforestation. According to Barbier et al. (2010) the main drivers of deforestation in these countries are:

- Market policy failures, e,g, policymaking in which incentives for clear cutting of forests are provided;

- Clear cutting of old-grown forests for the purpose of changing the type of land-use or the exploitation of natural resources;
- Inadequate regulations, i.e. not regulating or limiting practices leading to deforestation;
- Poor leasing contracts for forest exploitation;
- The dependency of the local population on fuel wood and shifting cultivation practices on areas with a high population density.

Shortly, the most important driver of deforestation remains the change of land-use from forest land to agricultural land being driven by the growing population and the development of global markets (Pagnutti et al., 2013), as well as the poor institutional framework: inadequate regulations, lacking capacities and corruption (Barbier et al., 2010; Mather & Needle, 1998). Another, indirect driver, mentioned by Perz (2007) is that deforestation is also partially determined by the North-South power division resembling the colonial times, in which the colonies were oriented on the export of natural resources being exploited on an unsustainable manner.

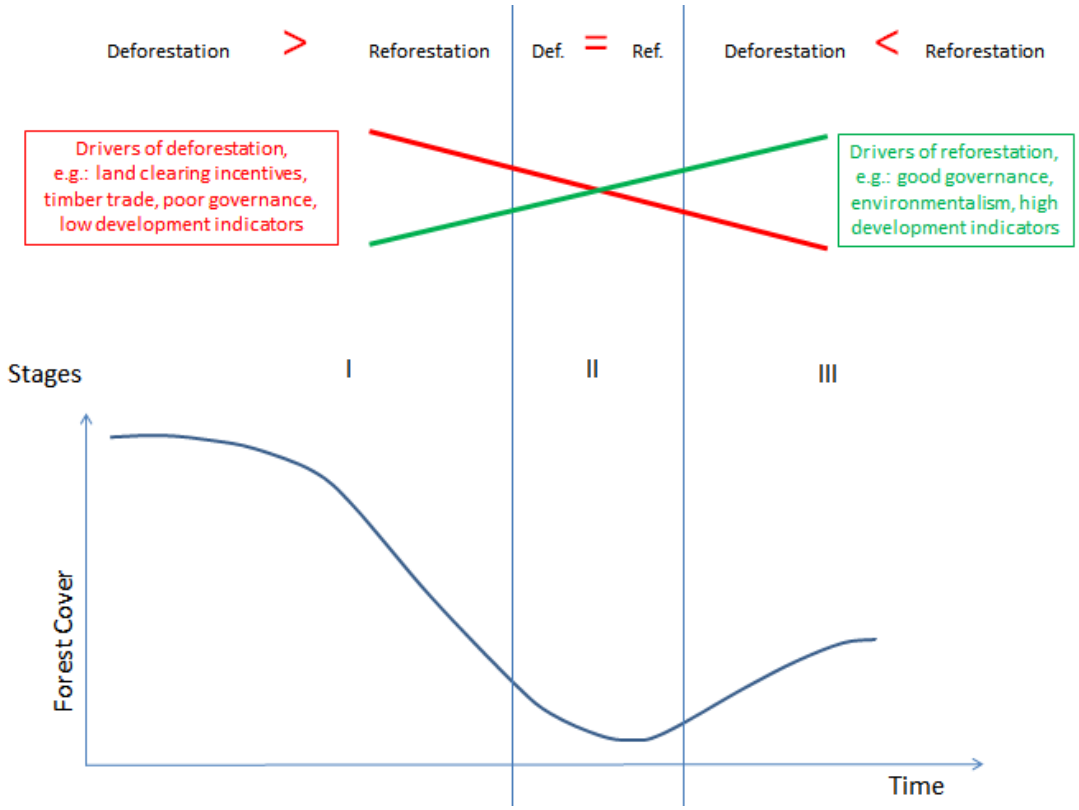

Figure 1: A conceptualisation of a forest transition and its impact on the forest cover. Graph adapted from UCSUSA (2014).

1.3 Leading to a forest transition

After an extensive research of literature on forest transitions three broad factors driving a forest transition were extracted. These factors are: **socio-economic changes**, **institutional performance** and the **growth of environmental concerns**, due to the raise of a civil society, or forest scarcity. These factors are, with its sub-categories, presented below.

1.3.1 Socio-economic changes

Economic changes are a wide array of drivers. Changes in the national and global economy tend to have a strong influence on land-use change in a particular country. A broadly understood **modernisation** process may lead to the development of adequate infrastructure. In the US the construction of railroads, and later: highways led to a more efficient penetration of the areas west of the Appalachians making the proximate and poor soils of New England uncompetitive with agricultural production from the Great Plains and the South. Consequently not only the land got abandoned, but also, a large part of farmers moved to the more suitable agricultural areas, or changed their livelihood moving to cities (Mather & Needle, 1998). Modernisation also leads to the **intensification of the agricultural sector**: new ways of cultivating crops, growing mechanisation or the use of chemical fertilizers bring higher productivity.

Closely tight is **land specialisation** that was originally proposed by Mather and Needle (1998) as the main driver of a forest transition. From one side the abandonment of low-quality land by agricultural practices occurs, while on the other side the more suitable land gets intensively utilised for agricultural purposes leading to a growing ‘specialisation’ of land.. As an example Mather presents his initial research area, the Black Isle in Scotland on which data is available for more than a hundred years. When following this data it can be found that class 5 and 6 soils were gradually abandoned and later transferred into forestland. Simultaneously almost all the available class 1, 2 and 3 land is now used for agricultural practices (Mather, 1996). On a macro-scale such a tendency is found in the U.S. where agricultural land in the Northeast got abandoned (and transferred into forestland), while the fertile lands in the South where adapted for agriculture (ibid.).

Figure 2: Only a few hundred meters from my house (Warsaw metro area, Poland) a small scale forest transition is happening: Till the early 1990s large state companies cultivated this 6th class and unclassified land, something which after the systemic transformation became unprofitable. Despite the very poor soil, no human intervention (no tree planting was made) and temperate climate zone the effects after only 20 years are clearly visible (source: Oskar's own picture).

Another consequence of modernizing the economy is a wider **non-farming opportunities** for the people in rural areas. Providing basic infrastructure or parts of an emerging service and industry sector leads to a wider range of opportunities and may not have to rely on marginal forms of agriculture as their only livelihood scenario. Consequently they may diversify their sources of income by paid off-farm jobs, giving the population a real choice, something that is limited in rural economies lacking basic infrastructural provision (Barbier et al., 2010). This process is not only occurring at a regional and national scale but also, due to cross-border migration and remittances sent, on a global scale (Kull et al., 2007).

Last, but not least, the countries selected in this research are all part of the Global South and therefore its **position in the globalisation process** is affected by the colonial division and all its adverse consequences (Fordham University, 1997; Perz, 2007). This has a great impact on land-use in the selected countries, since its position is mainly based on the export of raw (natural) materials which extraction and cultivation requires land clearing. This position also results in a low degree of value-added in the trade and production chain (OECD, 2013a). The limited power of these countries compared to wealthier countries of the Global North and large emerging markets makes them prone to abuse, land-grabbing and 'unfair' agreements in

which only the interests of foreign companies and a small group of privileged people are realised, something especially visible in Laos and Nicaragua (see: *4.2.1* and *4.4.3*).

1.3.2 Institutional performance

The institutional performance of countries is another important factor for making a forest transition successful. While not all the factors are absolutely crucial for a forest transition to occur, the institutions must provide a certain degree of vast and efficient frameworks that its able to enforce. This was confirmed in scientific articles and by experts specialised in the topic of the specific countries. In order to provide a structure for assessing the performance of institutions regarding the forest sector the World Bank Worldwide Governance Indicators assessing six aspects of governance were used. The aspects are as follows:

1. **Political stability** measures the likelihood that the government can be destabilised or overthrown.
2. **Regulatory quality** focuses on the ability to formulate and implement decent policymaking.
3. **Government effectiveness** measures the quality of public and civil services.
4. **Voice and accountability** captures the perception to which extend citizens may participate in creating the government as well as assesses the freedom of speech.
5. **Control of corruption** measures the degree to which the government is capable of controlling corruption among its institutions.
6. **Rule of law** measures the quality of contract enforcement, property rights and the functioning of police and courts (World Bank, 2014a).

1.3.3 Environmental concerns and civil society

The growth of environmental concerns due to the raise of a civil society, or forest scarcity may lead to a forest transition, defined as the forest scarcity path in which the growing public (and authorities') concern, increasing prices of timber and political pressure from within the country and abroad may lead to movements aiming at reversing the deforestation trend (Barbier et al. 2010; Meyfroidt & Lambin, 2011; Rudel et al., 2005).

1.3.4 Discussion

The 'forest scarcity path' is one of the two paths leading to a forest transition, with the other one being the 'economic development path' that is driven by structural changes in the economy and the abandonment of agricultural land.

From the conceptual side, the forest transition theory shares similarities with modernisation theories (Mather, 2007; Meyfroidt & Lambin, 2011; Perz, 2007), not only being based on a 'transition', but also having a linear character, stages (of deforestation and reforestation) and being a process driven by democratisation, rationalisation, urbanisation and industrialisation. Hence, this theory might be criticised similarly to the modernisation theory. The modernisation theory used to compare modern examples of countries in the Global South with processes taking place in the North as long ago as in the 1800s. This might be interpreted as paying little attention to the specific conditions and changes within countries (Perz, 2007).

Like modernisation, the forest transition theory should not be seen as a predetermined process in which all countries are bound to a path. There is an awareness of the limitations, and no direct determination for a forest transition can be given, since (Mather, 2007) proved that the relation between GDP, political freedom and forest transitions is far from evident in a few Asian countries that relatively recently experienced (or not) a forest transition. For instance, a forest transition occurred in Vietnam, while not in the relatively wealthy Malaysia or Thailand, despite the higher government effectiveness and rule of law in the latter countries (ibid.; World Bank, 2014a). Also, limiting deforestation and the promotion of reforestation may indeed lead to a forest transition in a particular country, but simultaneously lead to outsourcing of deforestation to other countries, of which evidence can be found in the case of e.g. Vietnam and Lao PDR (Meyfroidt & Lambin, 2011; Kulik 2013).

A transition may have a different course between each country, since a different rate of forest decline, time past to the moment of the transition, or amount of forest that remained compared to the initial situation occur (Perz, 2007) (see: *Figure 3*). Moreover, countries may differ in the rate and extent of recovery, including that there also might be differences in forest types between the original state and the state after the forest transition, since in many cases initial primary forests are replaced by forest tree plantations (Kulik, 2013).

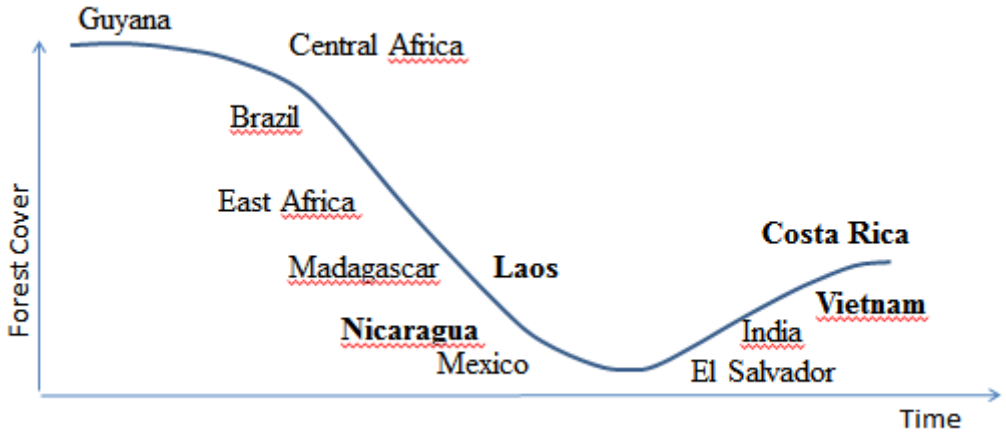

Figure 3: Forest transition curve (UCSUSA, 2014). Please note that the bold text and the place of Nicaragua and Laos were added for practical reasons and are not a part of the original figure.

Therefore, according to the initial research of Mather (1992) forest cover cannot be separated from general land use changes, and it can be stated that there is a point of equilibrium in the optimal amount of forest land:

Optimal allocation of forest land, in any time period, requires that the marginal net benefits of timber production and environmental benefits from forested land equal the marginal benefits of agricultural production from converted land (Barbier et al., 2010: 101).

Even since this definition is relatively simple the inclusion of both economic as well as environmental rationale results in a framework that might be used for assessing the usability of a specific forest area. Moreover, this definition does not give specific weights, but signalises that the problem is multifaceted. However, the definitions' limitation is that it does not include the interests of the local population *per se* and for the purpose of this research this definition must be enriched with this factor.

1.4 The role of forests and the importance of a forest transition

While the previous subchapters focused on the drivers of deforestation and reforestation this sub-chapter will highlight the importance of forests by putting a special weight on its environmental side and the key role it plays in climate change.

1.4.1 The global context and climate change

Starting from the global level environmental services. Forests play a key role in absorbing CO_2 emissions from human-based activities (Grebner et al., 2013). The highly threatened tropical forests alone absorb around one fifth of the total human CO_2 emissions (Science

Daily, 2009). Moreover, changes in forest cover, i.e. deforestation and forest degradation are responsible for 17.4% of the human-based CO_2 emissions (IPCC, 2007). Therefore, reforestation and afforestation activities are crucial for reducing the emissions from the Land use, land-use change and forestry (LULUCF) sector.

This is important in the context of climate change. According to Working Group II of the fifth assessment report of the Intergovernmental Panel on Climate Change (IPCC) the global mean temperature rise between the reference period of 1850-1900 and 1986-2005 is 0.61 degrees C (IPCC, 2014a). It is expected that the total rise will be between 0.8-2.3 degrees C in the low-emission scenario up to 3.4-6 degrees in the high-emission scenario (ibid.). During the Conference of the Parties 16 (COP16) in Cancun in December 2010 it was agreed that the negotiations should go towards fulfilling the target of a global temperature rise not exceeding 2 degrees C (UNFCCC, 2014a).

Stopping the global temperature rise is important since, it will have adverse effects on the environment and socio-economic relations (IPCC, 2014a). As agreed in the United Nations Framework Convention on Climate Change (UNFCCC) severe impacts of "dangerous anthropogenic interference with the climate system" should be avoided (UNFCCC, 1992). The key risks of this interference are:

- The risks of death, injury, ill-health or disrupted livelihoods for low-lying coastal zones, large urban populations and rural sites;
- Risks due to extreme weather;
- Risk of food insecurity, particularly for poorer populations;
- Risk of loss of ecosystems, biodiversity and ecosystem goods, functions and services (IPCC, 2014a).

These risks can be reduced by limiting the rate of mitigation and increasing adaptation efforts, e.g. reforestation projects, building dams and improving water provision. However adaptation efforts will not be sufficient without realising ambitious mitigation goals (IPCC, 2014a). Therefore, without additional efforts to reduce GHG emissions and further realising the *business as usual* scenario the global temperature rise by 2100 will be between 3.7-4.8 degrees C (IPCC, 2014b). In order to stay below the target of 2 degrees action is needed now since it is *likely*[1] that this target can be maintained only when staying below a CO_2

[1] 66-100 % Chance to reach the target

concentration of 450 ppm target (ibid.). It is *about as likely as not*[2] to reach this target by limiting the emissions around 500 ppm, for a short time overshooting 530 ppm (ibid.). Today the CO_2 concentration is 399 ppm and is growing with a pace of 2-3 ppm a year (NASA, 2014). In order to achieve the agreed goal, emissions will need to decrease by 25%-72% till 2050 and 90-118% till 2100 compared to the base years (1988-2005) (IPCC, 2014b).

Since land-use changes and forestry are responsible for a large extend of human-based emissions, a global reduction of emissions will be difficult without severely improving the conditions in the forest sector. The cost-effective mitigation options in forestry are afforestation, sustainable forest management and reducing deforestation. 1/3rd of the mitigation potential in the sector can be reached with a price below 20 USD per t of emissions reduction. Thus, goals in sustainable forestry are efficient tools for mitigating climate change. These tools can bring additional benefits such as the conservation of biodiversity and water resources or reduce soil erosion (IPCC, 2014b).

In order to reach a global agreement COPs are organised annually, fulfilled with additional Subsidiary Body for Implementation (SBI) sessions in Bonn. After the failure of reaching a binding global agreement in Copenhagen in 2009 (BBC, 2009; EU Observer 2009; Spiegel, 2009; The Guardian, 2009) a new goal was set in Durban (COP17) in 2011. During this COP the Ad Hoc Working Group on the Durban Platform for Enhanced Action (ADP) was launched. It is now planned to make the negotiating text available before May 2015 and reach an agreement at COP21 in Paris (2015) (UNFCCC, 2014b). It is probable that at least a partial agreement will be reached, since the approach of the biggest emitters: USA and China changed (Tree Alerts, 2014; IISD, 2014; T. Karpiński, personal communication, 10/6/2014, A. Metelitsa, personal communication 8/6/2014).

For the forest sector especially the negotiations on REDD+, i.e. Reducing Emissions from Deforestation and Forest Degradation are important. In the REDD+ abbreviation the '+' stands for conservation, sustainable management of forests and the enhancement of forest carbon stocks (UN-REDD, 2009). Costa Rica and Papua New Guinea were the first countries proposing talks on this theme within the UNFCCC (The REDD desk, 2014). The negotiation framework was created with the Bali Road Map (COP13, 2007) as a political response to the large emissions from the forest sector (UNFCCC, 2007). At the last COP the 'Warsaw Framework for REDD+' was established, securing funds (over 100 million USD) for the

[2] 33-66 % Chance to reach the target

further working of the mechanism and pilot programmes. However, the real implementation of REDD+ can only be possible if a global agreement is reached in Paris and a vast streamline of money is provided. Currently it is not even completely clear to what extend REDD+ will be financed by donors, private business and local funds (UNFCCC, 2013; S. Brun, personal communication, 12/6/2014; T. Kowalczewski, personal communication, 8/6/2014).

1.4.2 Regional and local level

At a regional and local level environmental or ecosystem services provided by forests have a more direct impact and value on the livelihoods of the people. Forested ecosystems provide a large extend of services for millennia. The most important services, according to Grebner et al. are divided into three types: provisioning, regulating and cultural services (2013). Provisioning services are such services as the provision of wood, water or protecting soils from eroding. Not mentioned were the NTFPs are an important source of income for millions of people in the Global South (Ticktin, 2004). Regulating services gather such services as: providing flood control, water and air filtration, plant pollination and carbon storage (presented in detail above, sub-chapter *1.4.1*). The cultural services form another important role which is not only limited to recreation and reflection but also forms a part of identity for indigenous populations around the globe whose spiritual values and beliefs are deeply rooted in the forests (see: *1.4.2.1* on Shifting Cultivation) (Grebner, 2013; Kulik, 2013).

An example of the importance of regulating services are the disastrous floods in 1998 on the Yangtze River, partly caused by the high water runoff in the deforested hilly drainage basin. Consequently, the Chinese government decided to afforest the steep slopes in order to slow down the water runoff, decrease the risk of mud-slides and decrease soil degradation (Zhou et al., 2007). Also the disastrous results of hurricane Mitch in the same year in one of the selected countries: Nicaragua, would be significantly lower if proper environmental services were provided before (US Forestry Service, 2000; UNEP, 2014).

1.4.2.1 Shifting Cultivation

The cultural services are highly visible when discussing shifting cultivation. This form of land-use is frequently associated with forest degradation, and is connected with indigenous populations (Garrity & Lai, 2001). It is practiced in parts of the global (forested) South. According to Vergara it is a “temporal and spatial cyclical agricultural system that involves clearing of land – usually with the assistance of fire – followed by phases of cropping and fallow periods” (2001: 24). Consequently, the soil fertility is based on the natural processes of

replenishing (Voss, 2007). Shifting cultivation was the first form of agroforestry and the cyclical system is closely linked to the (spiritual) culture of the population practicing it (Garrity & Lai, 2001).

However, the growing population density and logging put severe pressure on the shifting cultivators, shortening the possible fallow period (Malcolm, 2007; Vergara, 2001). Since shifting cultivation practices can be sustainable only with a low population density (Malcolm, 2007) the system gets inefficient. This, combined with the growing importance of cash flow in the modern economy and the pressure of governments on introducing permanent agriculture (Brookfield, 2007) makes shifting cultivation more and more marginalised and less profitable.

Chapter 2: Methodology and research design

2.1 Research rationale and country selection

The overarching goal of this research is to study the role of forest changes, leading to forest transitions, as an element combating climate change, as well as a tool in decreasing the impact of regional environmental effects. Already since the preliminary research, during which articles were read and experts on forestry were spoken it became clear that several challenges in the forestry sector, especially around poor governance and illegal practices remain severe obstacles for a forest transition. Therefore, in this research not only the drivers for a forest transition were presented, but also a look at four cases worldwide was made. In its analysis the main obstacles and possible lessons learned from the countries that already experienced a transition were identified.

To give a varied, however not total picture of forest transitions including its drivers and importance four countries were chosen. Two in Central America and two in Southeast Asia: Costa Rica, Nicaragua, Vietnam and Laos. The rationale of this choice was as follows: selecting a country that experienced a forest transition, and a neighbouring country with relatively similar conditions that did not experience such a transition.

In detail, Vietnam was chosen since it is an evident example of a country that experienced a forest transition and its size and inner differentiation is not as big as in China or India. Also, I was familiar with the conditions in this country due to the fieldwork made in 2013 and therefore the basic processes taking place in the country were understood. As another example from the region Laos was chosen for its proximity with Vietnam, the outsourcing of Vietnamese deforestation to it and the still the long way to experience a forest transition, despite the relatively high remaining forest cover.

In Latin America Costa Rica was chosen since it experienced a forest transition in the 1990s and its general development policy is strongly based on the principles of sustainable development. Also the Payment for Ecosystem Services (PES) programme was first launched on a broad scale in Costa Rica. This programme has been widely discussed and adapted in several other countries. On the other hand, Nicaragua was chosen since it is a country in the same geographic region that did not experience a forest transition and needs drastic improvements of its institutions.

No countries in Africa were selected. This is due to time constraints and the fact that nowadays in Africa no country really experienced a forest transition, therefore its

comparability with e.g. Vietnam and Costa Rica, would be marginal. However, examples of relatively successful policymaking can be found in such countries as Cameroon, or Congo (Brown, et al., 2014).

While the choice of the countries was partly subjective and therefore cannot be considered as a complete picture of forests transitions around the world a detailed look may help in identifying successful policies and actions taken by several actors. Moreover, it may also help in identifying common gaps and constraints.

