

**Upgrading in the timber value chain by a community  
forest organization in Lomerío, Lowlands Bolivia;  
Case study Puesto Nuevo**

**Master Thesis**

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July, 2014

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## List of acronyms

AAA	<i>Area de Aprovechamiento Anual/Annual Area of exploitation</i>
ABT	<i>Autoridad de Fiscalización y Control Social de Bosques y Tierras/Authority for monitoring and social control of Forest and Land</i>
AFIL	<i>Asociación Forestal Indígena de Lomerío/Association Indigenous Forests of Lomerío)</i>
AFIN	<i>Asociación Forestal Indígena Nacional/National Association Indigenous Forests</i>
AIOC	<i>Autonomía Indígena Originario Campesina/Autonomy of native indigenous peasants'</i>
APCOB	<i>Apoyo para el Campesino Indígena del Oriente Boliviano/ Assistance for indigenous peasants of East Bolivia</i>
BOLFOR	Bolivia Sustainable Forest Management Project
CADEX	<i>Cámara de exportadores de Santa Cruz/Export chamber Santa Cruz</i>
CICOL	<i>Central Indígena de Comunidades Originarias de Lomerío/Central indigenous organization of communities of Lomerío</i>
CIDOB	<i>Confederación Indígena del Oriente, Chaco y Amazonia de Bolivia/Indigenous Confederation for the East, Chaco and Amazon regions of Bolivia</i>
ESFOR	<i>Empresa de Servicios forestales en Lomerío/Forestry services enterprise for Lomerío</i>
IBIF	<i>Instituto Boliviano de Investigación Forestal/Bolivian Institute for Forestry Research</i>
INRA	<i>Servicio Nacional de Reforma Agraria/National Institute for Agrarian Reform, mostly referring to the Law INRA of 1996</i>
TCO	<i>Tierra Comunitario de Origen/Indigenous communal land</i>
TIOC	<i>Territorio Indígena Originario Campesina/Native indigenous peasant's territory</i>
PGMF	<i>Plan General de Manejo Forestal/General forest management plan</i>
PGMFN	<i>Plan General de Manejo Forestal Norte/General forest management plan north (of TIOC Lomerío)</i>
POAF	<i>Plan Operativo Anual Forestal/Annual operational forest plan</i>
UFM	<i>Unidad Forestal Municipal/Municipal Forestry Unit</i>

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## Summary

Community forestry is a widely used approach of practicing forestry globally. Since a trend of devolution of land and forest use rights is still ongoing, even more communities or other small forest enterprises will have the opportunity to start exploitation of their forest products for the market. In practice it can be observed that many community forest organizations (CFO's) sold their standing timber to timber companies and some of them 'upgraded' in the value chain. In this thesis 'upgrading' and its opposite 'downgrading' is seen as executing extra or less activities or functions by producers in a value chain respectively (Riisgaard et al., 2010).<sup>1</sup> In the timber value chain these extra or less activities could involve several stages of harvesting, transporting, sawing and/or processing secondary products. Since upgrading might provide CFO's with an interesting option for increasing income and forest conservation and it is observed only some CFO's upgraded, it is important to know why only some CFO's upgraded. Therefore the aim of this thesis was to determine which enabling and constraining factors might play a role in upgrading in the timber value chain by community forest organizations (CFO's), in order to get more insight into the way a CFO can fulfill their role in sustainable exploitation of forest resources after devolution of land and forest use rights.

In order to determine factors that play a role in upgrading, two bodies of literature were studied, the first on upgrading and the second on partnering. An in-depth case study on upgrading was conducted in the CFO of community Puesto Nuevo, TIOC<sup>2</sup> Lomerío, in the Lowlands of Bolivia, in order to gain further insight and understanding on the various factors. During the period studied (1980s until 2013), this CFO had upgraded twice to different stages in the value chain and subsequently had downgraded again to selling standing timber to timber companies. To put the aim of the research into practice, factors enabling downgrading to selling standing timber to timber companies were seen as equivalent to factors constraining upgrading. The periods of upgrading included sawing with a permanent and a portable sawmill. During one period of upgrading they were oriented to the international market, with a FSC-certificate, and during another, more recent, period to the local market. During the case study 59 interviews with 41 interviewees and 16 observations have been carried out and documents available in the field were reviewed. Additionally, literature has been studied.

Based on an analysis of the findings various different combinations of factors enabling and constraining upgrading were discovered over time.

The main conclusions are that many constraining factors needed to be overcome by the CFO, to upgrade its activities to a stage of sawing timber. The issue that community members often prioritized working on their land and joining social activities particularly constrained upgrading. Additionally, it was necessary to have financial resources from a NGO available

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<sup>1</sup> This is also called 'functional' up- and downgrading or 'vertical integration' in the upgrading literature.

<sup>2</sup> The abbreviation 'TIOC' refers to: 'Territorio Indígena Originario Campesino'/'Native indigenous peasant's territory', before also called 'TCO' ('Tierra Comunitario de Origen'/'Indigenous communal land) and is a recognized form of private organization with land- and forest use rights in Bolivian law.

and large and good quality forest. Above all it proved to be essential to have a drive for upgrading in order to overcome all constraining factors.

It is recommended to conduct a broader review of specific cases in upgrading in the value chain by CFO's and other small forest enterprises since general upgrading literature was not oriented to CFO's specifically, in order to be able to generalize the results. For CFO's it is also recommended to take various factors into account with their decision to upgrade or not. For donors it is important to realize that it is not only external support that plays a role in upgrading, but also internal factors like other activities that are important for a CFO.