2.2 Conceptual framework

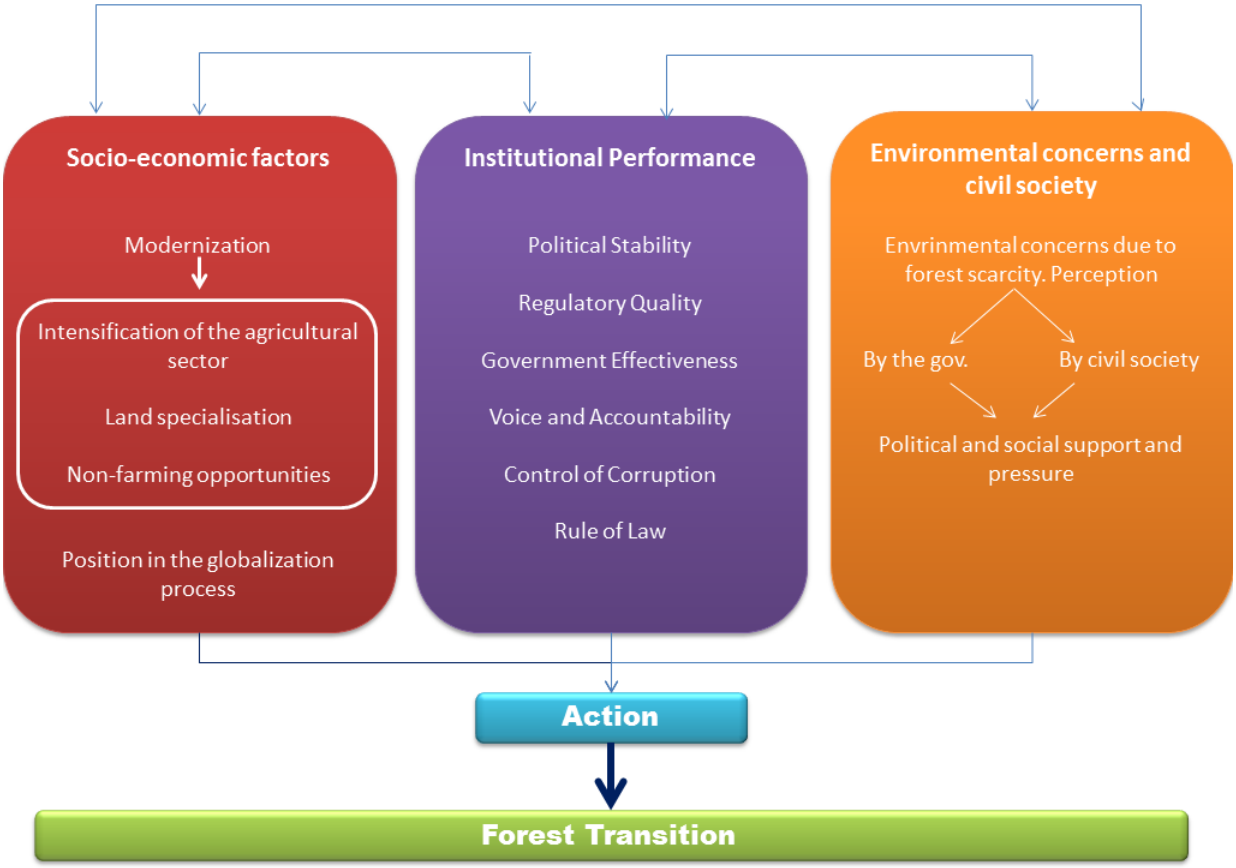

Figure 4: Conceptual Framework

The conceptual framework gathers the socio-economic and institutional factors needed for a forest transition. It also highlights the importance of environmental concerns and its impact on political and social pressure. Although presented only as a general pattern, the three areas interfere with each other. While a wide arrange of non-farming opportunities can only be provided in a modern economy, such an economy requires effective political frameworks. This mechanisms can also work the other way around: a well-functioning economy will provide funds for an effective institutional framework. Also environmental concerns and a

healthy civil society cannot develop without fulfilling the basic economic needs and the provision of institutions that provide at least a minimum level of stability and accountability.

2.3 Research questions

The main research question of this research is:

What is the picture of factors driving a forest transition. What is blocking it, and what are the main opportunities and threats for the future according to research in the selected case studies?

This is followed by more detailed sub-research questions:

1. What socio-economic factors: such as the changing global position of a country or inland development and tensions are driving and blocking a forest transition?
2. What characteristics of public and non-public institutions are driving and blocking a forest transition?
    - What are the main gaps and constraints regarding capacities needed for a forest transition
3. What are the most important lessons learned by countries that already experienced a forest transition?
    - What are the main obstacles and lessons learned in specific domains, such as policymaking, capacities or the socio-economic structure?
    - What type of practices should countries aiming at a forest transition definitely omit?
4. What forms of support may countries receive for (further) driving their forest transitions, paying special attention to the 2015 climate agreement?

2.4 Research methods

The specific circumstances in which the research was made strongly influenced the chosen research methods. The research was conducted stationary in Bonn, Germany, at the UNFCCC Secretariat, during an internship there, and finished during the stay at home (in Poland). Therefore no fieldwork was conducted and all the data was collected by analysing documents, scientific articles, databases by conducting interviews and through information received by email.

2.4.1 Interviews

During the research semi-structured interviews were organised with various interviewees. In the initial stage of the research experts on forestry and the global climate negotiations were interviewed in order to get a better understanding of the topic. In the next phase, thanks to the UNFCCC Climate Change Conference (SB Session, Bonn, June 2014), three semi-structured interviews with representatives of two selected countries and a typical donor country: Norway were made. After the Session experts, academics and NGO employees in the selected countries were contacted. Unfortunately, the response rate was low and this stage took more time than initially planned.

2.4.2 Analysis of governmental policymaking and vision

During this research the forestry policy and in broader terms: the general environmental policy of the selected countries was analysed giving a better understanding of the policymaking priorities and the constraints the countries face.

2.4.3 Gathering information from scientific articles

Scientific articles were used in the very first stage of the research in order to crystalize the subject of forest transitions as the main theme of this thesis. However, the scientific articles do not only form a theoretical base of this research. In later stages articles describing case studies and policy-constraints in the selected countries were also used in order to get a better understanding of the situation on the ground.

2.4.4 Reports and internet sites

In some parts of the research the information from scientific articles was insufficient and consequently 'grey literature' was used extensively. Reports published by such organisations as CIFOR, IEA, EFI, PROFOR and similar ones were of great use since they focused on a particular country or theme, providing information of high certainty.

Although internet sites should not be considered as a main source of information they did provide a good starting point for parts of the research, especially when these were sites of governmental institutions or renown research and industry websites. Also, internet sites of NGOs were visited in order to trace the mission of NGOs and find interviewees.

2.5 Research chronology

Chronologically, the research started in late February with a preliminary research around forest policy and REDD+. After a few weeks this crystalised around the topic of forest

transitions. At that stage mainly scientific articles were read and additional information collected on the Internet. The discussions with my supervisor and people from the MDA Programme at the Secretariat enabled me to narrow this research down to the current topic. This stage was finished in April.

The next stage, starting in late March, consisted of collecting data on the chosen countries. From the already read articles, and new ones specific information was extracted. Also the analysis of recent policy was made. Therefore this research contains elements of a discourse analysis, in which not only the information is weighted, but it also becomes important **how** and in **which context** the information was presented. Nevertheless, this element should not be considered as dominant. This phase, due to the vast amount of materials and high complexity lasted for the majority of time till August when the last written data on one of the countries was collected

The SBI 40 conference in June was an opportunity to conduct interviews with people responsible for forest policymaking in three countries. This was also a great occasion to visit side events. The SBI session opened new opportunities for further research.

The majority of interviews were conducted in August and early September, since in the first months the response rate was extremely low and the level of specialisation: not sufficient. The advancement of the research made identifying not only questions, but also people whom to ask these questions easier. This was significantly differing from the initial plans since it was planned to conduct interviews early in the research in order to provide a guidance for further desk-research. Contrarily, first extensive information was found, and then specific questions on issues requiring clarification were asked. This scheme also enabled me to receive opinions on pre-studied topics, deepening the spectrum of information. However, this method significantly extended the period of data collection and as a result, the deadline for delivering the Thesis had to be extended.

The main struggle was the strong interconnectivity between the specific phases of the research. Only choosing the topic was not enough, since in many places gathering detailed information on one particular country could still be considered as a preliminary research in terms of preparation for interviews. From the other side, it was challenging to grasp the whole picture without being sufficiently guided by interviews already performed. Also, the research did not include fieldwork, and to this extend I only relied on the experience from the fieldwork in Vietnam in 2013.

2.6 Strengths and limitations of the research

2.6.1 Strengths

- The topic of forest transitions is, from a scientific point of view, highly interesting. It combines issues on several levels (local, regional, national and global), as well as gathers various themes, such as economic changes, poverty, politics, GHG emissions, environmental concerns or the vulnerability and risks of changing land-use functions.
- Experience from the fieldwork conducted in Vietnam in 2013.
- Several interviews made with high-level experts. This includes an ex-minister of environment, heads of NGOs, climate negotiators from a few countries and UNFCCC officers.
- I was able to use the authority of the UNFCCC when collecting data from Parties;
- Work during the internship (capacity-building team) and the (although limited) experience on climate negotiations gave a decent understanding on the climate negotiation process of which forestry remains a part.

2.6.2 Limitations

- Due to time constraints and a different character of the cases no countries in Africa were chosen.
- Since the exact research on forest transitions started late during the internship at the UNFCCC, relatively little time during the internship to organise interviews was left.
- Organising a substantive number of interviews was a challenge: the responsiveness was low and a large part of the interviews had to be conducted after having a recommendation from a former interviewee;
- During the SBI 40 conference in Bonn only interviews with policymakers from Vietnam, Costa Rica and Norway were made. Due to technical reasons and availability no interview was possible with policymakers from Laos and Nicaragua;
- Since no fieldwork was made the real impact of forest changes on the local population is assessed in very general terms, basing on others' articles.

Chapter 3: Selected countries introduction and its forest sector

This chapter presents a general overview of the selected countries, starting with a short economic and governance outline, followed by specific sub-chapters on the four countries. In these sub-chapters first the socio-economic and historical conditions are presented and next the state of the forests and the forms of environmental (forestry) policymaking. Consequently, the chapters gives a better understanding of why, and how policymaking works. It will already be an opportunity to identify gaps, constraints and needs that will be further discussed in Chapter 4.

3.1 Economic and governance indicators

The four selected countries differ quite significantly in terms of population, economic growth and human and institutional development. However, they share similarities too. The pairs: Vietnam and Lao PDR and Costa Rica and Nicaragua are neighbouring countries with relatively similar climate conditions and a past determined by French and Spanish colonialism respectively. Moreover, all the four countries are part of the G77 group. This coalition of developing nations allows its members to collectively represent the needs of the developing world during such events as climate change conferences. Also, excluding Costa Rica, the countries have a medium human development index (UNDP, 2013).

3.1.1 GDP and HDI

Table 1: HDI in the selected countries (UNDP, 2013).

Country	HDI	Global Rank:
Costa Rica	0.773	62
Nicaragua	0.599	129
Lao PDR	0.543	138
Vietnam	0.617	127

Table 2: GDP PPP per capita in the selected countries (IMF, 2014).

Country	GDP PPP	Global Rank
Costa Rica	12,942	76
Nicaragua	4,554	131
Lao PDR	3,068	141
Vietnam	4,012	134

Since Costa Rica has by far the highest GDP PPP and HDI its achievements are not directly comparable with the other selected countries. However, following the forest transition curve it might be stated what steps are before the other countries in order to reach the place where Costa Rica is now.

3.1.2 Governance performance

For its governance performance the standardised World Bank Worldwide Governance Indicators were used (World Bank, 2014a). The performance of the particular countries can be found on Figure 5.

The performance of Costa Rica is the highest, which correlates with the GDP and HDI indicators. The "voice and accountability" indicator is drastically lower in Vietnam and Laos, which is a consequence of the authoritarian communist state. However, this feature also has its positive side, since the political stability and in the case of Vietnam, the government effectiveness and rule of law indicators are higher than in Nicaragua, although having a slightly higher GDP and HDI. No strong correlation is visible for the control of corruption and the government model.

Another sign of governance, connected with the "Control of Corruption" indicator is the corruption perceptions index, prepared on an annual basis by Transparency International. The four selected countries perform as follows:

Table 3: Corruption Perceptions Index (2013, Transparency International).

Country	Rank
Costa Rica	49/177
Nicaragua	127/177
Vietnam	116/177
Laos	140/177

Again, Costa Rica's performance scores the highest which can be correlated with its general high governance and economic performance. Especially the low position of Laos will occur to be a major obstacle, when considering its performance.

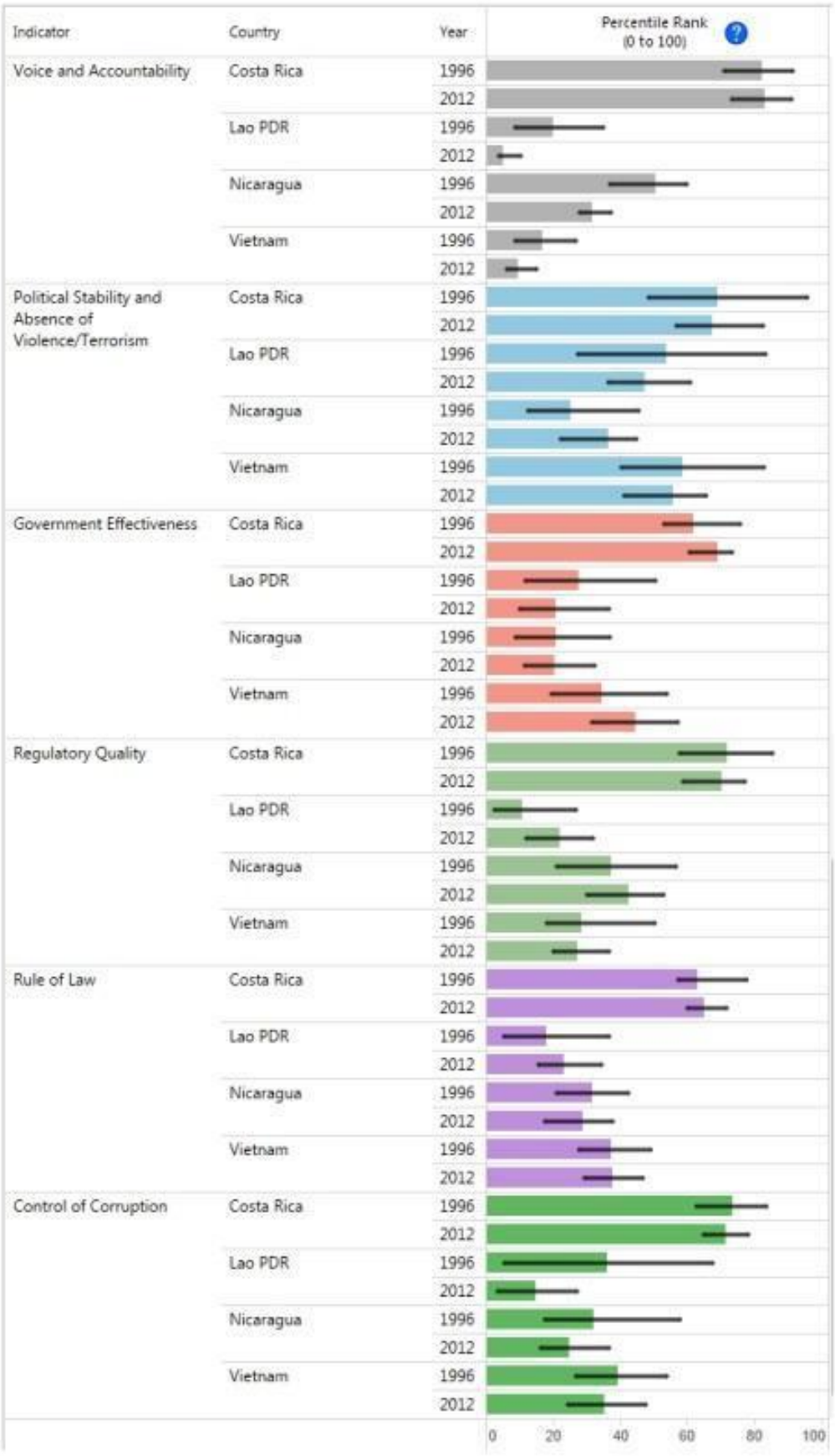

Figure 5: Governance indicators by countries (World Bank, 2014a).

3.2 Costa Rica

Costa Rica is a relatively small country (51,100 km^2) in Central America with a population of 4.8 million people (World Bank, 2014b). Compared to other countries in the region, it only experienced two brief disturbances since the late 19th century (World Bank, 2014b), and it's wealth in the region can only be compared with larger Mexico and Panama, with the latter having benefits from the Panama Canal. Nowadays it is an upper-middle-income economy (Micconference, 2013). However, similarly to other economies in Latin America, the Costa Rican economy is characterised by high inequalities and a significant part of consumer spending based on remittances (Index mundi, 2014).

3.2.1 The forest sector in Costa Rica

As in the other countries discussed in this report, the exact forest cover declared is inconsistent, differing by source of information and methodology, especially for historical data. A graph showing this level of uncertainty was prepared in the article of Daniels et al. (2010), presented on Figure 6. The most recent data provided by the ministry of Environment and Energy (MINAE) declares a forest cover of 52.38% in 2010 (MINAE, 2014). This is a significant change compared with the middle 1980's when, according to the most drastic estimates, the forest cover was as low as 20%, and did most likely not exceed 30%.

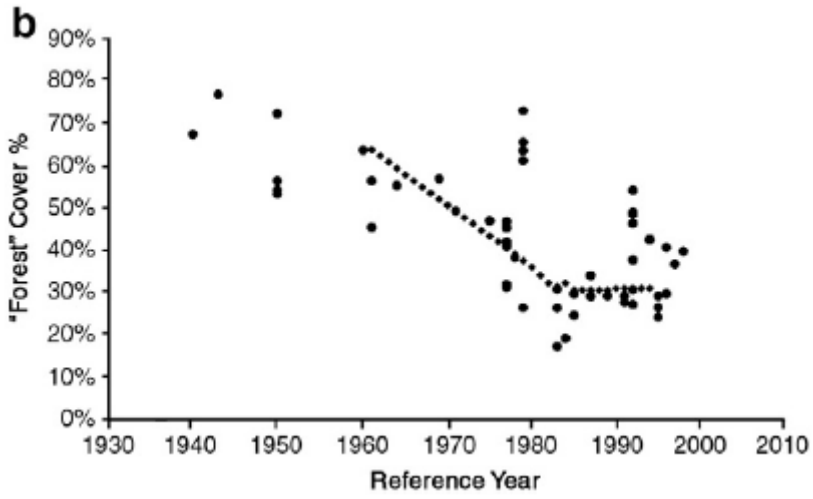

Figure 6: Forest cover in Costa Rica (Daniels et al., 2010)

The deforestation in the country was the most severe after the Second World War. The main pressure on the forest was made by the growing agricultural sector and growing population. Especially for cattle ranching large areas of fertile tropical dry forests were cleared (Calvo-Alvarado et al., 2009). This pathway was supported by the government and development agencies as a mean of making 'productive' use of land (Navarro & Thiel, 2007). This process

was going in pair with a national 'colonisation' programme of remote areas, resembling the policies introduced in Vietnam in the 1970s and 1980s (Kulik, 2013; Porras et al., 2012). Deforestation was strengthened by the landless peasants pushed to 'new' areas (Porras et al., 2012). The situation changed in the early 1980s, after the debt crisis of 1981. After this neo-liberal policymaking was implemented. This resulted in the bankruptcy of numerous cattle ranchers, slowing down the land-use changes and having impact on the population dependent on this sector. Also other changes in the economy and society, such as the growing labour out-migration, growing tourist sector and the growth of conservationists approaches had, besides the changing policy, a significant impact on reducing deforestation (Kull et al., 2007).

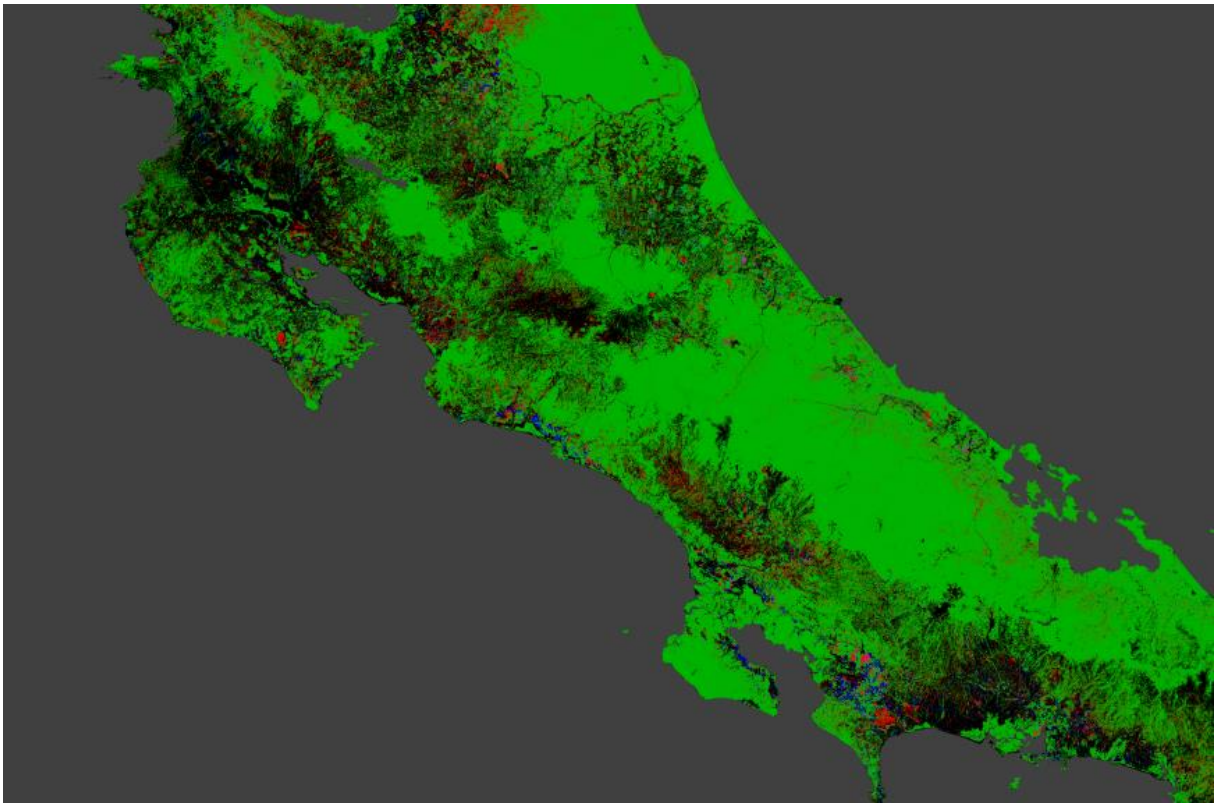

Figure 7: Costa Rica forest cover and change between 2000-2012 (red: forest loss, blue: forest regrowth) (University of Maryland, 2014).

Most of the forests in Costa Rica are regrowth, or secondary forests, with only 7.5% being in primary state. In 2005 the share of plantations was marginal (Mongabay, 2006a). In the case of further successful environmental policy this may become a great advantage, compared to countries basing most of their regrowth on plantation forests, since natural forests hold rich biodiversity and not only carbon stocks (C. Rodriguez, personal communication, 5/6/2014).

3.2.2 Environmental Policy

Costa Rica's recent reforestation trend cannot be considered as just a single element of the economic and institutional transition of the country. Besides the economic changes in the country, environmental policy played a role with forest policy being part of a broader vision, leading to a carbon-neutral economy in 2021 (Reuters, 2014)[3]. Sustainable development, and the inclusion of it into the general development agenda of the country has directly been a consequence of the strong commitment of the government towards responding to global initiatives, such as the Rio Agenda 21, the establishment of conventions combating climate change (UNFCCC), biodiversity loss (UNCBD) and desertification (UNCCD) established after the Earth Summit in Rio in 1992 (FONAFIFO, 2014).