Keywords: upgrading, functional upgrading, vertical integration, timber value chain, community forest organization, community forest enterprise, community forestry

## Resumen (Summary in Spanish)

La silvicultura comunitaria es un método ampliamente utilizado en la práctica de la silvicultura en el mundo. Dado que la tendencia de la devolución de tierras y derechos de uso forestal están todavía en curso, incluso más comunidades u otras empresas forestales pequeñas tendrán la oportunidad de iniciar la explotación de sus productos forestales para el mercado. En la práctica se observa que muchas organizaciones forestales comunitarias (OFCs) venden sus árboles en pie a las empresas madereras y algunos de ellos 'avanzan' en la cadena productiva de la madera. En esta tesis 'avanzar' y su opuesto, 'degradar' es visto como la ejecución adicional o menos actividades o funciones de los productores en la cadena productiva, respectivamente (Riisgaard et al., 2010)<sup>3</sup>. En la cadena productiva de la madera, estas extras o menos actividades podrían implicar varias etapas de la cosecha, el transporte, el aserrado y/o procesamiento de productos secundarios. Dado que avanzar en la cadena productiva de la madera podría proporcionar a las OFCs con una opción interesante para incrementar los ingresos y la conservación de los bosques, sin embargo se observa que sólo algunas OFCs han avanzado en la cadena productiva, es importante saber por qué sólo algunas OFCs han avanzado. Por tanto, el objetivo de esta tesis fue determinar que la activación y factores limitantes podrían desempeñar un papel en avanzar en la cadena productiva de la madera por las organizaciones forestales comunitarias (OFCs), con el fin de obtener una visión más clara de la forma en que una OFC puede cumplir con su papel en la explotación sostenible de los recursos forestales después de la devolución de los derechos sobre la tierra y uso de los bosques.

Con el fin de determinar los factores que juegan un papel en avanzar en la cadena productiva, se estudiaron dos componentes de la literatura, la primera, sobre avanzar en la cadena productiva y la segunda, sobre la asociación. Un estudio de caso en profundidad sobre avanzar en la cadena productiva se llevó a cabo en la OFC de la comunidad Puesto Nuevo, TIOC<sup>4</sup> Lomerío, en las tierras bajas de Bolivia, con el fin de adquirir una mayor comprensión y entendimiento sobre los diversos factores. Durante el período estudiado, (1980 hasta 2013), esta OFC había avanzado dos veces a diferentes etapas de la cadena productiva y, posteriormente, tuvo 'retroceso' de nuevo a la venta de los árboles en pie a las empresas madereras. Para poner en práctica el objetivo de la investigación, los factores que permiten rebaja a la venta de los árboles en pie a las empresas madereras se consideró equivalente a factores que limitan avanzar en la cadena productiva. Los períodos de mejoramiento incluyen el aserrado con una permanente y un aserradero portátil. Durante un período de mejoramiento que estaban orientadas hacia el mercado internacional, con un FSC-certificado, y durante la otra, más reciente, el período para el mercado local.

Durante el estudio de caso realizaron 59 entrevistas con 41 entrevistados y 16 observaciones y los documentos disponibles en el campo fueron revisados. Además, se han estudiado literatura.

Las principales conclusiones son que muchos factores restrictivos necesarios para ser superados por la CFO estudiada, para avanzar sus actividades a una etapa de aserrado de la madera. Especialmente el punto de que los miembros de la comunidad a menudo priorizan trabajar en sus tierras y participar en actividades sociales, limitando el avance. Además, fue necesario contar con recursos financieros provenientes de una ONG dispuesta a colaborar y de un bosque grande y de buena calidad. Pero,

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<sup>3</sup> En la literatura sobre avanzar en la cadena productiva eso también es llamada 'avanzar en la cadena productiva en una manera funcional' e 'integración vertical'

<sup>4</sup> La abreviación 'TIOC' se refiere a 'Territorio Indígena Originario Campesina', antes también llamado 'TCO', Tierra Comunitario de Origen y es una forma reconocida de organización privada con derechos sobre la tierra y uso de recursos forestales en la Ley Boliviana.

sobre todo, resulta necesario contar con un impulso para avanzar y superar todos los factores limitantes.

Se recomienda llevar a cabo una revisión más amplia de casos específicos en avanzar en la cadena productiva por las OFCs y otras empresas forestales pequeñas ya que la literatura en general, no está orientada a las OFCs en específico, con el fin de ser capaz de generalizar los resultados. Para las OFCs se recomienda tomar en cuenta diversos factores, con su decisión de mejorar o no. Para los donantes es importante darse cuenta de que no es sólo la ayuda externa desempeña un papel en avanzar en la cadena productiva, sino también factores internos como otras actividades que son importantes para una OFC.

Palabras clave: avanzar en la cadena productiva, integración vertical, cadena de valor de la madera, cadena de suministro de la madera, organización forestal comunitaria, empresa forestal comunitaria, silvicultura comunitaria.

## Acknowledgements

It has been very interesting to conduct my second Masters' study in Forest and Nature Conservation after almost twenty years of working experience and my first Master in Management and Organization. Especially the combination of technical insights in managing a forest for production and conservation means and socio-economic implications for small enterprises appealed to me. Additionally, I am glad that via this thesis I could gain further insights in the diverse issues a community, their clients, and supporting NGO's meet in sustainable exploitation of a forest. However, this study and thesis would not have been possible with the support of my family, my husband Riechard Weening and my children Martijn and Laura. I am very grateful for their patience and love. Since the children are not reading English yet, for them a few short words in Dutch: dank jullie wel, lieverds !

Furthermore, I would like to express my gratitude to the staff of the chair groups that contribute to the Master in Forest and Nature Conservation, for their insights, enthusiasm and interesting discussions. I am especially grateful for the critical and inspiring questions and support during the process of forming my thesis from my supervisors, Ingrid Visseren-Hamakers and Sietze Vellema.

This thesis would not have existed without the contribution and support of my interviewees. I am especially grateful for the hospitality of the people of the community Puesto Nuevo in TIOC Lomerío in Bolivia and their time for sharing their insights with me, while also the corn needed to be sown, food needed to be prepared, six houses needed to be constructed manually and the logs needed to be loaded. I would like to mention by name Carmen Faldin, Hugo Faldin, Venancio Faldin and Ignacio Surubí. I am also grateful for the assistance and insights of Esteban Quiviquivi, Elmar Masay and José Ipi of AFIL/CICOL and Wilber Estrada of the timber company Arboleda during my stay in Lomerío. I also would like to express my gratitude to the staff of my counterpart in Bolivia, IBIF, especially to Alfredo Alarcon, Marisol Toledo and Juan Carlos Licon; Jorge Riester of APCOB; Orlando Melgarejo of Serviforest/WWF; Rolando Vargas of AFIN; Javier Bejarano of SNV; Charlotte Benneker; René Boot and Herman Savenije of Tropenbos International; and all other interviewees who I didn't mention by name, for their assistance, insights and inspiration .

I also would like to thank my study mates, especially Marion Buddeberg, Laura-Jo Russell, Caroline Lumosi, Pedro Godinez Martinez and Daniela Potočnjak for their help and sharing both difficult moments and moments of joy; my friends, especially Laura Bornkamp for her support; and my relatives, especially my stepmother Marga van Schagen. Without her support by taking care of the children it would not have been possible to study again and conduct this thesis. Additionally, I would like to thank my father Thomas van Hulsen, for his love and unconditional believe in me.

Finally I would like all others who helped me, inspired me and distracted me from the work and who I didn't mention by name.

*This thesis is dedicated to Kuun van Hulsen-Spaan (1945-1991)  
whose love and drive for knowledge continues to inspire me*

## Chapter 1 Introduction

### 1.1 Background

Nowadays, many forest enterprises in the world are smallholders. Some of them have a private business, but many combine their efforts into ‘community forest organizations’ (CFO)<sup>5</sup> (Bray et al., 2005; Wiersum et al., 2013). This is especially the case in Latin America and parts of Asia, in areas with strong community tenure (Sunderlin et al., 2008). In 2008, about 428 Mha of forest, covering about 13% of the top 30-forested countries, were under ownership or designated for use by communities and indigenous groups ((Sunderlin et al., 2008). These enterprises are not only important for income generation (Larson et al., 2010) and facilitation of social services, but also for wood provision (Antinori et al., 2005; Benneker, 2008). This has not always been the case. Previously, many of the communities were still producing for subsistence. One important reason for this was the legal frameworks present. The traditional approach of forest policy was government-led control (Wiersum et al., 2013); (Sunderlin et al., 2008), with the provision of concessions for use of forest products to forest enterprises, that were typically large and export-oriented (Benneker, 2008). With distribution of concessions, customary tenure rights generally were not taken into account by governments. When local timber industry needed timber, they relied on these large forest enterprises or on their own harvesting in the nearby forest. Since they regarded the forest as open access, although others might have traditional land rights, they didn’t regard this as an illegal activity. (Benneker, 2008)

Community forestry had started in the 1970s as a strategy of participatory management in forest regeneration, oriented to sustainable resource management and alleviation of poverty, largely in East Asia and Central America. This strategy was a reaction to expropriation of forests by governments, mostly as forest reserves. This caused that many local people lost their rights of access to the forests they originally depended upon. (Beauchamp et al., 2011; Wiersum et al., 2013); (Arnold, 2001). From the 1980s onwards, community forestry was increasingly recognized as a useful approach of managing forests as a common pool resource, based on local led initiatives (Arnold, 2001). In the beginning of the 1990s a trend started towards the decentralization of forestry policies to regional and local government bodies and devolution of forest management responsibility to private enterprises (Wiersum et al., 2013); (Arnold, 2001). This was also influenced by a struggle for recognition of indigenous rights (Cárdenas et al., 2012), an increasing international environmental awareness (Wiersum et al., 2013) and a strategy to reduce budgetary costs of the central government of managing the forestry sector (Arnold, 2001). Also international processes played a role in this. A struggle for indigenous rights, especially in Latin America, had influenced a revision of the ILO Convention on Indigenous people and tribes in independent countries (no. 169) (Anthias et al., 2013) and international environmental awareness to the Convention on Biological Diversity (Wiersum et al., 2013). The UN Conference on environment and development (UNCED) in

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<sup>5</sup> In this thesis the term ‘community forest organization’ (CFO) will be used. Frequently these types of organizations are also called ‘community forest enterprise’ (CFE). Chosen is for the first term, since representatives of the community studied stated they don’t regard themselves as an ‘enterprise’.

Rio de Janeiro in 1992 was a meeting that played a significant role in channeling the mentioned diverse global processes that had led to those conventions (Wiersum et al., 2013). Based on the Convention on Indigenous people and tribes and Convention on Biological Diversity, several national laws that favored the position of communities in forestry came into force. In many Latin American countries indigenous people, before not regarded as being capable of implementing forest management, became included as full partners in the legal frameworks. In this new role they became responsible for production of forest and non-forest products for both subsistence and the market and allies of the government in protection of biodiversity. (Anthias et al., 2013; Vargas et al., 2009). However, these laws were not brought into practice everywhere (Beauchamp et al., 2011). Overall, the impact of community forestry has differed throughout the world, not only because of the mentioned differences in the devolution of tenure or use rights, but also because of differences in local participation (Arnold, 2001); (Larson et al., 2010).

Nevertheless, CFO's were emerging in many different places in the world (Molnar et al., 2008; Nolan, 2001), carrying a promise to provide a viable approach to community development and forest conservation (Charnley et al., 2007). Most experiences in community management of forests initially focused on individual subsistence or small scale production of timber or commercialization of non-timber forest products, like nuts, berries and honey (Arnold, 2001). Later on, CFO's also started to commercialize timber. Since profits can be large in timber industry, this has a great amount of poverty alleviation potential (Wunder, 2001).

Small enterprises and CFO's typically sold their standing timber to timber companies. The timber produced by them was meant for both the local and the international market. Some of the CFO's added activities –also called 'upgrading' or 'vertical integration' in the value chain. These activities could include several stages of harvesting, transporting, sawing and/or producing secondary products. Furthermore, these CFO's were not only selling directly to local markets, but also to international markets. (Antinori et al., 2001; Bray et al., 2005)

## 1.2 Problem statement

It is remarkable that many community forest enterprises (CFO's) that commercialized timber sold their standing timber to timber companies and only some of them upgraded in the value chain.

Case studies conducted in Mexico, a country where many CFO's upgraded, showed that upgrading provided interesting income opportunities for the communities and a basis for conservation of forest. However, not all cases proved to be successful, mainly because of internal community conflicts. (Antinori et al., 2005)

So, although upgrading doesn't provide the solution for all CFO's, it might be an interesting strategy to consider for CFO's. Especially in these times where new forestry strategies like Payment for Environmental Services (PES) and the UN program on Reducing Emissions from Deforestation and forest Degradation (REDD<sup>+</sup>) seem to slow down, it might be an interesting

option, possibly in combination with the new forestry strategies, PES and REDD+. Additionally, combinations could be considered of upgrading in the timber value chain with commercialization of non-timber forest products, agriculture, tourism, reforestation and conservation (Cuny et al., 2007 in: (Beauchamp et al., 2011).