The environmental way taken by the policymakers is portrayed in the countries' membership to AILAC, the Independent Alliance of Latin America and the Caribbean, gathering 6 countries of the region, both with right-wing as well as left-wing governments. This alliance aims at ambitious commitments in climate negotiations not only from the developed world (Annex II), but also from the developing world (non-Annex I), presenting a "third way" in the North-South division, by breaking the "firewall" separating these two groups (Climatefinance, 2013; T. Karpiński, personal communication, 20/3/2014; C. Rodriguez, personal communication, 5/6/2014).

The first moves towards combating deforestation, which has once been one of the highest in the world, reaching more than 1.2% in the 1980s (Kull et al., 2007; Rodriguez, 2013; Sanchez-Azofeifa et al., 2001) started in the 1970s with decisive actions taking place since the late 1980s. An introduction of earlier forest policies is important, since in common sense it is believed that the PES scheme was crucial for combating deforestation, while, according to an interview with the Minister of the Ministry of Environment and Energy (MINAE) in the time of introducing the programme the deforestation rate was already relatively low (C. Rodriguez, personal communication, 5/6/2014) (see: Figure 8).

[3] However, after the elections in April 2014 the pathway towards a carbon-neutral economy has been determined by the that foreign support must be provided.

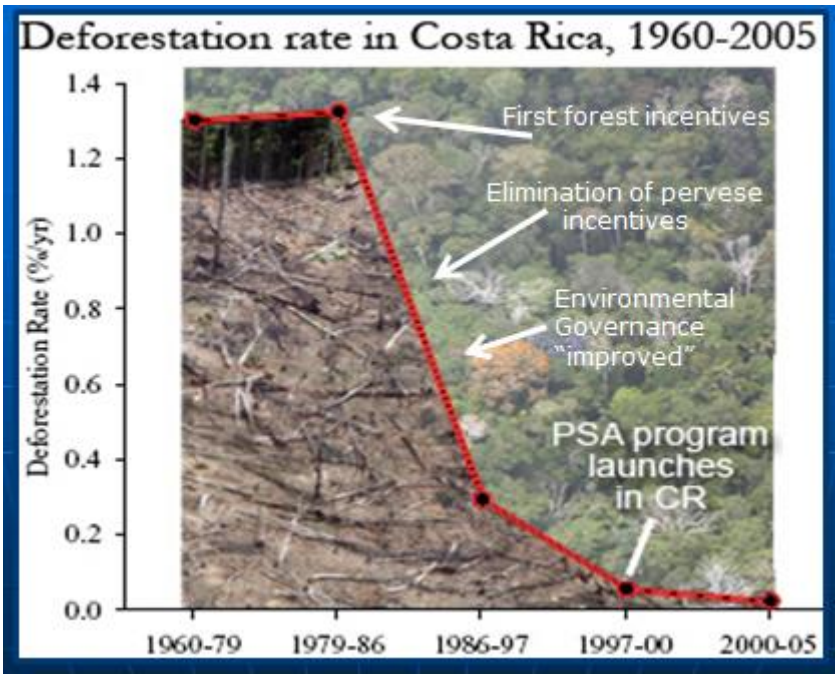

Figure 8: Deforestation rate in Costa Rica, 1960-2005 (Rodriguez, 2013).

In 1979 the first tax exemptions for forest land users were established, in order to prevent land-use change and basing on the 1969 Forest Law the first national parks were established (Calvo-Alvarado et al., 2009). As a next step, in 1983 a 'soft credits' programme was launched, allowing farmers to take low interest rates loans for commercial tree planting. In 1986, 1990 and 1996 major changes of the forest law were implemented (Miranda et al., 2004). On the basis of the 1986 Forest Law the following programmes were launched:

- **Title of payment for forests,** aiming at reforestation, and targeting owners of natural forests, funding the planting costs;
- **Municipal Forestry Fund**, promoting forestry activities at a municipal level;
- **Certificates of Forestry Credits,** refunding reforestation projects.

After the 1990 Law Certificates of Forestry credits for the management of forests were implemented, as well as certificates of forest protection, not giving the right to log in areas where trees were logged in the last 20 years (ibid.).

In 1996 the Forest Law no. 7575 was introduced.

3.2.2.1 Forest Law No. 7575

Costa Rica's recent forest policy, Forest Law no. 7575 from 1996 has a strong conservationist standpoint, and introduced the widely discussed PES programme in 1997 that since then enrolled over 700,000 ha. The basic principles of the law are presented below, based on the English translation and summary prepared by Frida Burnet (e-Parliament).

"The presented law establishes as an essential and priority function of the state to care for the conservation, protection and administration of the natural forests and the production, exploitation, industrialisation and promotion of the country's forest resources destined for this purpose, according to the principle of appropriate and sustainable use of renewable natural resources. In addition, it will see to the generation of employment and an increased living standard for the rural population through their effective incorporation into forestry activities." (2008).

In detail, it provides the law for establishing mechanisms important for protecting the existing forest and reforest barren and agricultural land. It hereby provides certificates for Forest Conservation giving tax exemptions for the provision of environmental services by land owners. It also gives a special priority for crucial areas, such as ecological corridors. Similar exemptions are given for implementing reforestation on the owned areas (ibid.)

The law no. 7575 defines forests, forest plantations, agroforestry systems and environmental services. Also, it defines specific logging rights, allowing forest exploitation only if the site has a management plan assessing the environmental impact. Moreover, it established a ban on the export of timber and logs. Another example of the exacerbation of the law is the implementation of a paragraph stating that only 3 trees per ha might be cut per annum on agricultural (pasture) land. Moreover, the 7575 law provides institutional arrangements, such as funding for the National Forestry Financing Fund (FONAFIFO). This institution established in 1991 has the implementation role in the PES programme and is the organisation responsible for the REDD+ strategy (The REDD desk, 2014).

The law also defines the hierarchy and responsibilities of particular institutions. It allows the establishment of legal, non-speculative business by those institutions if needed for the proper administration of forest resources. Last but not least, it provides an arrangement defining penalties for the breaking the law in the forest sector (Burnet, 2008).

Despite the neo-liberal character of the law, of which an example is the establishment of PES, that sets up a specific prices on the protection of the environment the law does state that

natural heritage cannot be privately owned (ibid.) and as a value remains a property of all Costa Ricans.

3.2.2.2 Payment for Ecosystem Services (PES) as part of the 7575 Forest Law

The PES, or Environmental Systems Payment (PSA) programme, was introduced in 1997 and, in accordance to forest law 7575, it recognizes the following environmental services:

- Mitigation of greenhouse effect gas emissions (fixation, reduction, sequestration, storage, and absorption).
- Protection of water for urban and rural use, and for hydroelectric plants.
- Protection of biodiversity for conservation and sustainable use for scientific purposes, for the pharmaceutical industry, for research, and for genetic improvement, as well as for the protection of various ecosystems and forms of life.
- Protection of the beauty of natural landscapes, to the benefit of both the tourist industry and scientific purposes (FAO, 2001; FONAFIFO, 2014).

This programme changed the concept of subsidies, by providing financial rewards for maintaining the current state of nature providing the mentioned services. According to FONAFIFO, the PSA programme is based on four pillars (2014):

- **Institutions**: The current programme incorporates several institutions, such as SINAC, FONAFIFO, the National Forest Office, forest regents, NGOs and others. Recently, several steps were introduced in order to enhance the management and investment process.
- **Legislation**: The switch of policymaking towards a more environmental direction. The PSA department of FONAFIFO is responsible for the effective management of the programme.
- **Financing**: currently 3.5% of the taxes on gasoline is assigned for the PSA programme ("ecotax"), reflecting the vision for the programme's sustainability and the factor, in which the emitter is the biggest payer. Although spending taxes on specific purposes has been criticised from the constitutional side, this issue has been solved since the time these concerns arose. However, the law allows other possible contributions, such as special state budgets, donations and credits from national and international organisations and countries, as well as financial sources through offset mechanisms. Last but not least, mechanisms for providing agreements with the local

private business were developed, and were proved to be successful. Only during last year more than 7 million $ came from this source.

- **Monitoring and Evaluation**: A special monitoring and evaluation scheme was designed by FONAFIFO. Monitoring is carried out by visits of regional offices to properties participating in the PSA Programme, the revision of reports from forest regents, audits of FONAFIFO, or by using satellite data (Burnet, 2008; C. Rodriguez, personal communication, 5/6/2014).

Besides the rigorous forest policy, wide protected areas, known as Protective Wildlife Areas were established, nowadays covering more than a quarter (26.2%) of the national territory, divided into the following groups: (i) National Parks; (ii) Biological Reserves; (iii) National Wildlife Refuges; and (iv) Forestry Reserves. The remaining categories are: (v) Wetlands; (vi) Protected Marine Areas; and (vii) Protective Areas, i.e. strips of territory along land borders and coastlines (The REDD Desk, 2014).

At the moment, more than the half (55%) of the Costa Rican forests are in private hands, since in the past formal titling was given after 10 years of occupying land (Corbera et al., 2011). The law requires owners to design the harvest plans by the involvement of professional foresters, and the government provides additional regulations on tree harvesting along rivers, water springs and steep slopes. This condition differs significantly from Vietnam and Lao PDR, where, due to the socialist mechanisms, the land formally belongs to the state. Also, this state leads to correlations between the government and private land holders, which will be further explained in sub-chapter *4.1*.

3.3 Nicaragua[4]

Nicaragua located in Central America has an area of 130,000 km^2 and a population slightly above 6 million people (World Bank, 2014c) giving a population density of 51 people per km^2.

The country can since the colonial times be divided into three main parts: the Pacific lowlands, the North-central highlands and the Caribbean (Atlantic) coast. While the land on

[4] Due to language reasons and the political instability in the country gathering information on Nicaragua was certainly the biggest challenge, since information on this country is relatively scarce which was also confirmed by a CIFOR Senior Scientists in an email exchange (A. Larson, personal communication, 26/8/2014). As a comparison, the results on Scopus for "Nicaragua AND forestry" gave only 63 hits, why for Vietnam: 227, 93 for Laos and over 300 for Costa Rica.

the Pacific coast and the centre of the country was occupied by Spanish colonists and populated by Mestizos i.e. people of mixed European and indigenous origin, the Caribbean coast was a domain of British interests, populated by black Creole and indigenous populations (Floyd, 1967; Stevens et al., 2011).

In the Western parts of the country agriculture and cattle-ranching is a common way of making a living. However, due to the limited land available and low intensification, the farmers and ranchers expand eastwards along the agricultural frontier, clearly visible on Figure 9 (Stevens et al., 2011)

The Eastern parts of the country have a different specificity. The area is mostly inhabited by indigenous groups having customary land rights and living in extreme poverty reaching 72% of the population, and being extremely dependent on NTFPs (Larson, 2006). In the early 2000s only 3% of the areas had official land titles. Even since it is argued that traditional land tenure can be as effective as the official governmental 'fines and fences' approach (Hayes, 2007) this is certainly an indicator of low institutional development. The Eastern parts of the country are also home for the largest remaining intact forests in Central America and most of the total forest cover in the country and therefore its protection is of high relevance (FCP, 2012).

The clashes between the Spanish-speaking population from the west and the Creole-Miskito-English speaking population in the eastern parts resulted in disturbances, the marginalisation of the eastern areas by central governments and consequently, the autonomy of the two provinces confirmed by the Autonomy Statute of 1987 (Larson, 2006; Zeledon & Kelly, 2009).

The country experienced long periods of disturbances during much of the 20th century with the Somoza family leading the country between 1936 and 1979. In that period political rights were limited and groups not belonging to the governmental mainstream oppressed, including political-caused murders (Stevens et al., 2011). During the Nicaraguan Revolution in 1979 the Sandinista National Liberation Front took over the power in the country (ibid.). However, no peace arose since the counterrevolutionary groups, the 'Contras' started its campaign against 'communism', by receiving strong support from the Reagan administration (Brown University, 2014). In the second half of the 1980s the funds for the 'Contras' declined and the situation slowly stabilised (Stevens et al., 2011). In 1990 a coalition of anti-Sandinista parties from both sides of the political spectrum took over power in democratic elections. The Sandinistas are the ruling the country again since 2006.

The result of the turbulent history are the low governance indicators (World Bank, 2014a) and low income per capita (World Bank, 2014c) ranking Nicaragua as a lower-middle-income-economy with a GDP (PPP) of 4400 USD (ibid.), slightly higher than Vietnam and about one third of the Costa Rican income.

3.3.1 The forest sector in Nicaragua

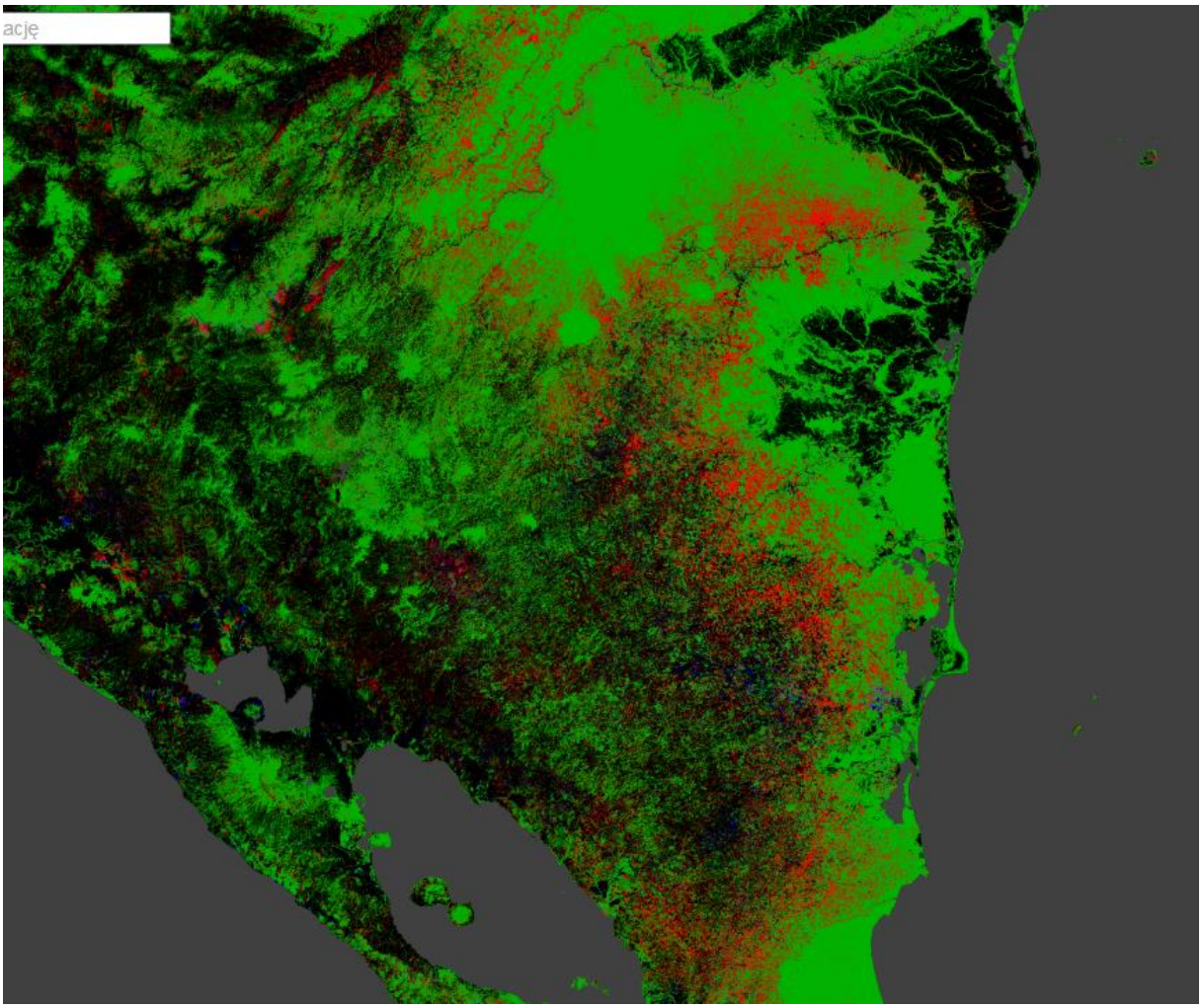

Figure 9: On the figure severe deforestation between 2000 and 2012 is seen, especially in the North-Central highlands where the agricultural frontier moves Eastwards. The 'black' (non-forested) areas West of the frontier were deforested between 1970 and 2000 (University of Maryland, 2014; Zeledon & Kelly, 2009).

As in the other analysed countries the actual forest cover is debatable and historical data is highly inaccurate. The forest cover was by FAO in 2006 estimated as 5.5 million ha, i.e. 42% of the territory, while other sources refer to only 3.2 million ha (Maderas Sostenibles, 2014) or 3.53 million ha (FCP, 2012). This differentiation probably depends on the fact which degraded areas are counted as forestland and which are not (Mongabay, 2006b). It is estimated that additional 50,000 to 80,000 ha of land are cleared annually due to illegal or unregulated logging (ODI, 2008; Tico Times, 2014a). This gives a deforestation rate of 1-

1.4% per annum and as a consequence since the 1950s the cultivated land area grew from 7 to 36% of the national territory and the forest area halved (Maderas Sostenibles, 2014). According to estimates by FAO the forestry sector contributes to 0.7% of GDP, however it is considered as the most important natural resource and its impact on the livelihoods of rural populations remains high (ODI, 2008).

While Latin America is a region particularly experiencing land-use cover change (Zeledon & Kelly, 2009), Nicaragua is an inglorious leader experiencing the biggest annual loss in Central America, particularly on the Caribbean side (Aide et al., 2013). The main drivers for deforestation are, besides agricultural demand: social exclusion, illegal logging and the impact of natural hazards (FCP, 2012). The cumulative losses due to illegal logging, including the provision of environmental services are estimated at 55-110 million USD annually. These loses are increased by lost tourism opportunities, or revenues from illegal logging being transferred abroad or invested into speculative sectors open for the 'shady' money (Richards et al, 2003).

3.3.2 Environmental Policy

While during the Somoza dictatorship environmental policymaking was non-existent, the poor state of the forests in Nicaragua is recognised by governments since 1979 (Stevens et al., 2011). During these 35 years several efforts were undertaken in order to reverse this trend by establishing reserves and forest protection policies, but the efforts remain insufficient. In 1997 the conservative government introduced a decree banning logging of cedar and mahogany, precious and expensive species, for a period of 5 years, but its effectiveness was estimated as low (Rainforest Info, 1999). In 2006 the new Ortega administration announced a state of emergency regarding the state of forests (Larson, 2006).

3.3.3.1 Forestry Law 462

The 462 law on Conservation, Development and sustainable forestry was introduced in 2003 and forms the general framework for forest governance (Larson, 2006). It highlights the importance of forests and the need for modernizing policymaking on that matter.

It defines the National Forestry Inventory agency responsibilities (INAFOR) as well as the tasks of the National Forestry Commission (CONAFOR), being the highest instance responsible for creating a social dialogue, monitoring and control of policymaking. The responsibilities of the former organisation are as follows: monitor the sustainable use of forest resources, run forestry development policy, approve permits, combat forest fires, collect

statistical information on the sector, manage national forest registries, facilitate national forest certification, perform audits and accredit forest regents and municipal foresters (President of Nicaragua, 2003).

The law also constitutes the ban for cutting, removal or destruction of trees of protected species and bans the extraction of trees on steep slopes. It does also provide a guideline for penalties for deforestation and forest degradation with the fines varying between 500 and 5000 USD (ibid.).

The law does not directly address land tenure issues, however it gives the administration of forests of 'unknown' ownership to state agencies (Larson, 2006). It also states, according to the constitution from 1987, that the land belongs to those people who work on it (ibid.).

3.4 Vietnam

Vietnam, officially the Socialist Republic of Vietnam is one of the most populous countries in Southeast Asia, having a millennia long history. The country was devastated during the First and Second Indochina Wars. After the reunification in 1975 the economy faced numerous structural problems: a destroyed infrastructure, outdated industry and agriculture, failures of the central-planned economy and non-existent foreign relations with the West. This resulted in widespread poverty and famine. As a response, the Vietnamese government decided to open its economy to the outside world, partly basing on the Chinese experience of Deng Xiaoping's liberalisation reforms. Since 1986 the 'Doi Moi' reforms were introduced in which the role of private enterprises an d households was increased, and simultaneously steps for decentralising the country were introduced. However, these changes still had to fit into the 'socialist-oriented market economy' in which the central government kept the decisive role (Grądzka, 2009; Harvie, 2008). Nevertheless, these changes made foreign relations with capitalist countries, and consequently, Foreign Direct Investments (FDIs) and the entry to the World Trade Organisation in 2006 possible. Remarkably, in the period from 1991 utill 2006 the annual growth of the economy was 7.6%. Nowadays the country is already considered as a lower-medium income economy matching the rise of the 'Asian Tigers' (Das & Shrestha, 2009).

Despite this success Vietnam is still a part of the Global South. The export products are mostly low value added, such as rice, coffee, or textiles. According to FAO agriculture creates 20% of the GDP and employs more than 50% of the labour force (2014), with rice taking

about 60% of the cultivated land (World Bank, 2012). The high population density and economic development puts significant pressure on the natural environment, especially on the forests.

According to the 1999 census the dominant Kinh group accounted for 86.2% of the population in Vietnam. However, in mountainous parts of the country the minorities form a significant part of the total population. There are 54 ethnic groups officially recognised by the government (Census, 2010), and these groups belong to the poorest in the country (FDS, 2007).

3.4.1 Shifting cultivation in Vietnam

The ethnic minorities are often linked with shifting cultivation. It was estimated that in Vietnam about 3 million people make their living basing on this form of agriculture (Ty, 2007; Quang, 2007). Research showed that shifting cultivation had, until recently, a leading role in land use by the farmers in the research sites visited (Kulik, 2013). However, modern forms of agriculture, acacia and rubber plantations increased the role of cash in the economy. While in the past the households were mostly self-sufficient, nowadays in many areas the land available for planting subsistence food crops gets smaller, and the role of the market economy increases. Moreover, as a consequence of the Forest Development and Protection Programme some households became dependent on support in the form of rice subsidies given by the government.

Currently there are three main drivers for a switch to more permanent forms of agriculture and plantations. First, the state-level policies aim to put a complete ban on shifting cultivation practices (MARD, 2001). Secondly, the land is becoming scarce (Arhem, 2009), something that was confirmed in almost all questionnaires. Last but not least, the process of modernisation and Kinh colonisation brings new agricultural practices to the highlands (Andriese & Nguyen, 2010).