It has become especially relevant to explore alternative strategies for communities, since this group -that potentially will be involved in forestry- will increase in the coming period. The basis for this is the trend of devolution of land and forests use rights to communities, which is still ongoing, although not in all cases legal frameworks will be implemented and enforced immediately (Sunderlin et al., 2008).

In this thesis ‘upgrading’ and ‘downgrading’ is seen as executing extra or less activities by producers in the value chain respectively (Riisgaard et al., 2010). This is also called ‘functional upgrading’ and ‘functional downgrading’ in the upgrading literature (Humphrey et al., 2000; Riisgaard et al., 2010). In Bolivia a few cases are known of upgrading to the stage of sawing, with the use of a portable sawmill. Although these cases on upgrading only operated for a short period of time and did not lead to large successes yet, recently some CFO’s in Bolivia are considering upgrading and investing in portable sawmills and one CFO bought a portable sawmill in 2013. (Pers. comm. Bejarano<sup>6</sup>, Vargas<sup>7</sup>, Alarcon<sup>8</sup> and Montero<sup>9</sup>). Of some of the former experiences in upgrading to the stage of sawing with a portable sawmill in Bolivia project evaluations had been made, although these were not all public available. Additionally, neither these cases in Bolivia nor many other cases of CFO’s in the world seem to have been studied from the perspective of upgrading in the value chain. Apart from the mentioned cases in Mexico (Antinori et al., 2005; Antinori et al., 2001; Bray et al., 2005), only a case study on Cameroon could be found (Beauchamp et al., 2011) that was studied from this perspective. Therefore it was important to study developments in upgrading in the timber value chain by a CFO in Bolivia from the perspective of upgrading. Firstly to share the results with CFO’s and those who cooperate with them in Bolivia. Secondly to share the results with those parties in other countries in the world who were recently faced with devolution of land and forest use rights and are interested in additional income opportunities and a basis for forest conservation.

In this thesis, two bodies of literature were used to gain further insight and understanding in upgrading: one on upgrading in value chains and one on partnering. Factors that played a role, according to this literature, in upgrading in the value chain or in continuing selling standing timber to a timber company in the course of time were studied.

The body of literature on value chain analysis in general involved many descriptions of its structure, theories on how and why a value chain is governed as such to secure production

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<sup>6</sup> Forestry specialist in Bolivia, working for SNV, a Dutch development organisation, personal communication via e-mail before starting the field work on 30-10-2013

<sup>7</sup> Coordinator AFIN (*Asociación Forestal Indígena Nacional*/National Association Indigenous Forests), personal communication before starting the field work on 5 & 7-10-2013

<sup>8</sup> Forest researcher of IBIF (*Instituto Boliviano de Investigación Forestal*/Bolivian Institute of Research in Forestry) on 5-11-2013

<sup>9</sup> Sociologist of APCOB (*Apoyo para el Campesino Indígena del Oriente Boliviano*/Assistance for indigenous peasants for East Bolivia) on 5-11-2013

capacity and increase efficiency. Some of the authors in upgrading in the value chain oriented themselves to involving economic, social and environmental issues for a producer. (Lee et al., 2011; Murphy et al., 2009; Riisgaard et al., 2010). Since I was interested in strategies that increase quality of life within communities and forest conservation, I chose to include their approach and take into account aligning with powerful horizontal partners that promote these kinds of issues. The body of literature on upgrading in the value chain provided also insights in other factors that play a role in upgrading (Gereffi et al., 2005; Ponte et al., 2009). However, the theories were not built on experiences of community forest enterprises. Therefore the mentioned case studies from Mexico (Antinori et al., 2005; Antinori et al., 2001) and Cameroon (Beauchamp et al., 2011) were included as well. It was possible their findings could be generalized, but it was not certain if these counted for CFO's in Bolivia with other contexts. Therefore was chosen to explore the mentioned factors on their applicability in Bolivia.

In the body of literature on upgrading it was found that it would be necessary to include horizontal partners in addition to vertical partners<sup>10</sup>. A body of literature that was found to orient to horizontal and vertical partners, is the one on partnering. Hereafter are discussed current insights in vertical and subsequently in horizontal partnering.

A study of Vermeulen et al. (2008) provided insights in vertical partnerships between communities and companies, based on several international collaborative policy analyses on partnering in the forest sector (Vermeulen et al., 2008). Partnering between communities and companies was promoted on the UNCED-conference in Rio de Janeiro in 1992, since it was recognized that starting commercializing forest products would imply an enormous step for communities. Commercialization of forest products was seen as a way to realize not only environmental, but also social and economic objectives.

A part of the literature on multi-actor partnering, involving both horizontal and vertical partnering described cases of CFO that were involved in upgrading, in combination with a certificate on sustainable forest management like the one of the Forest Stewardship Council (FSC). The FSC-certificate had been developed in the 1990s when West European and North American markets started to show interest for timber where environmental and social aspects were taken into account. Since this international market appeared to be an interesting niche market for CFO's, some of them used the certificate to guarantee a determined level of environmental and social requirements. The successes and failures and factors contributing to commercializing timber on international level, based on a FSC-certificate already has been investigated extensively (Carrera et al., 2006; De Pourcq et al., 2009; Humphries et al., 2006; Karmann, 2009; Markopoulos, 2003; Molnar, 2004; Richards, 2004; Van Dam, 2003). A large part of the literature on multi-actor partnering described findings in other sectors than timber. A part of these are oriented sustainability, in combination with a certificate on sustainability (Bitzer et al., 2012; Ros-Tonen et al., 2008; Visseren-Hamakers et al., 2007).

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<sup>10</sup> It is called 'vertical' because these relations in the value chain are mostly graphically represented in a vertical way. 'Horizontal' partners are partners that don't have a relation directly oriented to the transformation and commercialization of a product, but support this process.

Also in the body of literature on vertical partnering it was found that, like in the upgrading literature, it would be necessary to add horizontal partners to vertical ones to contribute to sustainable development and poverty alleviation. (Vermeulen et al., 2008; Wiersum et al., 2013)

However, upgrading in the value chain was only scarcely mentioned in the literature on horizontal and vertical partnering. Based on this it appears useful and interesting to combine the bodies of literature on upgrading and partnering, and explore their information on factors influencing upgrading or continuing operating at a low stage in the value chain, as is the case with selling standing timber.

Through studying the subject I would like to contribute to the debates on upgrading in value chains and partnerships.

The methodology that will be applied in this thesis is an in-depth case study of choices of a community forest organization for upgrading or operating at the stage of selling standing timber and influences of several factors in the course of time. I chose to study the experiences of a community forest organization of the community Puesto Nuevo of TIOC<sup>11</sup> Lomerío, in the Lowlands of Bolivia, as Bolivia is one of the countries with the largest areas of forest designated for, and owned by, communities and indigenous people (Sunderlin et al., 2008). Additionally, this CFO was one of the few that both operated at the stage of selling standing timber to timber companies and upgraded. Since they upgraded during two different periods and subsequently operated at the stage of selling standing timber, they also had to downgrade to reach this stage. Subsequently, in the case study it will be investigated what the enabling factors for up- and downgrading were -which is regarded as the same as continuing selling standing timber. During the periods they upgraded, they not only harvested but also sawed themselves. The first time they also served global markets, in combination with a FSC certificate, and the second time they served local markets. This CFO has also cooperated with various partners, NGO's and timber companies at different moments, for longer and shorter periods of time.

The community and also the community forest organization were seen as one decision making unit in this thesis, although I realize that a 'community' is a designation for a group of individual persons, who have their own –and probably sometimes conflicting- convictions and ambitions. This implies that factors that influence their decision to upgrade as a group will be taken into account. These factors might entail both internal factors, like capabilities present and shared convictions, and external factors like the market. This focus implies additionally that partnering in forestry related matters between the community and external partners will be included in this thesis and not relations among community members.

This study on upgrading by community forest organizations can be positioned in the context of opportunities and challenges in sustainable exploitation and commercialization of forest resources, after they receive land and forest use rights. The motivation for this is that it may

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<sup>11</sup> The abbreviation 'TIOC' refers to: '*Territorio Indígena Originario Campesino*'/Native indigenous peasant's territory', before also called 'TCO' ('*Tierra Comunitario de Origen*'/Indigenous communal land)

contribute to increase of quality of life within communities that depend on forests and conservation of these forests.

### 1.3 Research objective and research questions

#### ***Research objective:***

The objective of the research is to determine which enabling and constraining factors might play a role in upgrading of activities by community forest organizations (CFO's) in the course of time, in order to attain enhanced insights into the manners in which a CFO can fulfill its role in exploitation of forest resources after devolution of land and forest use rights.

#### ***Research question:***

What were the enabling factors for up- and downgrading<sup>12</sup> in the timber value chain by the community forest organization (CFO) of community Puesto Nuevo, TIOC Lomerío in Lowlands Bolivia, in the course of time ?

In order to answer the main research question, it is necessary to take the following sub questions into account:

1. To what stage in the value chain the CFO has up- and downgraded in the course of time ?
2. What were the enabling factors for up- and downgrading in the course of time ?
3. What was the contribution of horizontal and vertical partnering to factors that influenced upgrading in the course of time?

### 1.4 Thesis outline

In this thesis, first the theoretical framework will be discussed, including the conceptual framework that is used for the analysis and the research objective and questions (chapter 2). After an explanation of the research methods that are applied (chapter 3), community Puesto Nuevo, its overarching organization and region TIOC Lomerío and way of practicing forestry in the course of time will be introduced (chapter 4). In chapter 5 the result of an analysis of the factors that influenced up- and down- grading, in combination with contributions of horizontal and vertical partnering will be presented. In the discussion, in chapter 6, the results of the analysis will be compared with the theoretical framework and will be reflected on the theoretical framework and research methods. Finally, in chapter 7 the conclusions and recommendations will be presented.

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<sup>12</sup> Factors enabling downgrading are seen as equivalent to factors constraining upgrading. Additionally, factors enabling downgrading to the stage of selling standing timber to timber companies are regarded as equivalent to factors enabling continuing selling standing timber to these timber companies.

## Chapter 2 Theoretical framework

This thesis is oriented to finding factors that clarify upgrading, downgrading or continuing selling standing timber by community forest organizations (CFO's) in the course of time. A CFO can upgrade or downgrade by including or excluding several stages of harvesting, transporting, sawing and/or processing secondary products.

Theoretical insights from the following two bodies of literature will be taken into consideration in this thesis, to see whether they provide insight to a practice on upgrading found in CFO Puesto Nuevo, TIOC Lomerío, Lowlands Bolivia: the body of literature on upgrading in the value chain and body of literature on partnering. Of literature type, first general considerations like definitions and specifications of concepts will be discussed.

### 2.1 Upgrading in the value chain

#### 2.1.1 General

##### ***Orientation in the literature on upgrading in the value chain***

The theories on upgrading in the value chain are relevant for my thesis for two reasons. Firstly, the phenomenon of adding activities to current ones that result in 'moving up' in a value, supply or commodity chain is described as one of the strategies of 'upgrading' in the value chain literature (Ponte et al., 2009; Riisgaard et al., 2010). So theoretical insights from this literature might provide precisely those clarifications for upgrading or for downgrading by the CFO of community Puesto Nuevo, TIOC Lomerío, Lowlands Bolivia. Secondly, some authors of this group oriented to upgrading in the value chain literature also take into account the interests of producers, including economic, social and environmental interests (Lee et al., 2011; Murphy et al., 2009; Riisgaard et al., 2010). This aligns with the main perspective chosen in this thesis.

The 'value chain' or 'supply chain' literature studies cooperation among companies, from production to market. Since more trade is getting organized into global value chains or networks (Lee et al., 2011), this approach has gained importance during the last decade. Before, the relationships between producers and customers were thought only to be market based (Schmitz, 2006). In addition to many descriptions of input-output structures of value chains, an extensive part of literature on value chain analysis is oriented to how and why a chain is governed as such to secure production capacity and increasing efficiency in this value chain, in order to achieve competitive advantages in the market (Gibbon et al., 2008). The 'upgrading' group within the value chain literature is oriented to value-added activities by value chain partners and 'moving' up in the chain. Some of them explicitly take a producer perspective and also recognize the power of lead companies, typically at the demand site in western countries, as discussed in Riisgaard, Bolwig, Ponte, Du Toit, Halberg and Matose (2010), Lee, Gereffi and Barrientos (2011) and Murphy and Schindler (2009). They argued that it is necessary to include powerful horizontal partners in order to safeguard economic, social and environmental issues for a producer, as will be explained in further extend in paragraph 2.1.2. Lee et al. (2011) even indicated that upgrading becomes crucial for pro-poor employment in developing countries. Since the perspective of this last group aligns with the

perspective of my thesis I choose to use their approach in my conceptual framework and include horizontal partners in addition to vertical relations in the value chain.