3.4.2 The forest sector in Vietnam

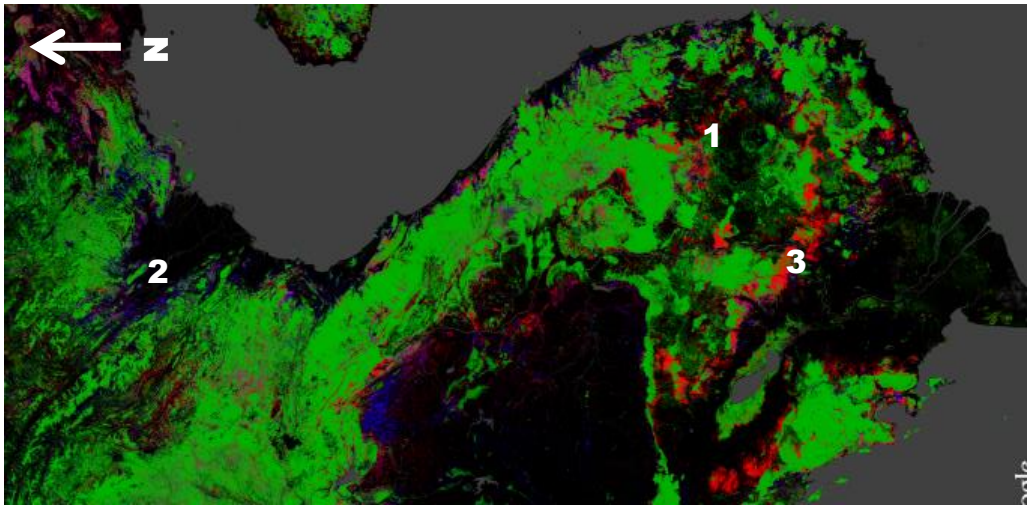

Figure 10: Forest Cover in Vietnam with changes between 2000-2012. The North is to the left. Please note the high deforestation in the Central Highlands ('1') and the large areas of reforestation in the Northern Parts of the country ('2'). The large red areas ('3') are in Cambodia (University of Maryland, 2014).

While the forest coverage in Vietnam was 43% in the 1940s, only 17% remained in the late 1980s (FDS, 2007; McNamara et al., 2006), and the forest lost during the period 1980-1990 was more than 100,000 ha annually (FDS, 2007). The severe deforestation was caused by a number of factors. Firstly, during the Second Indochina War millions of litres of defoliants were used, to strip leaves from the plants. The use of 'Agent Orange' caused dramatic impacts on the condition of the forest and human health (Burgers & Tran, 2012). Secondly, in the post-war period the intensive and improper forest exploitation, combined with the internal colonisation of the highlands by Kinh people was occurring. The colonisation process was driven by the rationale of colonising "empty" areas and controlling the minorities that might have separatist feelings (Liddick 2011). This though led to further deforestation (Burgers & Tran, 2012; Do, 1994), and most of the remaining forests were inefficiently managed by State Forest Enterprises (SFEs) (ibid.; Bonnin, 2012). Last but not least, according to the estimates of the former Ministry of Forestry about 50% of deforestation was a consequence of shifting cultivation (Do, 1994), accounting for 50 thousand ha annually (Vien, 2007). In response to the severe deforestation the national government established policies aiming to stop this trend (MARD, 2001). These reforms, briefly presented below, nowadays result in an annual forest cover increase of around 300,000 ha (FDS, 2007).

3.4.3 Environmental Policy

The policies that changed the forest cover trend would not have been possible without the *Doi Moi* reforms introduced in the second half of the 1980s (Harvie, 2008). The reforms, besides

reforestation, simultaneously resulted in the process of decentralisation, and increasing the role of communities (Bonnin & Turner, 2012).

3.4.3.1 The 327 Programme

The first large scale programme (no. 327) was established in 1992. The goals of the programme were broad, however for the purpose of this research the following elements were the most important: the process of 're-greening' open land and bare hills, the protection of existing forests, and the assistance for natural regeneration and reforestation. Officially the programme was largely successful, achieving its targets 'over 100%' (MARD, 2001). However, in reality the success was disputable, despite the funds and energy put into it. The main reasons for the only limited success were the top-down prescriptive bureaucratic regulations, limited know-how and insufficient funding, with the latter resulting in implementing the cheapest possible solutions (ibid.).

3.4.3.2 661 Programme: Five Million Hectare Reforestation Programme (5MHRP)

As a response, in 1998 a new programme, no. 661, or the Five Million Hectare Reforestation Programme (5MHRP) was launched. It includes some of the lessons learned during the previous programme. The main goals were: the efficient protection of the 9.3 million ha of forests and creating 2 million ha of special use and protection forests. The new programme considered the importance of decentralisation and cooperation with the local population, as well as the 'benefit sharing' process. The form of this benefit sharing was, however, not presented in detail (ibid.). The new policy also divided the forests into three types:

- **Production forests** having the aim to provide resources such as timber or fruit;
- **Special use forests** including national parks, nature reserves or cultural and environmental protection forests;
- **Protection forests** aiming in the protection of people from natural hazards. (ibid.).

3.4.3.3 Forest Development and Protection Programme (FDPP)

The newest programme is the Forest Development and Protection Programme. The programme follows the basic framework of the 661 programme, since the needs, especially in mountainous areas, remain high. However, the current programme is even more focused on the development of plantation forests, rather than the protection of existing natural forests. The main aim of the government behind this programme was to abandon shifting cultivation. The farmers who decide to start acacia plantations receive the seedlings and fertilisers for free, as well as rice subsidies (350kg/ha annually). These subsidies, although not being

sufficient for a complete food security, should make the years before the harvest easier (Village head, personal communication, 29/3/2013).

3.4.3.4 Forest Land Allocation

Another change since the 1980s is the different land tenure. While before the 1990s the forest land was overwhelmingly managed by the state, since 1991 Forest Land Allocation (FLA) laws were implemented, distributing the land to the users of the forests, including smallholders. Since its introduction till 2007 more than 7 million ha have been allocated, including 2 million ha of forests (Dinh, 2007). This process does positively influence the choice of making investments, especially on a long term, where a feeling of security is needed (OECD, 2010).

3.4.3.5 Vietnam Forestry Development Strategy and the vision for the forest sector in 2020

On 5 February 2007 the Vietnam Forestry Development Strategy for the Years 2006-2020 was adapted, presenting the current state of the forest sector, gaps, opportunities and proposed policies[5].

A forest cover of 47% is set as the goal for 2020. Basing on the relatively recent estimation of the Ministry of Agriculture and Rural Development, the forest cover in 2011 was 39.7% (2011, MARD). The general picture presented in the document shows that the Vietnamese government is planning to implement various institutional tools to enhance forest management. One important step is following the path of decentralisation. Secondly, a wide-ranged insurance mechanism is planned to be adapted, something which in 2013 was not common yet, at least in the Thua Thien-Hue and Quang Tri provinces (Kulik, 2013). Also, most of the forest land should be allocated by 2020, giving the stakeholders not only benefits, but also personal responsibility on forests. Another important part of the vision is the improvement of forest quality. Although the forest cover has risen substantially in the last several years, the forest quality declined, since most of the growth origins from newly established monoculture forest plantations and the protection of old-grown forest is still insufficient, resulting in a 10.2% rich-forest area decrease between 1999 and 2005 (FDS, 2007).

[5] The possessed copy of the "Viet Nam Forestry Development Strategy" is an unofficial translation and therefore can only be perceived as an overview, rather than an official statement. Nevertheless, it was used by Tropenbos Viet Nam, and the document can also be found on several websites.

It is planned that the sector will become a part of the global economy and wide institutional arrangements. This should be seen from two sides: firstly, the possible development assistance and environmental services, and secondly from the side of the global market reality. Starting from the former, in the original document a great opportunity was seen in the Clean Development Mechanism. Unfortunately, due to its failure, i.e. the extremely low prices of units, this chance should be considered as insufficient for solving the large scale problem of finance (Redd Monitor, 2013). However, since the publication of the document a new mechanism, the REDD+ got introduced, in which Vietnam already achieved a 'readiness' status (UN REDD, 2013).

From the market-oriented side, the document foresees a growth in timber and wood-products production both for domestic, as well as international demand. The growing forestry sector is supposed to cover these needs. Interestingly, the vision, and therefore the official line of the Party presented in the document aims at increasing the exports of wood-processed products to developed markets, such as the EU, USA and Japan. This is not only a move towards possible higher profits, but also higher expectations on the quality of the products and the sustainability of production. The EU already (since March 2013) requires that 100% of wooden products imported to the EU are provided with certifications (European Commission, 2014), as did the US (Karpinski, personal communication 20/3/2014). Therefore, it is crucial that at least the exported wood is certified. According to the plans presented, till 2020 at least 30% of the wood should originate from certified sources.

The forest sector in 2020 should also provide a decent livelihood for the rural population dependent on small-scale timber extraction and NTFPs as well as provide a bigger impact to the national economy. Recently the forest and wood-processing sector contributes for 1% of the GDP, which does not include other significant impacts of forests, such as: protection functions, environmental values, preserving biodiversity and gene sources, or the value for ecotourism. Moreover, the existing forest processing is assessed as being inefficient, ad-hoc based, lacking planning and sustainable (both financially and environmentally) character. It is aimed that this percentage will grow to 2.5 and that it will influence job creation and improve the livelihoods of ethnic minorities, since it is aimed to reduce the number of poor forest-dependent households by 70% by providing more diverse income sources, such as the development of tree crops, short-rotation and animal husbandry (FDS, 2007).

As a consequence of the undertaken policies, the current forest cover in Vietnam oscillates around 44 to 45% of the total land cover, out of which the biggest growth comes from

plantation forest, today accounting already for one quarter of the total forest area. Almost three quarters of the forest area has a secondary character, and only 1% is still in primary condition (P. Hung, personal communication, 11/6/2014; Mongabay, 2011).

3.5 Laos

Officially Lao People's Democratic Republic, also: Lao PDR, is a relatively scarcely populated Southeast Asian country, having a population of approximately 6.8 million people scattered on an area of 237 thousand square km, giving a density of 27 people per square km (World Bank, 2014d). Its geography is marked with hilly and mountainous areas on the overwhelming part of the country, and lowlands in the western parts along the Mekong, forming the border with Thailand. Historically it has been between Siamese and Vietnamese empires, later experiencing French colonisation and 20 years of Indochina Wars (Ducourtieux et al., 2005). As a result of the conflict Laos became a Marxist-Leninist socialist republic that, similarly to its Eastern neighbour: Vietnam adopted market-oriented policies in 1986 named the 'New Economic Mechanism' (CIFOR, 2013a). As shown in sub-chapters *3.1.1* and *3.1.2* it has significantly lower development indexes than Vietnam and is characterised by poor governance, which is of crucial importance, when comparing the performance of both countries.

3.5.1 Shifting cultivation in Lao PDR

Shifting cultivation in Laos is still a highly prevalent type of land use. An estimated area of 5 million ha (23% of the total land area) is used as fallows, and additional 400,000 ha are used on a current basis for cultivation (CIFOR, 2013a). According to (Ducourtieux et al., 2005) around 1/3rd of the households were dependent on shifting cultivation, especially in the Northern mountainous provinces in 1999 (Ducourtieux et al., 2005). The growing population pressure resulted in shortening the fallow period, from 10-15 years to 5-7 years, consequently resulting in a lower soil fertility (Seidenberg et al., 2013). However, it is not sure if the 'break down' point in which the population pressure and the available area becomes unsuitable for effective (and sustainable) shifting cultivation has already been reached (ibid.). Moreover, it is suggested that such a clear demarcation cannot be given (ibid.).

Since the government of Laos blames shifting cultivation, along with illegal logging as the main driver of deforestation, several policies aiming at eradicating this process were implemented (CIFOR, 2013a; EIA, 2011). One of it is the Forest Land Allocation programme

(see: *3.5.3.2*), since its main goal seems to be limiting land available for shifting cultivation, consequently forcing the people to change their livelihoods. According to state decrees it was first planned to eradicate shifting cultivation till 2000, which was later postponed till 2020, which, however, seems to be improbable either. Although the process is declining, considering that an overwhelming part of the population lives in the countryside, and that most of Laos' territory is marked with steep slopes, the process will definitely continue in the coming years (H. Sirivath, personal communication 8/08/2014).

3.5.2 The forest sector in Laos

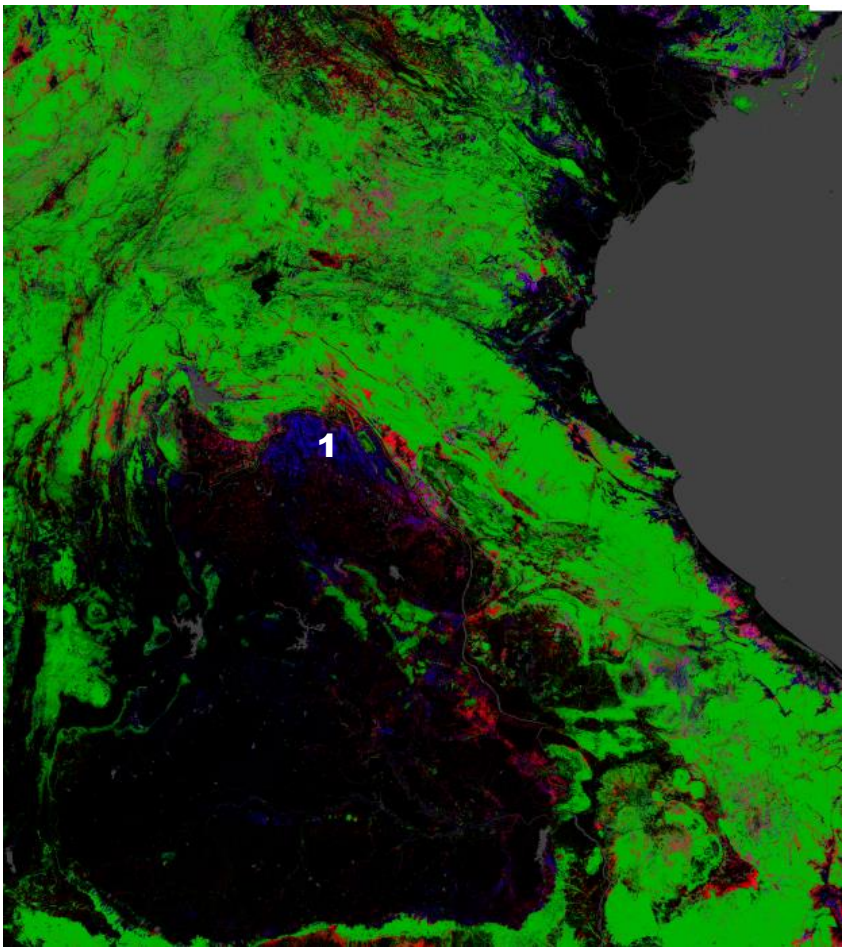

Figure 11: Forest cover and changes in the period 2000-2012. The large blue area ('1') is in Thailand, close to the Laotian border (University of Maryland, 2014).

Laos currently has a forest cover of around 40%, and is experiencing severe deforestation. Its historical forest cover was 49% in 1982, 45% in 1992 and 41.5% in 2002 (CIFOR, 2013a). Although historical data is, similarly to the other countries, debatable it is correlated with the FAO and UNFCCC recommendations defining forests. The country is experiencing deforestation due to several drivers that were listed by Thomas et al. as:

"(1) unsustainable wood extraction from production forest, (2) pioneering shifting cultivation, (3) agricultural expansion, (4) industrial tree plantation, (5) mining, (6) hydropower development, (7) infrastructure development, (8) fire and (9) urban expansion." (2010).

According to the CIFOR report (2014) although Laos still has the largest proportion of its land covered by natural forests in Southeast Asia, the deforestation rate is high: 0.7% of forest cover, or 76,000 ha are lost per annum. Alarmingly, the stock volume of forest is declining on a higher pace of 1.67% a year. While in the Northern provinces the deforestation rates seems to decline, simultaneously in other parts of the country the rate is significantly higher and deforestation is common inside conservation forests and national protected areas (EIA, 2011).

The official extraction of timber was at a rate of 300,000 m^3 in 1990 up to 734,000 m^3 in the late 1990s. Officially, the extraction nowadays is limited to 150,000 m^3, but at the same time severe illegal logging, on which more detailed information can be found in sub-chapter 4.4 is prevalent (ibid.)

The direct value of the forestry sector is 3.2% of the GDP and its export is the quarter of the total export value. Besides direct benefits, also indirect ones are provided i.e. environmental services, NTFPs and small-scale timber extraction. While taking into account that 75% of the population lives in rural areas and, according to some estimates, 80% of the households is at least partly dependent on forest products, its importance for the economy is higher, although unmeasured, than the direct benefits (Boungnakeo, ?; MAF, 2005).

3.5.3 Environmental Policy

In response to the severe deforestation and the importance of the forest sector for the people the government of Laos established policies aiming at reversing this trend, starting with a conference in 1989, followed by the Forestry Law of 1996 and continued by the 2007 Forestry Law.

3.5.3.1 2007 Forestry Law

The 2007 Forestry Law is an outline of forest management and protection. It has a general character providing a broad picture and regulations, not specifying technical details. It is a continuation of the 1996 Forest Law and earlier regulations from 1989 integrating the newly adapted (1986) market economy model (MAF, 2005). Due to the geographic and political similarities with Vietnam, the Forestry Law is resembling the Vietnamese regulations, including a discourse presenting the governmental efforts as a tool to fairly govern the working nation, typical for Marxist-Leninist governments.

Likewise to Vietnam, the forests in Lao PDR are divided into three categories: (1) protection forests, (2) conservation forests and (3) production forests. Protection forests (1) are classified for protecting water resources, river banks, road sides, preventing soil erosion and maintaining its quality, as well as protecting areas for national defence. In these forests cutting, shifting cultivation, land clearing and gathering of NTFPs is prohibited, unless an exceptional situation occurs. Conservation forests (2) are classified for conserving nature, preserving its biodiversity and ecosystems, as well as other natural or cultural sites. Production forests (3) are natural and planted forests classified for utilisation by the business sector, satisfying the requirements of national socio-economic development and livelihoods. A conversion of these categories requires the approval from the National Assembly (National Assembly, 2007).

According to the Forest Law the forests are owned by the state in the name of the people that with the organisations exploiting the forests bear the responsibility of protecting the forest areas (ibid.).

By the law logging is only allowed in production forests and prior to this process the area must be inventoried, surveyed and a sustainable management plan must be developed following the rules of:

- Managing, monitoring and controlling the logging process by forest staff.
- Logging only in the areas approved by the government.
- Cutting (on a selective basis) only the trees marked and stamped to be cut, simultaneously paying attention to a maximum utilisation of the harvested wood (ibid.).

The forests are also grouped according to its function and density into: dense, degraded, bare forestland and village use forest, however, a clear demarcation of the areas remains inconsistent. According to the law a high degree of responsibilities is provided to the local level.

The Forest Law mentions Customary practices (or utilisation) of forests, however it restricts shifting cultivation, aiming at changing these practices of the people into a more sedentary livelihood.

The Law also provides a basis for the promotion of forest regeneration and the establishment of forest plantations. Moreover, it specifies that forestland might be converted if it brings high level benefits for the livelihoods of the people, which is a crucial element, concerning the

governmental plans assuming that the overwhelming part of electricity production will come from hydropower, requiring large basins on previously forested land. Last but not least, the Forest Law provides guidelines for acting on the abuse of power and corruption issues (ibid.)

Since 2011 Lao PDR is working on a Forestry Law revision, in order to make it compatible with REDD+ requirements (Phonphichith, 2013).

3.5.3.2 Land and Forest Allocation Programme (LFA)

Similarly to Vietnam, a Land and Forest Allocation Programme was established in the 1990s and "vigorously implemented under strong leadership of the Central Committee for Land and forest Allocation" (MAF, 2005). According to this law permanent rights to land use is given after a governmental categorisation of land in villages. According to an interview, in 2005 around 7000 villages were allocated (Sirivath, personal communication, 8/08/2014). It allowed every household to use up to 25 ha of land, however, including up to 17 ha of barren land and only up to 3 ha of fertile land. Consequently, in most cases the cropland available per family declined, and the LFA programme is perceived as a tool aiming at the limitation and eradication of shifting cultivation, making the use of fallows impossible (ibid.; EFI, 2011).

3.5.3.3 Forestry Sector Strategy 2020

In order to provide a vision for the future development of the forestry sector in July 2005 the Government of Lao PDR adapted a Forestry Strategy to the Year of 2020. The main assumption of the law is a target of a 70% forest cover in 2020, for the first time presented during the conference in 1989. Since the domestic production of forest products exceeds the sustainable limits of 300,000 m^3 annually, the strategy recommends a wider establishment of forest plantations, that covered only 146,000 ha in 2005, by providing tax incentives, sharing technologies, and strengthening capacities of public institutions (MAF, 2005).

Another important goal is to improve the socio-economic impact of the forests on the people, by "providing goods and services, reduce dependences". One of the main goals is to decline the importance of shifting cultivation, being, according to the Strategy a main cause of forest loss, especially in the Northern provinces of the country, and therefore sedentary agriculture has to be promoted, Similarly to the Vietnamese strategy, and development plans of other countries (Brookfield, 2007) shifting cultivation is perceived as a backward and harmful practice not fitting the approach of a modernizing country.

Biodiversity targets are planned to be reached thanks to widespread cooperation with neighbouring countries, and foreign institutions such as Sida, DANIDA or the GEF. A clash

between the wide development goals and specific biodiversity targets is the development of hydropower that takes large areas. However, the government claims that it might be beneficial, since a special law has been adopted in which 1% of the revenues has to be spent on development funding mechanisms (MAF, 2005).

Chapter 4: Assessment and analysis

In the previous chapter the four selected countries were presented, starting from a general socio-economic picture, followed by a detailed description of the forest sector in the country and its forest policy. This chapter aims at assessing the performance of the countries and analysing its main gaps and constraints. The chapter has been divided into four sub-chapters, each presenting one of the countries. Then, the sub-chapters were divided into five parts: a brief introduction, an assessment of socio-economic drivers, an assessment of institutional performance, a part discussing environmental concerns and a country-specific conclusion. The specific division follows the drivers identified in the theoretical chapter (see: *1.3*) and portrayed in the conceptual framework (see: *2.2*) increasing the comparability of specific countries' performance.

4.1 Costa Rica

The approach to combat deforestation taken by several Costa Rican governments is an example of innovative policymaking, in which new approaches, such as the Payment for Ecosystem Services were implemented, making Costa Rica a pioneer in this initiative. When looking at the cause of forest transition in Costa Rica the answer is, controversially, its different recent history compared to other countries in the region, namely:

1. A stable (non-violent) history since the 1950s with a relatively stable political system and governments enforcing human development projects;
2. The confidence and vision of specific individuals in implementing key environmental reforms with a wide social support;
3. And (partly) consequently a relatively high economic development, and developed social services;
4. Last, but not least, the changes in the global economy also played a role in the forest transition.

4.1.1 Socio-economic changes

4.1.1.1 Modernisation

When looking at the statistics, a forest transition in Costa Rica is undisputable: the country faced severe deforestation between the 1950s and the 1980s, with less than half of the forest remaining at the end of this period. Since then the forest land regenerates at a rapid pace, despite the fact that the population almost doubled and GDP per capita tripled (Rodriguez, 2013). Although the conservationist policies had a significant impact on changing this trend,

socio-economic factors cannot be omitted since the structure of the economy changed significantly (see: 4.1.1.3 and 4.1.1.4).