Additionally, also other literature available on upgrading is explored on factors that contribute to upgrading, downgrading or continuing operating at the same stage by selling standing timber. Factors that lead to certain configurations of value chain governance, of which some provide more opportunities to upgrade than others, based on publications of Gereffi, Humphrey and Sturgeon (2005) and Schmitz (2006); and a factor indicated by Ponte et al. (2009).

Additionally a few publications were found on case studies that describe factors that influenced upgrading in the forestry sector (Murphy et al., 2009) and CFO's (Antinori et al., 2005; Antinori et al., 2001; Beauchamp et al., 2011; Bray et al., 2005). It is interesting that these case studies exactly relate to the subject that I am studying in this thesis, although in different locations. It has to be taken into account though, that these factors are contextual specific. But they might provide clarifications for the case study of the CFO of Puesto Nuevo, TIOC Lomerío in Lowland Bolivia as well. Factors found in these case studies on CFO's will be discussed as the last group of theoretical insights in upgrading in section 2.1.2.

Overall, I keep in mind that, apart from the mentioned case studies, most literature on upgrading in value chains is related to the global market and little is known about upgrading oriented to the local market (Schmitz, 2006). So it might be that other factors play a role (as well) than those found in chosen theories of Riisgaard et al. (2010), Lee et al. (2011), Murphy et al (2009), Gereffi et al. (2005) and Ponte et al. (2009).

### ***Definitions***

In this thesis, 'upgrading' and 'downgrading' is regarded as executing extra or less activities or functions by producers in the value chain (Riisgaard et al., 2010). This is also called 'functional upgrading' or 'functional downgrading' in the upgrading literature (Humphrey et al., 2000; Riisgaard et al., 2010).

Functional upgrading normally leads to 'vertical integration' (where an actor performs activities in more than one stage in the value chain) by a producer (Riisgaard et al., 2010), p. 198 This is also called integrating forward<sup>13</sup> (Joskow, 2005).

Often, in the literature on upgrading in the value chain, three types of strategies are referred to as 'upgrading': product upgrading (making better things), process upgrading (doing things better) and inter-chain upgrading (where learning experiences in one chain are applied in another) (Humphrey et al., 2000; Ponte et al., 2009; Schmitz et al., 2000).

However, in this thesis I am especially interested in those strategies that result in 'moving up' in the chain, since I would like to find out what influences adding activities, like several stages in harvesting, sawing, transporting and/or processing versus continuing selling standing timber by CFO's. This strategy of 'moving up' is being described by 'functional upgrading' or 'vertical integration' and was traditionally the approach of the upgrading

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<sup>13</sup> If at the other hand clients vertical integrate by incorporating activities that before were executed by producers, it is called integrating backward.

literature (Ponte et al., 2009).

In order to clearly distinguish functional upgrading from the other upgrading strategies, I will only call functional upgrading ‘upgrading’ and include it as such in my conceptual framework. In case other upgrading strategies are relevant in the case study I will describe them as strategies contributing to improvement of the position of a producer.

I also would like to remark that the term ‘upgrading’ suggests that this is a preferable strategy for producers above other type of strategies that may contribute to improving their position at a certain stage in the chain, but I won’t depart from this assumption, as is argued by Riisgaard et al. (2010) and Ponte et al. (2009).

### **2.1.2 Factors that influence up- and downgrading**

Several factors can be distinguished that may influence the choices of a CFO to upgrade, downgrade, or continue selling standing timber to a timber company in the course of time, based on the theoretical body of upgrading in the value chain. Hereafter firstly will be presented effects of the factors on complexity of information that needs to be exchanged in the value chain, possibility to standardize this information and capabilities of producers that influence type of governance in the value chain. The resulting type of governance influences upgrading. Additionally aligning with more powerful actors and demand of markets will be presented. Finally, several factors based on some case studies in CFO’s will be discussed.

#### ***Complexity of information, possibility to standardize information and capabilities producers (factor 1-3)***

Gereffi, Humphrey and Sturgeon (2005) found that complexity of information that is being exchanged in the value chain, the possibility to standardize this information and capabilities of producers influence for a major extent the type of governance arrangement in the value chain.

The following governance arrangements were distinguished in a ‘typology of value chain governance’ (Gereffi et al., 2005):

- Market type of governance, where costs of switching to new partners are low for both producers and clients;
- Modular value chains, with producers that make products to clients’ specifications. These specifications are that generic that easily can be changed to other partnerships;
- Relational value chains, with complex interactions and partnerships based on mutual dependence;
- Captive value chains, with high degree of monitoring of lead firms, that are typically large clients; and
- Hierarchy, where activities are incorporated in the organization of the client. Control and monitoring typically takes place via supervision.

These different types were described after several empirical observations. It seemed that not all value chains were governed by powerful firms. In some chains loose relationships exist and little exchange of information and learning exist, like in ‘market type of governance’ (Schmitz, 2006) and modular value chains. In addition, it appeared complex and tightly coordinated production in different companies, not always led to acquisition of a producer, resulting in hierarchical relations -as one would expect to find based on the transaction costs theory. It also led to captive and relational value chains (Gereffi et al., 2005).

Schmitz (2006) subsequently found a relationship between types of value chain governance and upgrading. They concluded that in the last two types, captive value chains and hierarchy, the client has chosen the strategy to control the processes in the value chain, not leaving much room for upgrading by producers. On the other hand they found that in a governance type with less control, like the market type of governance, upgrading is possible.

According to Gereffi et al. (2005) the several types of governance in the value chain are determined by three factors: complexity of the information that is exchanged between a producer and a client, possibility to standardize this information and capabilities of producers. The factors leading to market, modular and relational types are for all types, high capabilities of producers, in addition to varying levels of complexity of information and possibility to standardize the information, see table 1. In addition, according to Gereffi et al. (2005), in all these three governance types the power balance is quite symmetrical.

On the contrary, if the capabilities in the supply base are low, in combination with high complexity of information and varying ability of standardizing information, captive and hierarchy governance types can be found (see also table 1). In this case a client is more powerful than a producer. If a source is crucial for a company, mostly a hierarchy governance type is found to be applied. (Gereffi et al., 2005)

Governance type	Complexity of information	Possibility to standardize information	Capabilities of producer
Market	Low	High	High
Modular	High	High	High
Relational	High	Low	High
Captive	High	High	Low
Hierarchy	High	Low	Low

**Table 1 The influence of (dynamics in) complexity of information, possibility to standardize information and capabilities of a producer on governance types (Gereffi et al., 2005), p. 90**

Additionally, Gereffi et al. (2005) have distinguished some dynamics:

1. Increasing complexity of information (low-high in the first column of table 1) also reduces producer competence in relation to new demands (high-low in the third column).
2. Decreasing complexity of information (high-low in the first column) and greater ease of standardization (low-high in the second column).
3. Better standardization of information (in the second column, from relational type to modular type).
4. De-standardization of information (in the second column, from modular to relational type).
5. Increasing producer competence (low-high in the third column).

#### 6. Decreasing producer competence (high-low in the third column).

What is especially relevant for upgrading is the effect of a change in capabilities of producers, and increasing and decreasing producer competence (dynamics numbers 5 and 6) (Gereffi et al., 2005; Schmitz, 2006). If capabilities of producers are lower, the risk of their failure to meet requirements is larger and clients have more a tendency to control the value chain, and captive and hierarchical governance types are likely to be found. According to Schmitz (2006) this also has a relation with the kind of competition in the market (see factor 4 below). It can be noticed that if capabilities of producers improve, the possibility to upgrade might increase. The governance types change in this case from: a captive governance type to a modular governance type or from a hierarchical type to a relational type. Another finding of Ponte et al. (2009) is that the knowledge necessary for upgrading (for example about the market, customer preferences etc.) seems to develop best when producers work with smaller buyers or work for national markets.

At the other hand, according to Gereffi et al. (2005), an increase in complexity of information, reduces the capabilities of producers in relation to this new demands. The possibility to standardize information could help in this case to reduce the complexity of the information again.

I will take changing complexity of information, possibility to standardize information and capabilities of producers into account in my case study as possible factors contributing to changes in stage of the value chain.

#### *Aligning with more powerful actors (factor 4)*

Although in the former section it is indicated that several types of value chain governance can be found, governance in a value chain where producers with small- and medium sized enterprises and their client are coordinating often can be qualified as captive governance. Where value-added activities are located and who is included in global value chains in these cases is largely determined by lead companies at the demand site that govern the chain. (Lee et al., 2011) A production perspective on upgrading recognizes that resulting unequal power relations in value chains often is the case between producers and their clients. (Lee et al., 2011; Murphy et al., 2009; Riisgaard et al., 2010).

Those clients don't necessarily take into account social aspects. It might mean people benefit from higher wages and strong labor standards, but also that people are being put in highly flexible, unprotected and insecure work. 'Economic upgrading' therefore does not necessarily lead to 'social upgrading'. (Lee et al., 2011). Riisgaard et al. (2010) and Murphy et al. (2009) therefore concluded it was important to take into account processes on poverty, gender, labor and environment in addition to processes in the value chain that are mostly oriented to financial matters, to increase rewards or reduce risks. A strategy to reach attention for the social and environmental processes, is aligning with more powerful actors internal or external of the value chain who promote social and environmental aspects.

Additionally, Murphy et al. (2009) indicated that most value chain oriented literature regard the position of producers and regional conditions as static. They concluded CFO's and intermediaries not only have to wait until they are being selected by clients or get more favorable contracts to beat poverty, but they can also actively ally themselves with powerful

actors. Murphy et al. (2009) studied timber traders in Bolivia and they found small innovative traders or brokers had set up new international alternative networks in addition to traders that deliver to local markets, based on supply of CFO's. Furthermore, CFO's can also get involved with region-specific institutions that enable them delivering required quality and support poverty alleviation, employment creation and environmental protection.

So aligning with more powerful actors is primarily oriented to have a more equal power balance and secondly to realize social, economic and environmental results, contributing to upgrading in a sustainable way<sup>14</sup>. I will take this factor into account in my case study. I will take into consideration that alternative networks, created by traders or brokers and involving with region specific institutions are ways to shape this.

This strategy directly refers to horizontal partnering, what will be discussed as second body of literature.

### ***Demands of markets (factor 5)***

Since both producers and their (intermediary) clients prefer to sell their products and operate in a profitable way, choices for upgrading or downgrading to another stage in the value chain or continuing operating at the same stage of the value chain, are also influenced by the demand for the evolving product at these several stages. Therefore it is important to know the market segments at the different stages in the value chain. Not only about the potential volumes that could be sold, but also about the qualities required. (Ponte et al., 2009). What also needs to be taken into account with a change of market as a result of a choice for up- or downgrading is that timber is a natural resource. As it is a natural resource it is influenced by unpredictable circumstances like the weather and limits exist related to its organic nature, like the fact that production is bound to specific locations and there are time limits on expansion of produced volume (Castells, 1998 in: (Oosterveer et al., 2012)).

Additionally, competition is increasingly about non-price requirements, based on factors like quality, response time, reliability of delivery and concerns about safety, labor and environmental conditions. This implies that clients have become more vulnerable to shortcomings in the performance of producers. In case the competition is fierce on specific requirements and producers don't have the capabilities to assure they meet this requirements, the tendency to control value chains (for example through a captive governance type, see table 1) is larger. This also means the opportunity to upgrade is lower.

Overall, up- or downgrading depends on the demand at the several stages. If this demand requires a fast increase in volume, limitations have to be taken into account; and if this demand requires adaptations that producers are not capable of, it might enable downgrading.

### ***Context specific factors found in case studies on upgrading in CFO's (factor 6-12)***

Furthermore, other authors found factors based on case studies in upgrading by community forest enterprises (CFO's) (Antinori et al., 2005; Antinori et al., 2001; Beauchamp et al., 2011). Insights on factors that contribute to upgrading in Mexico and Cameroon in their specific contexts will be discussed hereafter. Additionally I will discuss some information known related to upgrading in the forest sector from Bolivia, based on Benneker (2008) and

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<sup>14</sup> A sustainable way is seen as a way where attention is paid to economic, social and environmental issues.