In the last decades the country undertook a wide-scale modernisation process. It transformed from a rural economy, exporting unprocessed beef from extensive farms, to a more urbanised form exporting fruit and coffee from intensive plantations, micro-chips, machines and others (MIT, 2014). This, along with relatively high governance indicators (see: *3.1.2*) distinguishes Costa Rica from the other chosen countries. Even if since the early 2000s, the long-time perspective of deteriorating terms of trade of primary products in favour of highly manufactured products is not valid anymore (Cypher & Dietz; 2008), the switch towards the production of manufactured products and the provision of complex services, such as eco-tourism, should be considered as a righteous move. It provides new technologies and services to the country, rather than keeping the country on the supply side of the highly substitutable primary products.

4.1.1.2 Intensification and land specialisation

The development of cattle ranches had a significant impact on the forest cover during the past decades. The cattle population was constantly growing, from less than 0.5 million in 1950, to more than 2 million in 1980. It was driven by the growing prices of beef, growing consumption, globalisation, and formal incentives provided not only by the government, but also by development agencies such as the World Bank and US AID (Calvo-Alvarado, 2009). The debt crisis in 1981 was a turning point: the subsidies were, from the economic point of view, not possible to maintain. Simultaneously this was a time when the policies of big development agencies started to pay attention to the environmental sustainability of development programmes. At that time also a highly conservationist vision of governance, strongly supported by the population arose (Kull et al, 2007).

Regarding land specialisation and intensification the PES scheme introduced in 1997 is of high relevance. Its impact in reducing deforestation in Costa Rica has been widely discussed and its rationale was questioned (Corbera et al., 2011; Daniels et al., 2010; Pagiola, 2008; Pfaff et al., 2008; C. Rodriguez, personal communication, 5/6/2014). The crucial question presented by Daniels et al (2010) is if the high investments in the programme were worth it. The answer if PES indeed influenced limiting deforestation is not straightforward. Basically, the direct impact of PES in preventing forest loss has been assessed as being minimal. It only prevented single sites from deforestation with payments given not only to ‘spotlights’ of deforestation, but also to areas, where the chance of deforestation, even without the payments,

was extremely low (ibid., Corbera et al., 2011). Therefore, parts of the payments can be assessed as inefficient, since the government basically paid for the adoption of practices that would be adopted in the 'business as usual' scenario anyway.

However, the assessment of the mechanism regarding its direct impact is not enough, since it should be considered in a perspective of additionally. Firstly, it played a socio-political role. Secondly, it provided other environmental and aesthetic services, such as water provision and retention, biodiversity, or scenic beauty forming a substantial part of Costa Rica's 'eco brand'. Indeed, a couple of dozens of USD paid per ha annually might not be a sufficient driver for stopping deforestation (D. Lynch, personal communication 10/8/2014), but it forms an additional factor for making the decision of land abandonment and forest maintenance.

Moreover, the PES should also be considered as an element of the "carrot and stick" mechanism. While the government from one side provided the "stick", in the form of the "eco-tax", logging bans, exports bans, and the cancelation of incentives for land clearance, also a "carrot" or reward for maintaining forests was provided, in order to keep the political system stable (Daniels et al., 2010; C. Rodriguez, personal communication, 5/6/2014).

At this place the question arises if the PES is really sustainable from an environmental point of view. While experts and members of NGOs agree that it certainly has some positive impacts, it simultaneously holds drawbacks. According to Pagiola (2008) the current payments may not be high enough for the desired land-use changes, and the costs of supplying the services might be higher than their value. Also, the 'protection' or in other words the financial incentive not to cut the forest is only given on a medium-term basis of 5 years. Even if the contract gets extended for additional periods, it makes long-term environmentally-sustainable decision-making difficult to implement. Therefore it is rather a policy of "buying time" than a long-term sustainable mechanism (D. Lynch, personal communication, 10/8/2014). In some areas after the end of the contract the sites get deforested and are frequently turned into pineapple plantations. This 'booming sector' is currently seen as the biggest threat for post-PES lands. Consequently 'smart' incentives and institutional frameworks are needed in order to make forest maintenance an economically sustainable alternative hence preventing land-use change (ibid., F. Carazo, personal communication, 15/8/2014).

Another issue facilitating the land-use change to other forms than forests is the fact that more than a half of the forests in Costa Rica belong to private owners. This does not have to be a problem *per se*, but it is a factor that generates additional complications in the process of

managing and protecting forests. Large areas of private forests visualise the conflict between environmentalism and generating income on a traditional manner.

Even though in 1996 land conversion from forests was banned, abuse is common. One of the methods of circumventing this law is to illegally cut the forest understory, and thereafter obtain an official status of pastureland. The next step is to apply for clearing 'pasture' rather than 'forested' land (McGinley, Cubbage; 2012). Similarly to the situation presented by PES, the incentives for changing land-use remain strong and consequently forest degradation on private land continues (D. Lynch, personal communication, 10/8/2014). On the country level, between 2000 and 2005 around 200,000 ha of young and medium-aged private forests were lost in favour of agricultural and cattle ranching expansion (Corbera et al., 2011).

4.1.1.3 Non-farming opportunities

Due to the growing welfare in the Global North and willingness to travel tourism became an opportunity for countries of the Global South. The peaceful development of the country, tropical climate and scenic beauty combined with the growing environmental concerns attracted large numbers of tourists looking for scenic beauty in a form of tourism regarded as 'eco'. While 'eco-tourism' often only shares the use of nature with the word 'eco' (D. Lynch, personal communication, 10/8/2014) it certainly forms an opportunity and additional incentive for environmental protection, also in politics since it gains support from voters involved in the sector (ibid.). Nowadays, the touristic sector is one of the most important branches of the economy generating more than 12.5% of the GDP (World Economic Forum, 2013).

The growth of service and industrial sectors due to economic modernisation, combined with the vivid tourism sector and remittances decreased the pressure on land cultivation (Kull et al, 2007). Importantly, it also made labour relatively expensive especially when compared with Costa Rica's neighbours. Due to these changes the colonisation process of lowly populated areas was radically slowed down, and opportunities in the countryside perished, pushing the population to urbanised areas and to the rising service sector.

4.1.1.4 Position in the globalisation process

In the last decades the global position of Costa Rica certainly improved. It gained a strong position regionally for its pacifistic approach and role in peace negotiations. Also its economic performance improved which is acknowledged by the OECD, part of which Costa Rica will become soon (OECD, 2013b). However, it remains vulnerable to the global

economic performance since its tourism sector remains a highly conjuncture-sensitive branch of the economy.

Nevertheless, the global economic drivers leading to adverse forest cover changes seem to play a lesser role than in the last decades and the institutional framework certainly plays a role in it, something presented in the next sub-chapter.

4.1.2 Institutional performance

4.1.2.1 Political stability

In various interviews conducted on Costa Rica it was highlighted that the stable past of the country including the abolishment of the army in 1948 was one of the main reasons lying behind the current success of the country (D. Boucher, personal communication, 1/8/2014; F. Carazo, personal communication, 15/8/2014; A. Larson, personal communication, 26/8/2014; C. Rodriguez, personal communication, 5/6/2014). For many decades, starting from the 1940s, the political reality was formed by the National Liberation Party (PLN) and its social-democratic model.

According to an American expert who has been observing Costa Rica's performance for the last 40 years this model of the country's mainstream politics resulted in high social spending. This gave wide access to health care and education, leading to high human development indicators and the creation of a middle class (D. Boucher, personal communication, 1/8/2014; Global Edge, 2014). The success of the social-democratic model also distinguishes Costa Rica from its neighbouring countries, being a form of pride, in which the Costa Ricans tend to perceive themselves as 'Europeans' rather than Latin Americans. Even if the social and economic indicators are incomparable with Western Europe, its general policymaking aims to match the European social-democratic model (D. Boucher, personal communication, 1/8/2014).

The governance model also contains several check and balances, and the abolishment of the army resulted in the military never involving in political affairs, something prevalent in many other countries of the region (Global Edge, 2014). This, combined with the general governance model made Costa Rica a regional leader, when considering human rights and work for stabilisation in the region during various crises. As a result Costa Rica became home for the Inter-American Human Rights Court (ibid.).

4.1.2.2 Regulatory quality

Due to the stability of the political system and wide support for environmental goals (D. Boucher, personal communication, 1/8/2014, for more see: *4.1.2.4*) the regulatory quality of environmental law is high, of which such mechanisms as the PES are an example.

The PES scheme is described by the governmental institutions as a success story involving cumulatively more than 150 million USD, and more than 700,000 ha until 2009 only. However, with 0,43% of the general state budget spent on PES, a percentage being several orders of magnitude higher than in it is for forest protection in the US, it allows a researcher to look at the effects critically as was done in sub-chapter 4.1.1.2 (Daniels et al., 2010). According to the FONAFIFO website the main positive impacts of the programme include:

- Reducing deforestation rates and recovering forest cover and degraded lands;
- Combating illegal forest felling;
- Promoting the forestry industry;
- Contributing to rural development and contributing to national strategies against poverty;
- Contributing to global environmental goals (FONAFIFO, 2014).

The PES mechanism was innovative in the 1990s and its example was shared around the world. However according to the director of one of the NGOs nowadays a new approach is needed. The institutions face a generational gap: the generation that implemented the key reforms is now heading towards their retirement and the institutions become cached into a comfort zone (F. Carazo, personal communication, 15/8/2014). This could in broader terms be compared with the economic 'middle income trap'. While the general situation improves, further development is not possible without a structural transformation. Therefore now the time arose, to design more sustainable tools, by building **upon** the current structures (ibid.).

This should be done in two ways. Firstly, the government should work with the beneficiaries of the payments to design long-term protection strategies and choose the beneficiaries in a more selective way (D. Lynch, personal communication, 10/8/2014) so to protect the key corridors and rich biodiversity areas, which slowly gets implemented (C. Rodriguez, personal communication, 5/6/2014). Secondly, the incentives for keeping forests must be higher than the 64 USD paid per ha annually. This could be done by allowing the owners to maintain the private forest in a sustainable "Scandinavian" manner. In this model selective logging: providing income and materials for the market is implemented (F. Carazo, personal

communication, 15/8/2014), significantly increasing the profitability and decreasing the gap between the opportunities from the forest sector and other land-use forms.

The proposed changes will definitely require higher institutional and financial capacities. Moreover, a determined decision-making initiative is need. But taking these steps is crucial to implement "Agenda 2.0" (ibid.) being a development of the already implemented policymaking. It will make it more economically and socially sustainable, adequately fitting into the current needs rather than the 'pioneering' 1990s.

4.1.2.3 Government effectiveness

Although current reforestation practices are more widespread than deforestation barriers remain (Corbera et al., 2011). As an example, due to the limited financial capacities currently there are more bodies interested in the PES programme than funds available. Also the capacity of controlling bodies, such as the forests regents and governmental institutions (FONAFIFO) remains extremely limited in some areas, being the main barrier for more effective action (Daniels et al., 2010; D. Lynch, personal communication, 10/8/2014; C. Rodriguez, personal communication, 5/6/2014). The very limited resources in the initial stage of PES resulted in methodological compromises. Areas were presented as single spots on the map rather than areas based on GPS coordinates, something that has been solved in the early 2000s but results in low comparability of data. Mr. Rodriguez, the Minister of MINAE at that time is aware of these problems, but highlights that Costa Rica was a pioneer and at that time sufficient resources were simply not available, while action was expected *immediately* (2014).

Despite their limitations the institutions are working relatively well and their transformation in the last decades had a great impact on controlling deforestation, since more precise control is possible (F. Carazo, personal communication, 15/8/2014; D. Lynch, personal communication, 10/8/2014). However, it is highly probable that these changes would not have been possible with the relatively high human and socio-economic development in the country presented in sub-chapter 4.1.1.1. This supports Mr Rodriguez's opinion that an effective change in the forest sector can only take place when countries will do their "homework" by not only implementing specific laws, but also by undertaking a general improvement of institutions and socio-economic conditions (2014).

Another problem of the government effectiveness is that the vision comes from a very small number of people and these ideas are realised in isolation (D. Lynch, personal communication, 10/8/2014). While the official vision of development assumes a carbon-

neutral economy in 2021 it remains a side agenda of the government and inter-ministerial coordination occurs on a very limited and isolated basis (F. Carazo, personal communication, 15/8/2014).

Without strong, non-corruptive institutions, having sufficient resources to maintain data, including satellite imagery and visits in the field, such situations will occur, and therefore improving institutional capacities is the key. At the same time wider, not directly financial incentives must be provided (F. Carazo, personal communication, 15/8/2014), in order not to only provide the 'stick', but also the 'carrot'.

4.1.2.4 Voice and accountability

As presented in 4.1.2.1 Costa Rica is a democratic country with its institutions standing out from the instable region. The last elections in February and April 2014 brought a change at the top of the government (Tico Times, 2014b) without destabilizing the country. Its environmental policymaking is also representing the will of the nation, since in a survey conducted in the last years around 70% of the Costa Rican population manifested their support for strong environmental policymaking (D. Lynch, personal communication, 10/08/2014).

Referring to political sustainability of the current environmental mechanisms the PES forms an important part of it. The system should be considered as politically sustainable for a few reasons:

- it provides direct additional payments for land owners, *de facto* being a subsidy for keeping the forest land intact.
- it reaches various social groups, including indigenous minorities that often possess thousands of ha of forests.
- It also provides funds for human and economic development, i.e. schools, housing, or health care (C. Rodriguez, personal communication, 5/6/2014). However, its impact is perceived as being low by some (D. Lynch, personal communication, 10/08/2014).

Another proof of the political sustainability of the system is that during the oil price peaks in 2008 there were wide political discussions for decreasing taxes on petroleum, including the "eco-tax", something that has not been implemented, despite the political pressure. Last but not least, the strong environmentalist character of development in Costa Rica is also providing direct economic benefits. An example of this is a vital tourist sector and the abandonment of the highly variable and in a long run adverse cattle export industry.

4.1.2.5 Control of corruption

In the global ranking prepared by Transparency International Costa Rica ranks 49 out of 177 countries, 67 places higher than the second analysed country: Vietnam (see: *3.1.2*). Although during an interview corruption was mentioned (F. Carazo, personal communication, 15/8/2014) it is not, at least in the recent times, seen as a major obstacle for the forest transition process. However, the political scene in which the environmental values are facing other interests is a game of power (D. Boucher, personal communication, 1/8/2014; C. Rodriguez, personal communication, 5/6/2014). Therefore corruptive practices cannot be excluded but it seems not to play a major role in Costa Rica's run for sustainable governance.

4.1.2.6 Rule of law

Although serious problems in the forest sector prevail the general performance of institutions is relatively good (D. Boucher, personal communication, 1/8/2014; F. Carazo, personal communication, 15/8/2014; C. Rodriguez, personal communication, 5/6/2014) and no substantial misuse of power or violations of the law were found, however as indicated in sub-chapter 4.1.2.3 the limited capacities impede the proper execution of the law.

4.1.3 Environmental concerns

The environmental policies driven by the implementation of a sustainable development model are implemented as a consequence of the strong commitment towards responding to global initiatives, such as the Rio Agenda 21 (FONAFIFO, 2014). This approach is a consequence of relatively successful policymaking, high social support for environmental goals and the severe environmental degradation until the 1980s, although not fully eliminated to this day. However, the growth of environmental concerns among the population is also driven from the governmental side. As an anecdote, during one of the interviews I was told that children at school are aware of the importance of forests to such an extent that they do not accept Christmas trees, even since they are planted in a sustainable manner for this specific purpose (F. Carazo, personal communication, 15/8/2014). However, this approach forms real problems too, since now policymakers and voters are not prepared to allow construction projects based on timber, even if extracted in a sustainable manner. This is a concern since giving incentives for forest owners to cultivate forests as a source of income rather than practice other forms of land-use. It may paradoxically be a key tool to maintain the state of forests, not to mention the avoided emissions from the cement industry (ibid.).

The environmental policymaking implemented in the last decades resulted in Costa Rica being on the 5th place in the global Environmental Performance Index, and on the first place in the Americas (UNDP, 2014). These reforms were made possible by the relative consensus on environmental policymaking since the 1970s (D. Boucher, personal communication, 1/8/2014), as well as key decision makers being 'in the right place at the right time' (D. Lynch, personal communication, 10/8/2014). However, the common believe that the success in establishing the national park system was the merit of two key people is an over-interpretation (ibid.). The general positive changes lead to convincing the society that the 'green' pathway is the right way of development (F. Carazo, personal communication, 15/8/2014).

4.1.4 Conclusion

While looking at the forest transition drivers presented in the first chapter it occurs that all drivers played their individual role. While land specialisation was not a dominant factor, certainly it occurred on a more globalised scale resulting in low competitiveness of the Costa Rican cattle ranchers. The most important factor were the structural economic changes. The globalizing world, growth of the touristic sector, changing food supply resulted in changes in Costa Rica. From one side the pressure on the environment from cattle ranchers declined, in favour for other less harmful sectors as tourism. On the other hand, the growing popularity of exotic fruit, especially pineapples, created a booming plantation sector, forming a strong incentive towards deforestation. The institutional transformation and environmental concerns also played an important role and can mostly be explained by the relatively stable governance and political system that synergistically led to Costa Rica being a strong middle-income economy.

Consequently, in terms of the forest transition theory Costa Rica is overwhelmingly following the "economic development path", driven by structural changes in the economy and subsequently, the abandonment of agricultural land. However, simultaneously elements of the "forest scarcity path", including the political pressure for dealing with forest degradation are taking place in Costa Rica (Meyfroidt & Lambin, 2011).

The future of land use changes in Costa Rica can be various. On one side, since 2007 new assistance policies for cattle farmers were introduced, and the open markets may be an additional incentive for increasing beef export (Calvo-Alvarado et al., 2009). Also the rapid

development of the pineapple industry forms a serious threat for a further improvement (F. Carazo, personal communication, 15/8/2014; D. Lynch, personal communication, 10/8/2014).

However, according to one of the interviewees, the current situation in Costa Rica is stable, and the risk of abandoning environmental policies is low, since 75% of the society supports the model of sustainable development in its country (F. Carazo, personal communication, 15/8/2014)[6]. Even if the 2021 carbon neutrality will be slightly postponed no drastic changes are probable.

The development of REDD+ forms a great opportunity for Costa Rica. The implementation of REDD+ which Costa Rica was an initiator of and already has the jurisdiction for, will however need breaking the comfort zone and setting this issue as a priority, rather than reaching one of the targets "for the sake of it" (ibid.). Nevertheless, even if no widespread funds will be provided through the REDD+ scheme, the government of Costa Rica will still support environmentalist policymaking, despite its high costs (C. Rodriguez, personal communication, 5/6/2014).

Table 4: Threats and opportunities for the Costa Rican forest sector

Opportunities	Threats
The implementation of innovative "Agenda 2.0" policies	Staying in the 'comfort zone'
Enhancing the capacities of forest regents and other controlling bodies	Being unable to control the growth of pineapple plantations
The implementation of REDD+	Postponing ambitious mitigation goals by the international community
Finding a niche for exporting 'eco' products and services obtained on a sustainable manner	A failure of the 'eco' sector resulting in lower trust in the sustainable development programme

Finally, the experience of Costa Rica was described by the OECD as a story worth sharing (2013b), despite its limitations and the specific circumstances of a relatively small and developed country. Certain elements of policymaking such as the PES have been implemented in such countries as Mexico or Vietnam. However, the institutional constraints in other countries (including the selected) are far more unfavourable, making action less effective. Looking at possible local cooperation the political tensions between Costa Rica and

[6] According to a national survey conducted a few years ago.

Nicaragua result in a situation where even the neighbouring country cannot directly benefit from an exchange of views in collective programmes. It is common though that experts from Costa Rica work as independent consultants in Nicaragua but their effectiveness is lower than if a bilateral cooperation programme would be organised (C. Rodriguez, personal communication, 5/6/2014).

4.2 Nicaragua

Nicaragua did, in comparison to its southern neighbour Costa Rica, not experience a forest transition, despite its improvements in environmental policymaking since 1979. Only between 1990 and 2005 21% of the total forest cover was lost (Mongabay, 2006b) and it is estimated that half of the timber in the country is extracted illegally (CIFOR, 2006). This drastic contrast with Costa Rica is a result of numerous socio-economic and institutional drivers having an adverse impact on the forest cover.

4.2.1 Socio-economic changes

4.2.1.1 Modernisation

The modernisation process in Nicaragua has a low pace, with times of stagnation mainly due to political conflicts (see: *4.2.2.1*). Firstly, due to the instable past, the population of the country lacks capacities and human capital (C. Montes, personal communication, 1/9/2014). Secondly, the recovery processes after wars and revolutions were, and still are, based on the extensive exploitation of natural resources by such practices as mining, logging and depleting water resources (ibid.). Apart from the reconstruction process, due to lack of financial resources fuel wood still plays an important role in the food preparation process, additionally driving forest degradation (UNEP, 2014). Moreover, the inefficient and outdated farming and cattle-ranching practices put high pressure on the natural environment despite its low productivity (N. Sepulveda, personal communication, 27/8/2014).

4.2.1.2 Intensification and land specialisation

Before the 1980s, during the Somoza clan dictatorship, the forests were treated as an extractive resource that could be exploited for agricultural purposes and cattle-ranching. The sector was dominated by foreign companies, holding concessions with minimal state regulation (CIFOR, 2006). In 1979 the Sandinista revolutionary government nationalised the

forests and created state forest enterprises which were later re-privatised in the early 1990s by the liberal government (ibid.).

Despite the changes in forest policy implemented by the Sandinista and liberal governments after the Somoza era, the agricultural frontier of the Mestizo population moving Eastwards remains the main driver of deforestation (Faurby, 2008; Hayes, 2007; Larson, 2006; C. Montes, personal communication, 1/9/2014; Zeledon & Kelly, 2009). In the whole period between 1950 and present the agricultural frontier has resulted in a 50% loss of forest area (FSD, 2014). This process is highly destructive, since the cleared areas are over-exploited and lose its fertility on a rapid pace. This strengthens the push towards further deforestation in the scarcely populated Eastern parts of the country (C. Montes, personal communication, 1/9/2014). In this process a correlation between the beef prices and the pace of land-clearing can be found. Especially since the dramatic rise of food prices in 2008 an increased pace of land-use changes is observed (O. Faurby, personal communication, 8/9/2014; N. Sepulveda, personal communication, 27/8/2014).

There are various reasons for this widespread practice besides the weak institutional framework which will be discussed in sub-chapter 4.2.2. Firstly, the local and global need for agricultural products drives agricultural expansion (Aide et al., 2013; Sepulveda et al., 2013). Secondly, due to widespread poverty and a low general development rate the efficiency in the agricultural sector is low. As a result of extensive production methods a large extend of land is needed (N. Sepulveda, personal communication, 27/8/2014). Thirdly, the cattle-ranching lobby has high influences on various political levels. It turns the attention from the broader problem of land-use conversion to purely illegal logging, an area where politicians can prove themselves to be successful by singular and scattered initiatives (ODI, 2008). Last but not least, the forest sector itself provides nihil direct incomes being, at least from an economic point of view, no counterbalance for agricultural practices (O. Faurby, personal communication, 8/9/2014). In order to make this sector more economically attractive a sustainable method of forest exploitation must be developed, which however would require strong institutions and turning the public attention from the fact of ‘cutting trees’ to the drivers really laying behind deforestation (Faurby, 2005).

The consequences of low intensification and negligible land specialisation are alarming. The environmental impact of the current model became highly visible after Hurricane Mitch that cleared 1 million ha of forestland and resulted in numerous landslides (UNEP, 2014; US Forestry Service, 2000). It was proven that the scale of this disaster was enlarged due to the

heavily degraded forests (Maderas Sostenibles, 2014). The current process also has a strong socio-economic effect. Especially the poor have worse access to non-market benefits of the environment such as NTFPs or water, since large areas are kept barren (CIFOR, 2006). Moreover, the illegal processes lead to the alienation of social groups, violence, to which the people can only become passive spectators (ibid.). Within this context particularly the indigenous communities from the East preserving their original land-use manners are affected (Sepulveda, 2014).

4.2.1.3 Palette of opportunities

In Nicaragua 40% of the population lives near forests and is highly dependent on its products (CIFOR, 2006; Eldis, 2007; Richards et al, 2003), but the interest of public institutions on forest policy remains limited (O. Faurby, personal communication, 8/9/2014). At the same time the economic development level is low and infrastructure unsatisfactory (UNEP, 2014). The level of FDIs amounts only half of the Costa Rican, despite its larger population (World Bank, 2014e). Consequently the opportunities to base the livelihoods on income from other sources than agriculture and forestry remain limited.

4.2.1.4 Position in the globalisation process

The position of Nicaragua on the international markets is highly adverse, since the years of political perturbations have resulted in a low level of trust and in general economic misery. The economy is uncompetitive and based mainly on the export of raw materials (A. Larson, personal communication, 26/8/2014; N. Sepulveda, personal communication, 27/8/2014; US Forestry Service, 2000).

Interestingly, the logging process for acquiring hardwood seems not to be a major driver by itself, since it is to a large extend a by-product of land-use change due to agricultural expansion (O. Faurby, personal communication, 8/9/2014). Consequently the presumed impact of legislation blocking the import of illegal wood to developed markets, such as the Forest Law Enforcement, Governance and Trade (FLEGT) or the Lacey Act tends to have a very limited impact on illegal logging, although it might have a positive impact regarding funding of forestry institutions (ibid.).

4.2.2 Institutional performance

4.2.2.1 Political stability

The political stability of a country has a high impact on policymaking and its implementation. Moreover, political instability is one of the main reasons for low economic development. Nicaragua experienced a long and bloody civil war between 1978 and 1993. The impact of this conflict on the environment is twofold. From one side, for security reasons the Contra War prevented lumber operations, and some people claim that wildlife rebounded due to the lack of economic growth and exploitation. A similar process was also observed in Bosnia and in Sri Lanka (Stevens et al., 2011). However, at the same time the process of reconstruction was to a large extend based on the exploitation of natural forests (UNEP, 2014).

In the last decades the policy towards forestry has changed significantly, depicting the sources of social support (O. Faurby, personal communication, 8/9/2014). While the current Sandinista government has its political support from indigenous communities, the liberal governments where strongly supported by the 'frontier' farmers (ibid.). This, however does not automatically correlate with prioritising forest governance and growing forest cover. According to interviewees the current government has various other and more sound areas to focus on and additionally the agricultural expansion is strongly driven not only by national factors, but also, as mentioned in 4.2.1.2, by the prices of commodities on the international markets (ibid.; N. Sepulveda, personal communication, 27/8/2014).

The current rule of a left-winged ex-revolutionary government also results in the situation where Nicaragua is the only country from the selected ones not participating in UN REDD (2014). This is for political reasons, since the government is highly critical towards the concept of monetising environmental services, and specifically: carbon credits (O. Faurby, personal communication, 8/9/2014; C. Montes, personal communication, 1/9/2014).

4.2.2.2 Regulatory quality

The regulatory quality and its general sound is of high importance for successful forestland protection. To start, it must be mentioned that the general vision of development plans has a highly modernisation-oriented approach. Even since the Sandinista government nationalised and redistributed forestland to smallholders and landless peasants the priority on forestry remained low (Hayes, 2007). Currently the development policy remains focused on large-scale infrastructural projects such as creating a second Trans-Ocean canal through Lake Nicaragua or creating international railways (D. Boucher, personal communication, 1/8/2014).

The general approach towards the forest sector began to change in the late 1990s, during the liberal government. In 1997 a moratorium on logging hardwood species was signed (Maderas Sostenibles, 2014). Earlier, in the late 1980s, the Sandinistas had started the decentralisation processes (Ribot et al., 2006). The motivation for decentralisation was to provide downward accountability and bring decisions closer to the people (ibid.). However, despite the 1987 Constitution that re-established municipal autonomy, the changes mainly distributed the burdens downwards, without providing sufficient funds and adequate legal frameworks (Larson, 2006).

The current legislation is full of ambiguities and inconsistencies significantly limiting the efficiency of governmental institutions (Hermosilla, 2003; McGinley & Cubbage, 2012) and certainly more clarity is needed (ODI, 2008). Moreover, for smallholders the regulations remain too complicated for implementation and on a general level policymaking remains focused on logging itself rather than land-use change, therefore only dealing with the effect rather than the cause (O. Faurby, personal communication, 8/9/2014; ODI, 2008).

4.2.2.3 Government effectiveness

In the country numerous sites of illegal forest clearance can be found and in some cases the government practically agrees to illegal timber and NTFPs trade (C. Montes, personal communication, 1/9/2014). Although effort by the government is made towards stopping illegal logging, the effectiveness of it remains extremely low (N. Sepulveda, personal communication, 27/8/2014). While it is required by law to prepare a management plan for forest extraction, these plans are often overhauled by the logging companies (O. Faurby, personal communication, 8/9/2014).

The reasons for the low effectiveness on combating deforestation are diverse. Definitely the lack of technical, institutional and financial capacities is a major obstacle, since a large gap between the responsibilities and actual capacities exists (Hermosilla, 2003). In Bosawas National Reserve in the East 1.5 million ha of forests, roughly 1/3rd the size of the Netherlands, is patrolled by one forestry officer and three assistants sharing one motorbike (CIFOR, 2006). Also the capacities for monitoring the quantity and quality of timber extraction are minimal, since no advanced databases and satellite imaginary systems are used to a wide extend (Hermosilla, 2003). Even if a group is caught on illegal logging the fines are relatively low, which does not discourage the incentives for land clearing (ibid).

Another problem is that the current responsibilities of institutions and investors are distributed in an inefficient way. Governmental institutions spend a large part of their capacities on providing permits and payments and consequently lack the capacities and time to work on the detection of forest crimes and law enforcement (Hermosilla, 2003). On the other side, investors are required to replant parts of forests as a compensation for such practices as mining or the creation of infrastructure. As a consequence, often low-quality forests are planted. Funds spend on this goal could be used in a more effective manner by supporting local forestry institutions (O. Faurby, personal communication, 8/9/2014).

4.2.2.4 Voice and accountability

Although in the last decades elections are organised on a regularly basis, the voice and accountability indicator for Nicaragua is low due to the general lack of trust in the post-war society (O. Faurby, personal communication, 8/9/2014; World Bank, 2013a). In addition, only limited attention is paid to the voice of indigenous people (Liddick, 2011). Finally, due to socio-political differentiation, the interests of the population living along the Atlantic Coast is neglected by Central Governments (Larson, 2006).

4.2.2.5 Control of corruption

In the corruption perception index Nicaragua ranks on the 127th place. Corruption was mentioned by several occasions and the process is considered as having an endemic character (CIFOR, 2006). The high level of corruption, especially at local levels, results in concessions for forest clearing provided rather easily (N. Sepulveda, personal communication, 27/8/2014). Due to corruptive practices extracted timber can get 'laundered' (Richards et al, 2003) by reusing permits, falsification during legalisation or direct bribery (Eldis, 2007). Another problem is the corruption among local leaders of indigenous groups making these communities extremely vulnerable to land clearing processes and influencing the traditional values and socio-cultural stratification (Liddick 2011; Richards et al., 2003).

4.2.2.6 Rule of law

In the rule of law indicator Nicaragua is performing only slightly better than Laos, and worse than Vietnam, let alone Costa Rica. Due to poor governance illegal practices are widespread. As an effect of corruption the legislation often becomes ineffective since large logging and agricultural companies "can always get the papers right" (O. Faurby, personal communication, 8/9/2014). Simultaneously, the complicated legislation decreases the incentive to follow a legal path for economic activities (ibid.). Another problem is the

widespread crime: armed groups of loggers are common, violently blocking the access of forest regents to logging sites (Hermosilla, 2003). Also other links between illegal timber trade and organised crime can be drawn (CIFOR, 2006). Last but not least, economic, political and social instability, high crime rates and drug trafficking prevent Nicaragua, despite its environmental beauty, from developing as a 'holiday paradise' like its southern neighbour: Costa Rica.

4.2.3 Environmental concerns

Although local NGOs work on environmental issues in Nicaragua (C. Montes, personal communication, 1/9/2014; N. Sepulveda, personal communication, 27/8/2014) the general approach towards environmental issues seems to be focused on the theme of illegal logging. However, as mentioned before, illegal logging is not the main problem *per se* but rather the result of strong economic incentives towards land-use change. Nevertheless, the environmental concerns of the civil society remain high, with this also having drawbacks, since proposing sustainable forestry models remains difficult due to the lack of trust in any forms of logging (O. Faurby, personal communication, 8/9/2014).

While the government, including the presidential level, highlights the importance of protecting the forests its focus on the area remains limited. President Ortega has been accused for having links with at least one of the logging companies (Tico Times, 2014a). This, combined with the vision of realising big infrastructural projects questions the truthfulness of the Nicaraguan government to really make a change. It should rather be considered as a political tactic aiming at gaining public support by undertaking a 'crusade' against the loggers while not undertaking decisive moves towards ending deforestation (ODI, 2008).

4.2.4 Conclusion

While Costa Rica did experience a forest transition, Nicaragua did certainly not. Its forest loss remains alarming. The current unsuccessful performance of Nicaragua is a combination of various factors. As presented, certainly the economic drivers towards land clearing remain strong. The low economic development level of the country drastically decreases the opportunities for making a living outside the agricultural sector and also adversely impacts the productivity, consequently demanding high land areas. Simultaneously the institutional framework remains extremely weak and the governmental priority for adequate forest protection limited. Also the low capacities, political instability, corruption and the low

educational level remains a severe obstacle for a strong civil society having a real impact on policymakers.

The outlook for the future remains vague. The adoption of REDD+ might certainly provide an incentive for reforming the institutional framework as well as enhance the profitability of forests, increasing its competitiveness towards other forms of land-use. At the same time the issue of introducing mechanisms based on the concept of PES should be discussed (N. Sepulveda, personal communication, 27/8/2014), and sustainable exploitation of forests introduced (O. Faurby, personal communication, 8/9/2014). However, within the current governmental framework there is no political incentive for liberalisation, nor for attaching monetary value on forests. Therefore other, more conventional tools such as clear land demarcation and efficient forest protection mechanisms are needed. This method will also need high financial inputs and large institutional capacities. These funds are currently not available and the institutions seem not to be prepared for fulfilling their tasks properly (Hermosilla, 2003; Larson, 2003; FCP, 2012).

Currently it is difficult to presume if and what forest transition path might be followed by Nicaragua. From one side: the population density is relatively high and, due to the democratic model, the social pressure on politicians may increase, forcing more decisive moves towards protecting forests. Therefore the forest scarcity path might occur. However, at the same time the growth of GDP is higher than the mean for the region and the tendency is stable. This may result in increasing the non-farm opportunities, decreasing the direct pressure on forests, consequently resulting in realising the economic development path.

4.3 Vietnam

It is widely agreed that Vietnam did experience a forest transition in the early 1990s (MARD, 2001; Meyfroidt & Lambin, 2008b; UCSUSA, 2014). The current forest growth is more than 140,000 ha per year, giving a net reforestation rate of more than 1% on an annual basis (Mongabay, 2011). Most of the reforestation is coming from the establishment of plantations which area tripled since the early 1990s (McElwee, 2009), already accounting for 25% of the total forest cover (Mongabay, 2011) (see: *Figure 12*). This success is the result of the deep economic transformation since the launch of the *Doi Moi* reforms in 1986 and policymaking paying more attention to environmental goals. However, still challenges remain for which detailed information is presented in the following sub-chapters.

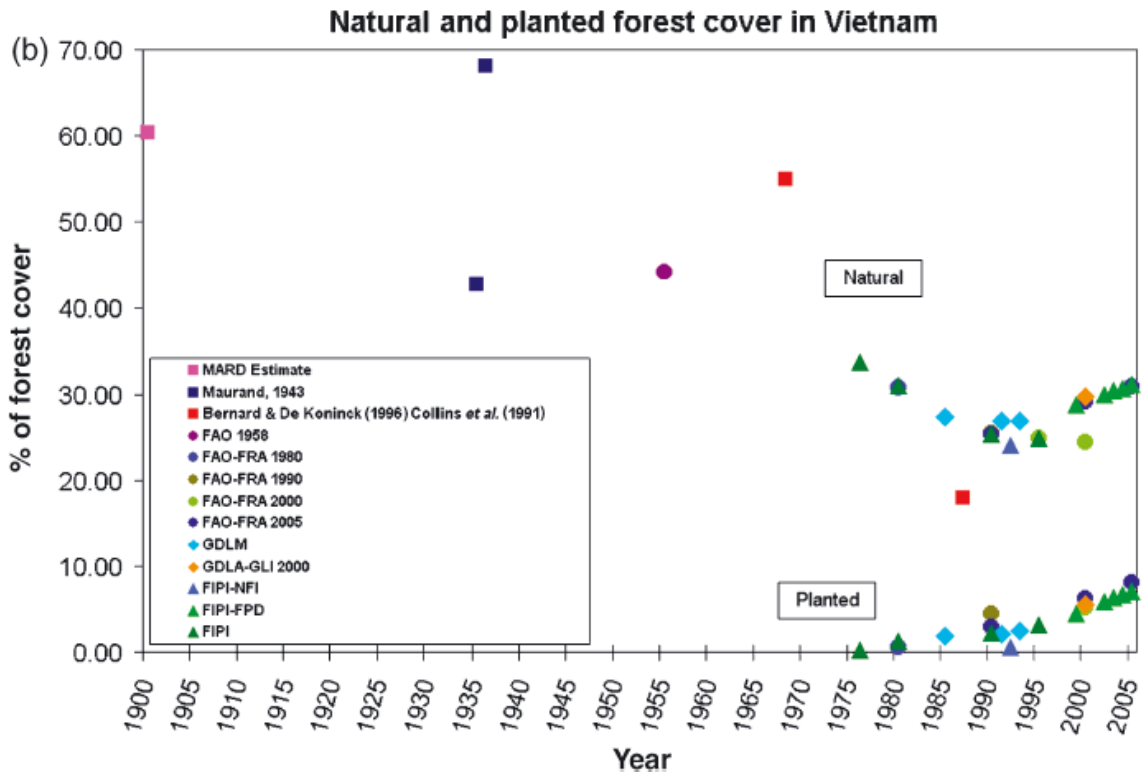

Figure 12: Natural and planted forest cover in Vietnam (Meyfroidt & Lambin, 2008a)

4.3.1 Socio-economic changes

4.3.1.1 Modernisation

Vietnam has undergone a tremendous transformation in the last decades (Meyfroidt & Lambin, 2008b). The widespread use of fertilizers and herbicides since the 2000s decreased the labour requirements (Meyfroidt, 2013) and simultaneously increased the productivity per land area. At the same time the interest of policymakers turned into changing the crops cultivated by farmers to those that are controllable and taxable (Kulik, 2013). Also a wide scale initiative aiming at eradicating shifting cultivation in Vietnam was launched by using both the 'stick' in the form of bans as well as the 'carrot' in the form of incentives and subsidies for the establishment of forest plantations (ibid.; Quang, 2007).

More effects of the modernisation and more generally, changing processes in the Vietnamese economy and society are presented in the following sub-chapters.

4.3.1.2 Intensification and land specialisation

In the original theory Mather (1992) proposed the factor of land specialisation as the main aspect driving a forest transition. The forest transition in Vietnam indeed tends to share similarities with this theory. The famine of the 1980s forced people to cultivate forestland for food security reasons (Meyfroidt & Lambin, 2008b). At the same time new economic zones

redistributed large numbers of Kinh people to the highlands in order to create a frontier of economic development clearing land for cash crop plantations at the cost of forests (M. Bayrak, personal communication, 6/9/2014; Ha, 2002). The growing forest scarcity pushed the government to implement reforestation policies (see: *3.4.3*), but the economic changes taking place after the introduction of *Doi Moi* reforms in 1986 have had an even deeper impact.

The change of the adverse deforestation trend is to a large extend linked to rural development (M. Bayrak, personal communication, 6/9/2014). In the past agricultural intensification was costly and extensification leading to deforestation was chosen as a rational choice (Tachibana et al., 2001). However, many of the 'forestland' areas cultivated were very infertile (McNamara et al., 2006) covered by scrubby cover and woody plants (McElwee, 2009). The continuous loss of fertility due to over-exploitation of the poor land made the cultivation of land unprofitable (Clement & Amezaga, 2008; M. Bayrak, personal communication, 6/9/2014). Simultaneously, in the lowlands due to the modernisation and intensification of agricultural production the profitability grew, moving labour from the highlands to labour-intensive cultivation on the lowlands (Meyfroidt & Lambin, 2008b; Tachibana et al., 2001). Consequently, the extensification method became unprofitable and remote areas got abandoned. It was proven that the lowland irrigated land ratio has a highly significant impact on limiting deforestation (Tachibana et al., 2001).

Nevertheless, also policymaking, especially the part regarding land allocation influenced land specialisation and intensification. It was favoured to put "unused" bare lands into productive use, as well as to control, i.e. limit, shifting cultivation (Lambin & Meyfroidt, 2010). For this purpose planting forests was perceived as a good land-use solution, securing water supplies not only for the population but also for the growing hydropower sector (M. Bayrak, personal communication, 6/9/2014; CIFOR, 2013b).

Due to the intensification of agricultural production Vietnam became the second largest exporter of rice after and a leading exporter of coffee (Vietnam Embassy, 2014; VOA, 2012). The largest extend of forest regrowth came from forest plantations (McElwee, 2009) mainly covered by Acacia trees. Acacia, an Australasian specie is very suitable for paper production and can be used for the production of furniture and woodchips (ACAIR, 2013). It is relatively easy to cultivate and it can grow on places where other (native) species would not grow fixing atmospheric nitrogen (ibid.) and preventing water runoff (CIFOR, 2013b).

Interestingly, according to research based on an extensive statistical analysis the forest cover increased more rapidly in districts with higher densities of roads and closer to provincial capitals (Meyfroidt & Lambin, 2008b). This is due to the lower transaction costs and moreover the plantations are more likely to be established in areas with low forest cover in the dawn of the transition in 1993 (ibid.).

However, the impact of Acacia plantations is mixed. While from one side it certainly does increase carbon stocks and the area covered by forestland as well as prevents water runoff its deeper impact is less favourable. For the poorer parts of the rural population the 'bare lands' on which Acacia is often planted is an important place for which cattle-grazing and the extraction of NTFPs (McElwee, 2009; Meyfroidt et al., 2010). Consequently, privatising these common pool resources can negatively impact the livelihoods of marginalised groups. This is highly relevant, since the compensation for poor farmers remains limited (ibid.; Kulik, 2013). thus no substitution for the lost income from NTFPs is provided.

From the research conducted by me and confirmed in an article it occurs that very few farmers stopped agricultural cultivation in favour of Acacia plantations as a free choice (Kulik, 2013; Clement & Amezaga, 2008). It was only adopted when there was legally or practically no other possible option left and establishing a plantation became the 'least bad solution' to a large extent supported with subsidies. Such a plantation can become a competitive form of land-use only for the richer, more knowledgeable and well informed farmers that can allow themselves to diversify their sources of income. Last but not least, a huge drawback of Acacia plantations is that although profit can be made in a short time of 5-7 years the risk of losing the income due to heavy weather conditions is high while insurance mechanisms are underdeveloped (M. Bayrak, personal communication, 6/9/2014; Kulik, 2013).

Another form of emerging forestlands are Rubber trees, only recently counted as a forest tree (T. Tran, personal communication, 20/3/2013). It does provide a larger total income, bringing income on a continual basis, since latex can be extracted for several years. However, this type of forest plantations is even more vulnerable to heavy weather conditions and can only be cultivated on slopes not steeper than 15%. At the same time rubber trees require more maintenance and higher initial costs (Kulik, 2013).

The exact investment and return pattern for both Acacia and Rubber trees was prepared by me during the fieldwork in 2013. The biggest issue for smallholders is the period between the

third year when no intercrop is possible anymore and the sixth to seventh year when the first harvest becomes possible (see: *Figure 13*).

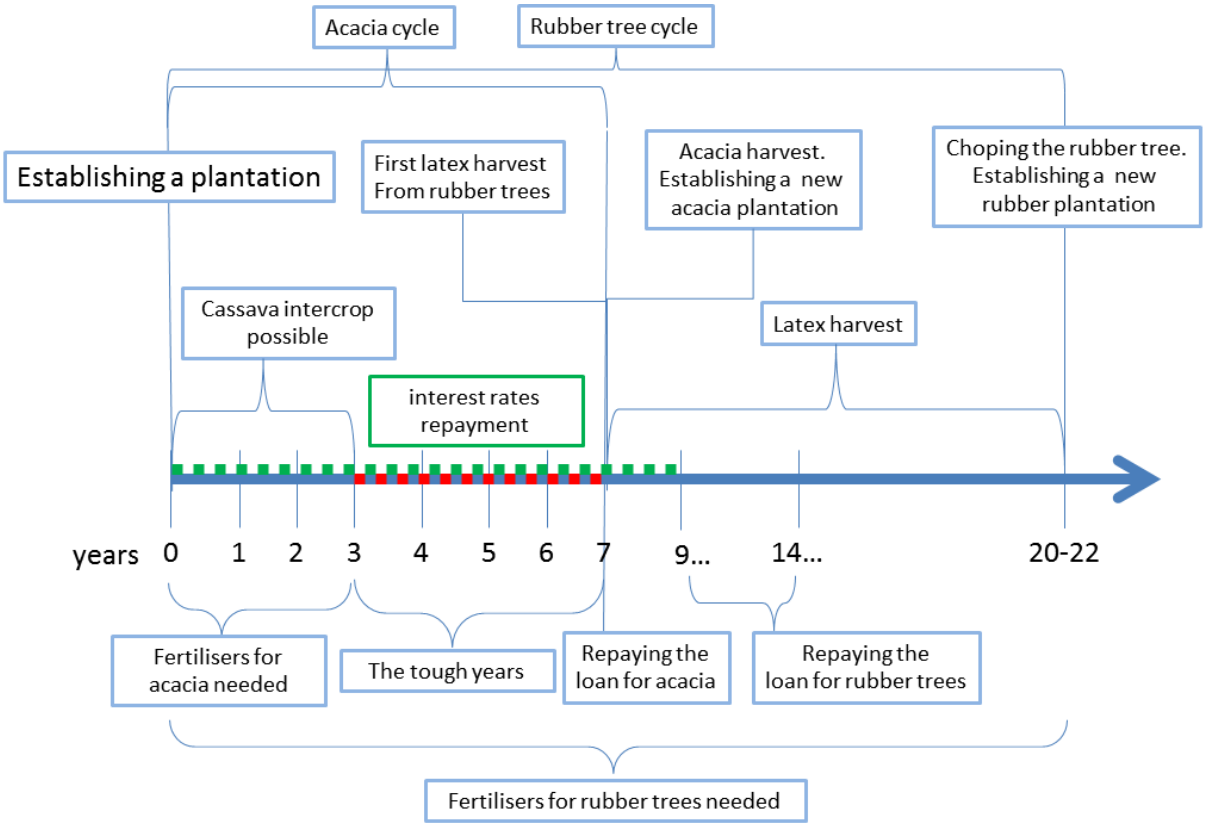

Figure 13: Investment and return pattern for Acacia and Rubber plantations (Kulik, 2013).

4.3.1.3 Non-farming opportunities

Due to the modernisation process and the new land-use pattern in Vietnam the number of opportunities for making a living increased. While in the past people in rural areas where to a large extent self-sufficient nowadays people must to some extend rely on the market (Kulik, 2013). Moreover, the development of infrastructure made it possible to commute on a daily basis to places further away, such as province capitals or to places along the infrastructural corridors that are places attracting services and industry and consequently: employment.

This significantly decreased pressure put on the forests as a main source of making a living (T. Tran, personal communication, 20/3/2013). However, it does not mean that nowadays the people are completely free to migrate and make a living on a manner separated from the land. The infrastructure is still limited and the jobs in the service and construction sectors are not easily available for rural populations having only limited education and access to information (Andriesse & Nguyen, 2010; Kulik, 2013).

4.3.1.4 Position in the globalisation process

Due to the general development of the country the global position of Vietnam grew when compared with the past. However it is interesting to trace the impact of this changing position on the forestry sector. Vietnam became a major producer of furniture (HCMC Expo, 2014) simultaneously tightening the access to timber from natural forests. This resulted in the need to establish large scale forest tree plantations and to import timber from abroad. In other words, the need to outsource deforestation to other countries arose. It is estimated that 39% of the forest regrowth in Vietnam has been extracted from forests abroad (Meyfroidt & Lambin, 2009). One of the main 'recipients' of this outsourcing is Laos, Vietnam's Western neighbour sharing a similar political system. It is proven that the scale of timber export exceeds 1 million m^3 on an annual basis (EIA, 2011), most probably being an underestimated number due to a large share of grey market (Meyfroidt et al., 2010)[7].

This condition was accepted for a long time, but recently, due to the introduction of FLEGT in the European Union, the Lacey Act in the US and similar acts in other developed nations. These laws, banning the import of illegal wood made the Vietnamese government and business sector notice the need to legally secure its supplies in order to remain a player on the most lucrative markets. Therefore, in cooperation with the Laotian side bilateral meetings are organised. These meetings including the participation of EU officials aim at solving the problem of illegal logging and illegal timber trade (EIA, 2011; A. Flanagan, personal communication, 12/9/2014; P. Hung, personal communication, 11/6/2014).

However, even if a Voluntary Partnership Agreement (VPA) will be signed in the coming years it is probable that this will not stop illegal logging and trade between these countries, since the illegal wood can simply be provided on domestic and less demanding markets (ibid.). This is a prove that national level policies to control deforestation will not be sufficient to slow the destruction of forests on a global scale;

4.3.2 Institutional performance

4.3.2.1 Political stability

The political stability in the current times is relatively high, however the turbulent past including colonisation and two Indochina Wars, resulted in the destruction of infrastructure and social structure from the pre-war times (Burgers & Tran, 2012; T. Tran, personal communication, 28/03/2013). The war was, besides human tragedy an 'ecocide' (Lambin &

[7] Details regarding the Laotian side can be found in sub-chapter 4.4.1.4.

Meyfroidt, 2010) due to the massive use of Agent Orange a defoliant destroying large areas of forests and uncontrolled logging (Burgers & Tran, 2012). The low political stability in the first decade after the conflict further drove illegal forest over-exploitation (Boissière et al., 2009; Do, 1994). However, nowadays, due to the authoritative dictatorship supported with vast economic growth the political stability remains high compared to the regions average not to mention the perturbations in Thailand (World Bank, 2014a) consequently allowing stable policymaking avoiding drastic solutions.

4.3.2.2 Regulatory quality

The regulatory framework is extensive (PROFOR, 2011) and the Vietnamese government is experienced in the implementation of large scale land-use and forestry programmes, such as the 327, 661 programmes and FLA of which details were presented in sub-chapter *3.4.3*. Due to its experience Vietnam was chosen as a pilot REDD+ country for the UN programme on REDD (Bayrak et al., 2014). However, the quality and purpose of forestry policymaking is not forthright. While indeed large programmes were introduced they resulted in a limited success (MARD, 2001) and were partly aimed not to provide environmental benefits, but perceived as a tool aiming at the eradication of shifting cultivation (Kulik, 2013).

A new tool implemented by Vietnamese policymakers is the PFES or Payment for Forest Environmental Services programme. The concept of this PES programme was born in 2004 and pilot projects are realised since 2008 (CIFOR, 2013b). The main goals of the programme is the improvement of the forest sector, carbon sequestration and the provision of water for hydropower projects (ibid.). Although it is too soon for results it is already clear that the current programme has high transition costs and lacks the flexibility of a real market mechanism. The system does not provide a market-based payment system and a strong conditionality of the payments. The prices are set on a fixed rate and are not targeted effectively to places where actual support is needed. Moreover, they depend on the total forest area, therefore densely forested areas receive only minimal support making land-use change scenarios more probable. Also its social impact is ambiguous, something discussed in sub-chapter 4.3.2.4. Last but not least, the system lacks transparency and any form of oversight or monitoring and evaluation mechanisms (ibid.). This partly resembles the initial stage of the PES system in Costa Rica that also lacked transparency, efficient targeting and had high transaction costs in its early stages (see: *4.1.2.2*).

4.3.2.3 Government effectiveness

While the regulatory quality regulating the forest sector is advanced it is the effectiveness or application of regulatory frameworks that really matters when assessing the governmental institutions and its impact on the forest transition.

Starting from the national level. The widespread 5MHRP received several hundreds of millions USD from foreign donors such as the Asian Development Bank the World Bank and several NGOs (Clement & Amezaga, 2008, P.Hung, personal communication, 11/6/2014). However, in the governmental 2020 forestry sector outlook it was assessed as a partial success: only 70% of the total goal was reached (FDS, 2007). More importantly, it states that the public sector as a whole is not well prepared for further reforms (ibid.). However, from the other side the general policymaking proved to be at least partially successful, since despite of the population growth and agricultural production the forest cover is on a constant rise since the early 1990s and methods, including monitoring and evaluation changed over time. Now greater attention is paid to interim steps or checkpoints and policymaking, although slowly, adapts to lessons learned and international governance practices (P. Hung, personal communication, 11/6/2014).

At a local level several changes occurred too. The decentralisation process in Vietnam is due to the top-down model of the government introduced with resistance and lacking the much needed dynamism and MARD still heavily influences decision making some decisions. Moreover, the provinces also tried to classify the forests in such a way, to be able to receive government funds for protection or development purposes (FDS, 2007). In general, the process of land classification was unclear, especially that no specific criteria for forest classification was designed (ibid.).

An aim of the FLA programme was to provide agricultural and forest land to the people, moving the responsibility for land from state enterprises to smallholders (see: *3.4.3.4*). While officially land could only be allocated to households having actual demand and capacity for using it, this was not always the case (MARD, 2001). During my fieldwork in 2013 and in an interview it was confirmed that indeed poorer households got limited land allocated (M. Bayrak, personal communication, 6/9/2013; Kulik, 2013). Consequently young families often received no land or land as far as 10-20 kilometres from the village since all the land closer to the village was already allocated (M. Bayrak, personal communication, 6/9/2013; Kulik, 2013). Having less land in more remote sites results in decreasing the possible income by increasing the transaction costs. Moreover, according to the report by MARD (2001) land was

often given to people connected to the army and police. Furthermore, for a long time the land that was used collectively by minorities could only be distributed to single people which changed recently (Kulik, 2013). Last but not least, the process of providing the so called Red books stating land tenure (Burgers & Tran, 2012; Clement & Amezaga, 2008) is very slow, and therefore often only temporary land tenure documents are given (MARD, 2001).

This approach, combined with a still common thinking in which it is believed that the local people are part of the problem rather than the solution (Boissière et al., 2009) brings poor results. Tensions between the government and local communities emerge and the gap between richer and poorer households increases. The rich households can benefit from the large land allocated and have the funds to establish forest plantations, while poor households lack the basic funds, sufficient land and have a decreased access to NTFPs due to the 'privatisation' of land.

A problem prevalent on the local and national level in all the researched countries, including Vietnam, are the limited capacities of governmental institutions (Boissière et al., 2009; Kulik, 2013). By PROFOR (2011) the number of experts is assessed as being very low. My individual research showed that although efforts by officials were undertaken the financial capacities for realising such basic activities as land delineation were insufficient resulting in not undertaking this process everywhere where needed (Kulik, 2013). Also, the limited human capital of many smallholders decreases the utility of the already limited training programmes. The level of education of particular groups in many cases remains insufficient to fully benefit from these programmes.

Although the implementation quality of specific programmes is controversial it is a fact that the forest coverage in Vietnam grew significantly in the last two decades. However, it has to be stressed that this growth mainly comes from the large scale monoculture Acacia plantations having a rotation period of less than 10 years (Mc Namara et al., 2006) and rubber trees, rather than from the recovery of natural forests which area is still declining in some areas (Meyfroidt & Lambin; 2008). The current policymaking gives a priority to economic development and the supply of raw materials, by only putting green cover rather than dense forest on land, resulting in weak environmental benefits (Lambin & Meyfroidt, 2010). Moreover, as discussed in sub-chapter 4.3.1.4 and 4.4.1.4 the stricter execution of environmental policymaking in Vietnam resulted in outsourcing deforestation to other countries, especially to Laos.

4.3.2.4 Voice and accountability

According to PROFOR (2011) the level of local participation in Vietnam is extremely low and only a limited civil society is emerging. This is, similarly to Laos a consequence of the Socialist Marxist-Leninist state in which a single party rules the country on a top-down basis and the media are strictly controlled by the state, although mainly through self-censorship (T. Tran, personal communication, 20/3/2013).

The very limited impact of the people on policymakers does also influence the policymaking that lacks a socially-sensitive. This is highly important since it is believed that community forestry can positively impact forest protection (T. Nguyen, personal communication, 16/9/2014). Even since many processes were decentralised to provincial and district levels the sensitivity of the programmes remains limited. In the PES programme the social impact plays a secondary role (CIFOR, 2013b) and also the previous reforestation programmes mainly focused on the provision of raw materials and environmental services rather than on the fact how the lack of NTFPs could be successfully compensated (CIFOR, 2013b; McElwee, 2009).

However, in the last years the situation is slightly improving. In cooperation with NGOs programmes allowing sustainable extraction of NTFPs are introduced (Bayrak et al., 2014; Kulik, 2013). Importantly, the NGOs are only to a small extend controlled by governmental institutions and have relatively high freedom in establishing its programmes (T. Nguyen, personal communication, 16/9/2014; T. Van, personal communication, 15/9/2014). Also food subsidy mechanisms were introduced making the transition from NTFPs easier as well as compensating the lack of income in months when no harvest from plantations is possible (Kulik, 2013).

4.3.2.5 Control of corruption

In the global ranking on the perception of corruption Vietnam ranks on the 116th place and according to PROFOR corruption in the forest sector is prevalent (2011). According to one interviewee illegal logging is often connected with corruption and also the adequate quality of seedlings for forest plantations is affected by corruptive behaviour. However, according to my own research experience and interviewees (M. Bayrak, personal communication, 6/9/2014; A. Flanagan, personal communication, 12/9/2014; T. Nguyen, personal communication, 16/9/2014) it seems that corruption is a problem in successful governance but it is not one of the most severe obstacles in realising the aim of forestland expansion as in Laos (see: *4.4.2.5*).

4.3.2.6 Rule of law

The rule of law is by the World Bank indicators assessed as being significantly higher than in neighbouring Laos, as well as higher than in Nicaragua. In an interview with a Laotian expert it was stated that the level of law enforcement in Vietnam is significantly higher and even public officers on high positions are evaluated. In the case of evident abuse officials were sentenced to jail giving an example for other officers (N. Disanayake, 11/8/2014). Also illegal logging, although existent, seems not be such a great problem as in Nicaragua and Laos.

4.3.3 Environmental concerns

The environmental changes due to the 'ecocide' of the Second Indochina war (Lambin & Meyfroidt, 2010) and the chaotic years after 1975 resulted in growing concerns of the government for a further provision of environmental services and raw materials. In the years after the Second Indochina War the deforestation rate due to the general chaos in the country was high. Also the 1980s famine resulted in the ineffective cultivation of forestland for food security reasons (Meyfroidt & Lambin, 2008b). This, combined with the growing population density, and establishment of new economic zones in the highlands (M. Bayrak, personal communication, 6/9/2014; Ha, 2002) put high pressure on common pool resources (Kulik, 2013; McNamara et al, 2006, Meyfroidt & Lambin, 2008b) and resulted in a growing infertility of the soils and the creation of fire-prone grasslands (McNamara et al., 2006).

Since the situation was worsening and the government saw examples of drastic floods in Thailand and China strengthened due to deforestation (Lambin & Meyfroidt, 2010) it became clear that governmental interventions was needed. In its action the governmental action resembles the forest scarcity path since new policies aimed to address the perceived degradation of forest resources became an economic response driven by the needs of urban markets (Meyfroidt & Lambin, 2008b) and therefore the path chosen by the government follows the urban requirements rather than the rural perception.

4.3.4 Conclusion

Despite its drawbacks and limitations Vietnam is an example of a country that undertook a relatively successful transformation from net deforestation to reforestation despite an increase of rural population and GDP (Meyfroidt & Lambin, 2008a). The country largely followed the forest scarcity path that mobilised governmental institutions to implement large-scale reforestation programmes. Simultaneously the landscape got more fragmented and forests

mainly prevailed and were newly established in the hilly and mountainous areas of the country, confirming the land specialisation theory proposed by Mather (1992).

However, the transition brings several drawbacks. While urban markets require a constant provision of environmental services such as water and vast amounts of timber, something which plantation forest can provide (Podwojewski *et al.*, 2008), the rural perception focusing on the provision of NTFPs and spiritual values was to a large extend neglected (Kulik, 2013). This way of policymaking is an example of an urban bias in which the perception of the central (urban) location influences policymaking in other areas favouring its needs (Lipton, 1978).

Also the environmental impact of the new land-use pattern in Vietnam is twofold. From one side the forest cover increased, the soils and water runoff is better protected and the total carbon stocks increased (Meyfroidt & Lambin, 2008a). However, from the other side the forest regrowth almost purely comes from forest plantations that bring low environmental benefits. At the same time, the total area of undisturbed natural forests decreased from 384,000 ha in 1990 to 187,000 ha in 2000 (ibid.) and is estimated to be as low as 80,000 ha in 2010 (Mongabay, 2011).

4.4 Laos

As presented in sub-chapter 3.5.2 Laos is experiencing relatively high deforestation rates reaching 0,7% a year (CIFOR, 2013a). In their extensive article Thomas et al. (2010) presented the main drivers of deforestation in 9 bullets. These drivers, having an universal status and could be valid for more countries, are a great example of activities influencing the forest cover in Laos. However, in this research we are more interested in the drivers, or factors laying *behind* it, i.e. which factors really drive the forest transition in the country, consequently leading to deforestation in the following areas:

"(1) unsustainable wood extraction from production forest, (2) pioneering shifting cultivation, (3) agricultural expansion, (4) industrial tree plantation, (5) mining, (6) hydropower development, (7) infrastructure development, (8) fire and (9) urban expansion." (Thomas et al., 2010).

The research lead to a conclusion stating that a forest transition is far from happening in Laos. This stays in contrast with its 'paired' country: Vietnam. However, this is simultaneously partly a result of the action taken by its bigger Eastern neighbour, as well as, to a lesser

extend: by China and Thailand. The main reasons laying behind the adverse condition are: poor governance due to the limited capacities, a poor institutional structure and high levels of corruption. Also the adverse socio-economic situation is worsening the situation.

4.4.1 Socio-economic changes

4.4.1.1 Modernisation

The interviewees with NGOs stated that there is no strong commitment from the highest government levels (including presidential) to radically change the current adverse situation of forests (N. Disanayake, personal communication, 11/8/2014; H. Sirivath, personal communication, 8/8/2014), except of few scattered and minimal actions (EIA, 2011). The main officially stated goal of the government is improving the economic condition in the country. This is implemented by policies having elements of a modernisation approach: the construction of hydropower dams and a vision of making Laos the "battery of Asia" (EIA, 2011; MAF, 2005) as well as developing an export-oriented industry (MAF, 2005). During this process little attention is paid to the environmental impact of these investments (CIFOR, 2013a; H. Sirivath, personal communication, 8/8/2014). The process of resettlement moreover puts additional pressure on new, previously forested areas. Also, land clearance for economic concessions gives, due to the limited capacities and corruption, additional opportunities to extract wood beyond the areas included into the plans (CIFOR, 2013A).

4.4.1.2 Intensification and land specialisation

Shifting cultivation, the traditional form of land-use is practiced by one third of the households, and is operating on a total area of 5 million ha. This practice is often blamed as the main driver of deforestation besides illegal logging (CIFOR, 2013a; MAF, 2005). As a response the government introduced policies aiming at eradicating, or at least stabilizing this process, starting from 1989 (CIFOR, 2013a).

In fact, it does not play a key role in deforestation, since, at the still low population density in large parts of the country (SEDAC, 2000), shifting cultivation can remain an environmentally sustainable practice (N. Disanayake, personal communication, 11/8/2014). Moreover, other forms of agriculture (paddy rice fields) are not feasible in parts of the mountainous areas of the country, since the rainfall is too low for it, oscillating just above 1000 mm (ibid.; Ducourtieux et al., 2005).

According to Malcolm shifting cultivation can sustain itself with a population density around 10-15 people per km^2 (2007), being 50% below the Laotian average. However, the largest part

of the population lives in the plains along the Mekong. In the highlands where shifting cultivation remains prevalent the population density is below that number and therefore such practices can be, at least from the environmental side, maintained. Therefore, the attempts to eradicate shifting cultivation should therefore not be perceived as a real environmental need, but more as a tool to control minorities (N. Disanayake, personal communication, 11/8/2014).

Land specialisation in Laos remains limited, since most of the areas are cultivated on a shifting basis, with only plain areas being susceptible to intensification with the cultivation of paddy rice. In the highlands cash-crops providing an additional source of income are not well developed, and also, due to the low capacities, farming intensification remains limited (CIFOR, 2013a).

4.4.1.3 Non-farming opportunities

Due to the low economic development, low educational levels, poor infrastructure, small number of FDIs and low urbanisation rate the opportunities to gain income outside the agrarian sector are extremely limited (N. Disanayake, personal communication, 11/8/2014; World Bank, 2014e).

4.4.1.4 Position in the globalisation process

Laos, as a poor and scarcely populated country, has a weak economic and political position even when compared with its neighbours. A driver closely related to the structural economic changes is fulfilling the needs of other countries for timber used in their massive timber processing industries (EIA, 2011; PROFOR, 2011). While at the national level the annual deforestation cap has been set at 150,000m^3 of timber from production forests (Boungnakeo, ?) the estimates of the European Forest Institute (EFI) show that the exports were around 1 million m^3 annually in the 2000-2008 period (EFI, 2011), with export to Thailand and, rapidly growing, to Vietnam. Only during the first 10 months of 2008 Vietnamese Customs recorded 220,000 m^3 of logs entering Vietnam through a single border crossing in Bo Y in the South of the country (EIA, 2011).

While the neighbouring countries, especially Vietnam and China established strict caps on illegal logging, the needs of the wood processing industries remain big and are still growing (EIA, 2011). Since Laos is a country with large areas of preserved natural forests and poor governance indicators (see: *3.1.2* and *3.5.2*) it becomes an attractive and cheap source of timber. Basically, the status of Laos being a recipient of outsourcing deforestation from other

countries is a derivative of all the weaknesses in its governance and low human and economic development.

In most of the situations the process of logging and the export of logs is a violation of the Lao law or at least an abuse of its ambiguity (EIA, 2011). While a log export ban has been established in 1999 (Boungnakeo, ?) this can easily be obeyed due to the limited capacities, poor governance and (or) consequently "special circumstances" legally allowing wood export and clear cutting of protected forests (EIA, 2011). Although forestland is officially divided into 3 categories, its demarcation on the ground is in many cases imprecise or even non-existent (CIFOR, 2013a).

Illegal logging and the export of logs is also a game of power in which the strongest players receive a privileged position. Phonesack Wood company belonging to the wealthiest Laotian has connections with the President of Lao PDR and is known for clearing large areas with at most, a vague legal status (PROFOR, 2011). Having large businesses in the mining and construction (hydropower) sectors it gains opportunities to acquire "conversion timber" (ibid.) from land clearance, giving additional opportunities for clearing larger areas than stated due to the limited capacities and widespread corruption (EIA, 2011). Another opportunity for illegal clearance of forests for wood export is the establishment of fictional Lao wood processing companies, on which account forest is extracted for 'domestic use'. This is also an example, how the general development policy may provide additional incentives and opportunities for large scale fraud (ibid.).

The Vietnamese side also plays a role in the process. Firstly, the Vietnamese customs do not extensively block illegal wood imports from Laos at the border with this being a consequence of various interests and the economic importance of delivering wood to the extensive wood processing sector (T. Van, personal communication, 15/9/2014). While EIA was researching the topic of illegal wood export the Vietnamese companies openly admitted that "nothing is difficult, if you have the money" (EIA, 2011: 13), and that, in order to receive a forest concession, "money has to be given" (ibid.). Also, due to the close political ties linking the two countries, the Vietnamese army-based companies can play an important role in wood extraction (ibid.). Being a big player, such a company can afford itself to bribe officers, or 'launder' wood by importing it through regular suppliers.

As a consequence to this widespread practice the 2020 goal of reaching a 70% forest cover seems to be even more improbable than before. Simultaneously, Lao wood processing factories complain about a lack of raw material, since foreign companies can beat their offers

due to higher power and better prices, consequently blocking the development of the forest processing sector, one of the goals of the 2020 strategy (MAF, 2005). This makes it difficult to escape the vicious circle of being only a supplier of raw materials with low value added.

4.4.2 Institutional performance

4.4.2.1 Political stability

While Laos experienced colonisation and two Indochina Wars its current stability is relatively high, since the country is governed by one-party that controls the media, and in more direct or indirect ways organisations involved in public participation. It also tries to control the population in order to minimise political challenges for the ruling party (ASEAN FTA, 2008; World Bank, 2013). Therefore I believe that the current political stability does not form a major obstacle, however its turbulent past certainly influences the current performance of the government on various areas.

4.4.2.2 Regulatory quality

Laos has a relatively well-developed legal framework regarding land-use and forestry (PROFOR, 2011) and made significant improvement (The Redd Desk, 2013) with the Forestry Law from 2007. With this it is fulfilling the requirements of a modern law, noticing the need of protecting the forests and using it on a sustainable manner. The same can be said about the Forest Strategy to the Year 2020. However, preparing a decent legal framework is just a first step in the way to good governance. The part making the real difference is the implementation of the legal framework, something that in Laos is still at a very initial stage. The situation on the ground remains chaotic and corruption is widespread (EIA, 2011).

Moreover, the regulations are full of ambiguities. In 2002 a ban for exporting logs was introduced (EIA, 2011). However, this ban is often obeyed by decrees referring to 'special circumstances' (ibid.), which is crucial when discussing illegal logging in Laos (see: *4.4.1.4*). At the same time, logging concessions are centrally planned, which from one side puts the responsibilities at a higher level, but, on the other side, causes ambiguities at a local level (The REDD Desk, 2013). Also the fact that land can be classified due to administrative decisions results in differences when comparing the situation on the ground and in cadastral bases, not to mention the vulnerability for corruption and mismanagement.

A forest transition in a country cannot occur without specific changes in the economy and strong efforts undertaken by the government. The question is also: to what extend is limiting deforestation and massive reforestation really a priority for policymakers? As shown in the

case of Costa Rica and Vietnam, the 'success stories' of this Thesis these countries undertook great effort by not only creating innovative policy, but also implementing it to an extent possible with the given capacities. In Laos the targets are ambitious: a 70% forest cover is planned to be reached in 2020, including more than 500,000 ha of plantation forests (MAF, 2005). The English-language regime-controlled Vientiane Times indicated that this target could still be reached (2014) if only Laos is able to recover 6 million ha of land in the next 6 years. This could only be done by giving severely degraded forests, covering about 30% of the country, time to recover. According to reports (CIFOR, 2013A; EIA, 2011) and interviews it is highly improbable or even impossible to reach this target (N. Disanayake, personal communication, 11/8/2014; H. Sirivath, personal communication, 8/8/2014), since the obstacles presented in the previous parts are too strong, and the governmental commitments: weak and these challenges cannot be overcome in one or two years (EIA, 2011).

4.4.2.3 Government effectiveness

Almost all the analysed articles, documents and responses from interviews mentioned the *very* limited capacities as a crucial constrain laying behind the negative land-use change trend. However, till 1990 commercial logging areas were not mapped at all and only national logging quota levels were provided (CIFOR, 2013a), consequently being of null value on the ground. Therefore progress has definitely been made.

From the legal side, large areas of land did not experience ground delineation, therefore the land tenure on these areas is sensitive for abuse. Also, even if the LFA was realised in a specific village it has often been implemented on a rapid and chaotic pace. While a proper delineation of a village takes around three weeks, government employees often do it, due to the large number of villages to delineate, in only a few days, with very little, or no public participation and visits in the field (H. Sirivath, personal communication, 8/8/2014). This results in a chaotic and partially unfair division of land, consequently leading to conflicts within the village or with the population of other villages (EIA, 2011). After this delineation only a temporary land use certificate is given, lasting for 3 years. In order to become permanent, it must be evaluated by the local government, otherwise, it loses its legal value. Due to the limited capacities of local governments this is, in many cases, not done (H. Sirivath, personal communication, 8/8/2014), leading to extreme inefficiency in which, due to capacity gaps, the value of projects realised by one institution is not followed by another.

Finally, also the capacities to control illegal logging by field visits, and satellite imagery are very limited, resulting in poor control of the process (CIFOR, 2013a; EIA, 2011)

4.4.2.4 Voice and accountability

Since Laos is a Socialist Marxist-Leninist state in which a single party rules the country on a top-down basis with a low level of transparency, non-existent free media and nihil democratisation its performance is the lowest among the selected countries (see: *3.1.2*). This forms a barrier for local participation and the involvement of NGOs. In crucial projects, such as land allocation (see: *3.5.3.2*) the participation of the local population remains low. This is not only due to the limited capacities, but also the rigid institutional structure and lack of trust towards minorities. Until very recently it happened that the government showed hostility towards participatory forestry (CIFOR, 2013a) and till 2007 no recognition of customary land rights was provided in any of the legal mechanisms (The REDD Desk, 2013).

Nevertheless, the government is now experimenting with reforms and an NGO-based civil society is slowly being build (Forest Trends, 2010). However, the local NGOs now need to be officially registered, and remain closely monitored by the government (CIFOR, 2013a). Its actions are limited to plans approved by the government, significantly limiting its efficiency and ability to work with local communities (H. Sirivath, personal communication, 8/8/2014). For a further growth of NGOs not only the highly formalised rules are a barrier, but also the low human and social capacities (Forest Trends, 2010), resulting in difficulties in involving people into the consultation processes. The lack of independent domestic media makes it hard to openly criticize mechanisms occurring in the Laotian government (ibid.). Consequently, nowadays the civil society is lagging behind not only, when compared with Thailand, but also Cambodia (ibid.).

Decentralisation, a process started after the launch of the 'New Economic Mechanism' (CIFOR, 2013a) is a new challenge for the Laotian government. This can be perceived twofold. From one side it brings governance 'closer to the people' (Ribot et al., 2006), but on the other side poor governance with high competences at a local level creates additional opportunities for fraud and mismanagement. While after the reforms in 1986 parts of the responsibilities were taken downward this trend was reversed in the early 1990s due to the very limited capacities and widespread corruption of local governments (Forest Trends, 2010). Only after more coordinated reforms the responsibilities are again slowly transferred to the provincial and district level. At the same time the authority of these levels for large concessions is limited in order to control the concessions more strictly (ibid.). Nevertheless, the lack of capacities, control and mismanagement remains widespread (CIFOR, 2013a).

Another issue is that while the district and village authorities are responsible for the implementation of land concessions, its influence on these decisions remains minimal (ibid.).

4.4.2.5 Control of corruption

According to Transparency International, Laos ranks 140 out of 177 countries, when regarding the perception of corruption (2013), being an improvement compared to 2010, when it ranked 154 (EIA, 2011). By one of the interviewees corruption was considered as **by far** the biggest problem in combating illegal deforestation. This is because even if strict policies are created, its implementation and execution is almost impossible (N. Disanayake, personal communication, 11/8/2014). While the problem is noticed by the government (EIA, 2011) it is the government officials that take bribes for securing quotas. These bribes can be as high as 20% of the overheads in companies, plus additional funds for the lower level officials, and uniformed services (ibid.).

The research of Forest Trends (2010) stated that the most significant examples of bribery take place in order to:

- "launder" wood by confiscating it. Next, governmental institutions sell it on the open market.
- Receive an allowance for additional wood extraction.
- Obtain logging approvals.
- Misrepresent and under-measure the amount and sort of species.
- Falsify documents.

In order to combat this situation a special Department of Forestry Inspection (DOFI) was created by a Prime Ministerial degree. Although it has strong tools, it lacks the capacities to work efficiently (EIA, 2011; PROFOR, 2011).

However, in 2014 changes are visible. Very recently a large group of officials was sentenced for bribery and also large scale actions at borders were undertaken by DOFI blocking the export of illegal timber (A. Flanagan, personal communication, 12/9/2014). Although these are still first steps, a strong message has been send, showing that the attitude of the government changes and that explicit examples of bribery will not be accepted anymore. Nonetheless, Laos still has a very long road to go when regarding the control of corruption (ibid.).

4.4.2.6 Rule of law

The widespread corruption, ambiguity of laws and lack of capacities discussed in the previous sub-chapters result in low indicators for the rule of law. Another reason being a direct consequence of the low capacities is the lack of a determined approach towards combating deforestation. This is due to a conflict of interests and widespread corruption in which people responsible for law implementation are having personal benefits in maintaining the status quo. In contrast to Vietnam, people clearly responsible for these improprieties were, until very recently, not accused (N. Disanayake, personal communication, 11/8/2014).

4.4.3 Environmental concerns

While poor governance is definitely a factor influencing the negative trend leading to deforestation it is clear that a large part of responsibility for the current state of action lays in the general governmental vision of development promoting large scale and export-oriented projects, which, is not a negative sign *per se*, but, without sufficient public participation, low priorities for environmental issues and poor governance results in the current alarming status of the forest sector.

4.4.4 Conclusion

Despite these negative practices, there seems to be a chance in, at least a slight, improvement of the situation. Since the overwhelming part of wood exported from Laos is processed into products sold on the international markets, including the EU, the US and Japan. On these markets the consciousness of consumers grows and legal frameworks get stricter, to name the Lacey Act in the US and FLEGT in the EU. The producers of furniture in Vietnam and China now need to revise their policies, in order to confirm the legality of their products when exporting them to the mature markets. In order to achieve this, Laos, in cooperation with Vietnam, is negotiating the VPA (EU FLEGT, 2014), since the Vietnamese wood processing sector risks a loss of supply materials (EIA, 2011).

However, in order to make this transformation a success story a strong approach is needed, going beyond the signing of Moratoria or the Vientiane Action Plan (2004). The government should enforce its export ban, publish details of logging quotas and clarify rules of land use transfer, in order to avoid ambiguities (Forest Trends, 2010). Also improving the rule of law by declining the possibilities of using power of highly influential people and groups is required. Another problem is that, according to one interviewee, the enforcement from the European side is not strong enough (N. Disanayake, personal communication, 11/8/2014).

According to two interviewees, there are no signs of improvement yet, since the FLEGT was implemented as recent as 2013. It is presumed that more time is needed, in order to get a clearer picture (N. Disanayake, personal communication, 11/8/2014; H. Sirivath, personal communication, 8/8/2014). More time will also allow to increase the role of the civil society after the first stages taken for the VPA 'opened the floor' for them. Moreover additional external pressure is put on Laotian policymakers giving hope (ibid.). But still the process is moving ahead on a slow pace (H. Sirivath, personal communication, 8/8/2014).

Summing up. Deforestation in Laos is a fact and the reasons laying behind it were presented extensively. When measuring the poor position of Laos while comparing it with the forest transition theory it seems that the drivers presented in the theoretical chapter are not occurring, at least at a significant stage and tremendous work is needed in order to bring at least acceptable improvements. At this stage it is also rather unclear if Laos might follow the economic development path or the forest scarcity. However, due to the low population density, still relatively high forest cover remaining and its presence in the rapidly growing ASEAN area it seems more probable that the economic development path will be followed. But, when looking at what the future can bring, huge uncertainties arise. Definitely the implementation of FLEGT VPAs might bring improvement. However, the level involvement from the government needs to grow, in order to make its implementation efficient. If the *status quo* will be maintained, the condition of the Laotian forests will further deteriorate.

Discussion and conclusion

After gathering information from 200 sources the forest transition theory was tested and illustrated on the example of four countries: Costa Rica, Nicaragua, Vietnam and Laos. Out of these Costa Rica and Vietnam clearly experienced a forest transition while Nicaragua and Laos did not. This result is not revealing, since the deforestation and reforestation trends in these countries were widely discussed. However, the main strength of this Thesis is the discussion of a wide array of drivers and its comparative value. Consequently, it brought a comprehensive picture of what has driven the transition in Costa Rica and Vietnam and what did not in Nicaragua and Laos.

A forest transition remains a complex theme with several variables involved. This has been proven on the example of the four analysed countries. It is evident that every country is following its own path and therefore indeed only tendencies can be presumed regarding the future rather than pre-defined development paths.

The conclusions of the selected case-studies gathered the main drivers of forest cover change. This final part of the Thesis sets out the general trends and differentiation between the countries by answering the research questions from sub-chapter 2.3. Firstly the sub-research questions are answered. Subsequently, the general research question is answered including a discussion and outlook for further research.

Sub-research question 1

What socio-economic factors: such as the changing global position of a country or inland development and tensions are driving or blocking a forest transition?

The socio-economic drivers gather a large group of factors having impact on a forest transition. To start, the impact of modernization processes in the countries generally has a positive impact on the state of forests. The process goes in hand with the expansion of infrastructure, consequently increasing access to remote and forested areas. While from one side this forms a thread of exploiting forests of which examples where found in Vietnam and Costa Rica until the 1980s and in Laos and Nicaragua until recently, from the other side it also provides opportunities. Due to better infrastructure the mobility of the population grows and services and industry sectors are attracted to the country of which Vietnam and Costa Rica are great examples. An efficient infrastructural network is also needed for sustainable and plantation timber extraction. Consequently, this decreases the transaction costs and the pressure on illegal logging by simultaneously declining the incentives for land-use change.

A modernization process also results in the intensification of the agricultural sector. On this area great progress has especially been made in the Vietnamese agricultural sector. The massive use of fertilizers, herbicides and mechanisation is taking place for the past two decades, correlating with the pace of forest recovery. Contrarily, the poor performance of Nicaragua can mainly be explained by the poor and inefficient agricultural methods requiring more land to feed the growing population. At the same time its wealthier Southern neighbour, Costa Rica, reoriented its economy towards the sector of services and industrial production.

Due to non-farming opportunities and agricultural intensification more space could be provided for the expansion of forest areas. This is because the population receives other sources of income than extensive agriculture and obtaining NTFPs in the nearby forests. The growing income and industrialization also decreases the fuel wood pressure on forests, since the cooking process gets to a large extend fuelled by fossil fuels.

Another important factor driving a change to net reforestation or, contrarily, preventing it, is the global position of a country. Due to economic and political strength, countries are less prone to adverse economic events. A symbol of this strength is the relatively diverse service and industry sector in Vietnam and, especially, Costa Rica, providing a wide arrange of opportunities and markets. On the other side, the poor state of institutions and low economic development makes Nicaragua and Laos prone to internalise the negative effects of development in other countries. Particularly Laos is hit by the externalization of deforestation from its larger neighbours with which the weak institutions cannot cope. This is also a strong signal showing that if REDD+ policies are to be effective they must not only include institutional regulations and efforts but also put efforts on land-use issues and trade agreements at a global level, as well as include all relevant Parties in order to minimise the 'leakage'.

Sub-research question 2

What characteristics of public and non-public institutions are driving and blocking a forest transition?

Again, in the area of institutions performance the results of Vietnam and Costa Rica were more satisfactory than in Laos and Nicaragua. While all countries indeed provided a relatively broad regulatory framework for forestry its quality remains inadequate. Even since all the countries made progress, the needs are still big. However the depth of the problems remains diverse. While Laos still faces with the issue of numerous ambiguities the already innovative

Costa Rican policymaking is rather struggling with its own success and the risk of landing in a comfort zone. In order to further advance brave decisions are needed, fulfilling the requirements of 2014 rather than the 1990s.

While the democratisation process certainly helps in creating a civil society and critical citizens this is not a necessity for having a forest transition. The example of Vietnam, but also China, demonstrates that a forest transition is possible with even very low voice and accountability indicators.

The research revealed that the government effectiveness is the most important factor for making a forest transition a reality. Both Costa Rica and Vietnam rank significantly higher than its neighbouring case countries. The execution of regulatory frameworks, financial and institutional capacities are highly needed in order to succeed.

Political stability, rule of law and low corruption are also factors important in combating deforestation and successfully implementing reforestation and afforestation initiatives. The massive and endemic corruption in Nicaragua and Laos are a great problem. It was admitted in interviews that with bribery all the problems with obtaining forest concessions could be solved and people responsible for controlling the sites could turn a blind eye at the abnormalities. While certainly corruption also appears in Costa Rica and Vietnam, its scale is lower, and the number of positive factors: larger, consequently outweighing the adverse impact of corruption. In turn, the political stability and rule of law are needed in order to have a stable, effective and predictable policymaking, much needed in long-term issues as forestry.

While the general level of policymaking is important also the level of priority given to environmental protection is of high relevance. While Costa Rica bases its development goals on sustainable development and made its environment a key tool in attracting tourists, the environmental priorities in Laos and Nicaragua are relatively low in the development agenda. Vietnam, although having a highly technocratic government put environmental issues high on its agenda, since the large population and forest scarcity impacts the provision of environmental services and timber needed for a growing economy.

Finally, the list of main gaps and constraints regarding capacities unsurprisingly opens with money. The lack of financial capacities to run institutions, projects and hire an adequate number of staff was highlighted in numerous interviews. Also the lack of technical skills and lack of wide-scale provision of satellite imaginary significantly impedes the work of forestry

institutions. Moreover, institutions in the selected countries also lack the skills to efficiently cooperate with NGOs and indigenous people.

Sub-research question 3

What are the most important lessons learned by countries that already experienced a forest transition? This sub-research question will be answered on the basis of the experience of Vietnam and Costa Rica.

While both countries experienced a forest transition in the early 1990s this process was turbulent. The main obstacles that needed to be overtaken was convincing social groups that reforestation is a must and other ways of making a living exist. In both countries the general development brought employment in the emerging service and industry sector, decreasing the pressure on the forests. However, simultaneously additional incentives had to be provided. In Costa Rica a widespread PES programme was launched, while in Vietnam subsidies for establishing forest-tree plantations and stopping shifting cultivation were provided.

One lesson learned is definitely that the limited funds for compensation need to be addressed not only effectively, with low transaction costs, but also selectively and flexibly, in order to address the spots where changes can be made. This, however, requires significant technical and financial capacities needed by the institutions governing the system, something that was lacking, especially in the initial stages.

It is also evident that at least a certain level of economic and social development is required in order to make a forest transition happen. Even since this topic has been studied before, no clear answer can be given yet to the question what exact combination of factors is needed in order to make a forest transition happening. Nevertheless, a country must definitely be on an advanced stage of the 'forest scarcity path' and, or 'economic development path'. But, as seen on the example of Nicaragua, being in a scarcity situation already, at that moment strong institutions are also needed. Moreover, the examples of the relatively well of Thailand and Malaysia, that only stabilised its forest cover or experience regional forest transitions, questions this approach.

Countries that aim to experience a forest transition should omit policymaking that provides incentives for land-use changes, such as the establishment of economic zones in scarcely populated areas, or incentives for beef production, mistakes made by Vietnam and Costa Rica respectively. Sadly, Nicaragua and Laos are countries from one side declaring to combat deforestation, but from the other side not sufficiently dealing with the issue of land-use

change. Simultaneously they have orientated its development path on infrastructural projects rather than on sustainable land management.

Sub-research question 4

The last sub-research question: *What forms of support may countries receive for (further) driving their forest transitions, paying special attention to the 2015 climate agreement?* also brought some, although limited, results.

After discussions with climate negotiators from three countries and experts on this area there is a belief that 2015 can bring a binding agreement on climate change. This agreement will definitely include a part on REDD+ and, hopefully, stream money for it. Although no full consensus is reached whether REDD+ should be based on carbon credits or voluntary payments it is believed that this stream might provide improvements. Firstly, it will provide funds and frameworks for improving the institutional capacities. Secondly, payments from REDD+ might become an additional incentive for smallholders to keep the forests in a healthy condition. Keeping forests in a good condition will help in preserving carbon stocks, which is the main goal of the programme. Nevertheless, even if no ambitious agreement will be reached it is certain that at least Costa Rica and Vietnam will follow the process of improving their policy and most probably Laos will follow. Unfortunately, it is difficult to presume what the future will bring for Nicaragua, regarding its low political stability and critical approach towards REDD+ and PES.

Main research question

Finally, this section answers the main research question: *What is the picture of factors driving a forest transition. What is blocking it, and what are the main opportunities and threats for the future according to research in the selected case studies?*

As presented, a forest transition is driven by various factors ranging from purely economic, to factors based on social, political and world-view variables. It is, however difficult to give a clear answer on the question which factor plays the most important role. Definitely social and political will is needed for implementing policymaking limiting deforestation and favouring reforestation projects. From the economic side the cases confirmed that one of the two pathways, i.e. the forest scarcity path or the economic development path must be followed. The former originates from increasing impacts of scarce forestland for the economy and provision of environmental services, while the latter decreases the pressure on forests, by

providing other ways of making a living. Nevertheless, for undertaking drastic methods, or enabling economic growth a solid institutional framework remains important.

At this place a question arises whether designing a specific algorithm assessing the chances of a particular country to undergo a forest transition is possible and feasible. Nowadays development theories do not tend to strive for absolute, but rather include the aspect of relativeness. In this context it was not the purpose to present the four countries in a purely dualistic manner. While indeed two of them are performing significantly better than the other two, this does not mean that Costa Rica and Vietnam excelled in their performance and Nicaragua and Laos are in a state of perish. This research only shows that Costa Rica and Vietnam simply passed the leverage point and it highlights the elements in which these countries succeeded, and where the others did not. While such a relativistic character makes the forest transition theory of limited usefulness for large statistical comparisons it certainly does provide a decent base for extensive qualitative research.

Another question is, if a high forest cover is always a desired state, since in the forest transition theory it was argued that a point of equilibrium regarding forestland exits. Also, due to the high interconnectivity of the current world and the global problem of climate change the forest transition theory should now move to a total, i.e. global level. This approach was until now undertaken to a very limited extend. I share a strong believe that only when the global forest equilibrium will be fully understood the forest transition theory might become a powerful theoretical concept. At this stage, singular forest transitions occurring in particular countries may indeed be beneficial for these specific countries, but may have only a neutral effect globally and aversively hit other countries, due to the global commodity chains.

Future Research

This research brings implications and a vision for future research. Firstly, it is desired to monitor the situation, since the global trend on forest loss is decreasing. This is due to general economic development, strengthening environmentalism and improving policymaking. Also the development of REDD+ and FLEGT VPA might bring further improvement. Secondly, the twenty years of research on forest transitions did not bring a specific guideline that allows to effectively assess what steps a country needs to experience a forest transition. Simple measures based on governance or GDP do not work (although can give a general picture) since the reasons are laying deeper. If all these drivers were clearly identified, the strength of the forest transition theory could go beyond the driver of land specialisation, by forming a

universal platform for assessing the pathway of countries struggling with deforestation. Therefore further research by using the forest transition theory is needed in order to identify a broad picture of factors driving forest cover change.

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Personal communication

Table 5: List of interviewees.

Name	Function	Country/Org.	Date
Tran Nam Tu	Researcher, PhD candidate at UU	Vietnam	28/03/2013
unknown	Village Head, Ky Ri, Quang Tri Province	Vietnam	29/03/2013
Wojciech Galinski	Team Leader, MDA Programme	UNFCCC	03/03/2014
Tomasz Karpiński	Expert, KOBiZE, emissions monitoring centre	Poland	20/03/2014 10/06/2014
Carlos Manuel Rodriguez	Former minister of the environment, Vice President of Conservation International	Costa Rica	05/06/2014
Alla Metelitsa	Team leader, Capacity-building and Outreach	UNFCCC	08/06/2014
Tomasz Kowalczewski	Expert, Ministry of the Environment	Poland	08/06/2014
Pham Quoc Hung	Vietnam Forest; Department of Science, technology and international cooperation	Vietnam	11/06/2014
Sørlie Eirik Brun	REDD+ negotiator	Norway	12/06/2014
Doug Boucher	Director, Tropical Forest & Climate Initiative	Union of Concerned Scientists	01/08/2014
Hongthong Sirivath	Programme Coordinator for land & livelihoods programme	Village Focus International, Laos	08/08/2014
Diego Lynch	Head	ANAI, Costa Rica	10/08/2014
Nishan Disanayake	Consultant	Village Focus International, Laos	11/08/2014
Felipe Carazo	Executive Director	FUNDECOR, Costa Rica	15/08/2014
Anne Larson	Senior Scientist	CIFOR	26/08/2014
Norvin Sepulveda	Landscape coordinator	CATIE, Nicaragua	27/08//2014
Cristhiam Osmar Berrios Montes	Expert on education programmes	Sonati, Nicaragua	01/09/2014
Mucahid Bayrak	PhD candidate	CUHK, Hong Kong	06/09/2014
Ove Faurby	Expert	Norteak, Nicaragua	08/09/2014
Aidan Flanagan	Consultant	FSC Australia	12/09/2014
Thien Van	Expert	Quang Tri, Vietnam	15/09/2014
Nguyen Quang Tan	Vietnam Country Program Coordinator	RECOFTC	16/09/2014