Moreno (2006).

### ***Mexico***

In Mexico it appeared that CFO's not only function very well, but also a part of them upgraded their activities successfully (Antinori and Bray, 2005; Antinori and Rausser, 2001; and Bray, Merino-Peréz and Barry, 2005). Of a group of 95 CFO's in 2000, 28% were selling standing timber, 44% were only logging the timber and 27% also sawed the timber or were involved in producing finished products (Antinori et al., 2001), p. 21. Some of the CFO's exported in combination with commercialization in the local market, facilitated with the use of a FSC-certificate, while others concentrated on the local market. Some of them owned a crane, most of them a tractor and some communities a saw mill or other processing facilities (Antinori et al., 2001). Technical skills required had been gained by participating in training, technical assistance, prior employment and via contractual arrangements in the market. Demanding industrial skills and processes were not beyond the capacity of local communities. CFO's also turned out to have unrecognized strengths: they could leave a part of the forest, exploiting other means of subsistence, until prices and technology change. Nevertheless, in some cases Mexican CFO's failed, mostly due to internal community conflicts. (Antinori et al., 2005)

Antinori et al. (2001) found that in the Mexican community forestry sector, the factors that contributed to upgrading were: *capabilities of members of the CFO's*, especially through experience from previous jobs in mechanical aspects; *historical realities*, in these cases a history of parastatal leasing of the land before 1986; and availability of *large and good quality forest* which made it interesting for CFO's to invest in upgrading because of possible economies of scale. It appeared in the case study that communities that logged and sawed the timber had between 5.000 and 7.500 ha of forest available, and the communities that produced finished products around 11.000 ha.

They also concluded that the availability of physical infrastructure (existing network of logging roads) did not influence upgrading.

Antinori et al. (2005) determined the following as specific contextual factors in Mexico: a state-directed common property system with *devolution of most forest rights*; agrarian reforms that led to over 50% of the *land with forests belonging to communities*; and *active assistance of state and civil society* in forming CFO's.

Bolivian CFO's also had the advantage of an extensive devolution of forests (since 1996) and took advantage of land reforms (Anthias et al., 2013; Cárdenas et al., 2012; Vargas et al., 2009). However, in contrast to the Mexican case, civil society especially the Bolivian state have done very little to improve poor peoples' access to productive infrastructure, micro-credit networks, market information and technology transfer (Pacheco, 2001). Since two of the three special factors also play a role in the case in Bolivia, the other factors discovered in Mexico might partly play a role in Bolivia as well.

### ***Cameroon***

Beauchamp and Ingram (2011) conducted two case studies on CFO's in Cameroon. As the

most important factor for upgrading they determined *skills of community members*, not only technical, but also managerial –and especially marketing- skills. Development of these skills was supported by NGO's. Interestingly, it appeared that the focus of the support rather than the length of the period of support was important. Support oriented to skills that were necessary for next stages of the value chain proved to be especially useful. Furthermore, Beauchamp et al. (2011) concluded that a lack of technical and managerial skills lead to dependence on external partners at all stages in production and further stages in the value chain. They found that the hired external operators were fraudulent and technical and marketing knowledge of the NGO's was only a little higher than that of CFO's. This resulted in the cases studied to poor governance and even corruption. Additionally, the lack of marketing skills of external supporters in combination with lack of *available clients after upgrading* lead to felled timber that was never sold.

Furthermore the *availability and quality of the forest* played a role. The quality of the forest available was influenced by the exploitation history, including illegal logging, and the rate of unplanned land use change through small-holder agricultural expansion. Additionally, it was found that private logging companies were illegally harvesting in concession areas.

The way that *financial resources* were available also played a role. In Cameroon they were only available through NGO's, because financial institutions are unwilling to invest in a, largely informal, small scale sector with a reputation for corruption (Laird et al., 2010, Awono et al., 2010 in: (Beauchamp et al., 2011)). Additional financial support was also provided by these NGO's, who didn't provide *effective and neutral advice*.

The last influencing factor was determined to be: *violations of forest use rights* of which violence reports registered were *not followed up in the juridical process*, because of 'interventions of influential persons' ((Global Forest Watch, 2000 in: (Beauchamp et al., 2011)). Additionally, CFO's were hardly informed about their rights by the authorities.

With regard to the specific contextual factors as being distinguished by Antinori et al. (2005) for Mexico, it appeared that in Cameroon a legal framework for devolution of forest rights was in place, but this was legally not sufficiently complete to provide forest use rights to CFO. The reason for this was that they are only allowed to have access to forest in a non-permanent zone, for a maximum of five years of a 25 years harvesting cycle. Apart from not stimulating CFO's to upgrade based on this legal framework, it also did not support sustainable harvesting. On the other hand, for many CFO's the violations of rights by elites and the government, was nonetheless a reason to request these -incomplete- forest use rights and start with commercialization of forest products. (Von Stieglitz, 1999; Lachapelle et al., 2004 in: (Beauchamp et al., 2011))

So the contextual factors that were distinguished as being conditional for upgrading in Mexico with regard to forest and land use rights, were not present in Cameroon. The third factor, active assistance, was found in Cameroon though. Nevertheless, Beauchamp et al. (2011) added to this the need for *capable* assistance.

### ***Bolivia***

Most CFO's in Bolivia sell their timber standing or felled (Moreno de Alborán González, 2006). However, at some locations CFO's upgraded and included activities like transporting

and, in exceptional cases, sawing.

Both Benneker (2008) and Moreno (2006), who did their research in Bolivia, mentioned that *equipment* was a limitation for upgrading. In general equipment was owned by timber companies and scarcely *available* otherwise –and this equipment had a very poor *quality*. “Its low availability and quality is even generally considered a major bottleneck for the development of CFO’s as well as for other small scale forest enterprises” (Benneker, 2008), p. 120.

Those who had tried to harvest (whether in combination with transporting or sawing or not) on their own account had to conclude that the *investments* in equipment and other matters were so large that the *additional earnings did not justify* them. This was also related to the low price for harvested, transported and sawn timber. The CFO’s did not receive a substantially higher price for their products and the costs just multiplied (Benneker, 2008). Additional limitations were existence of *bad roads* and *lack of fuel* (Murphy et al., 2009). CFO’s, therefore, seem to be forced to partner with timber buyers that have the capacity to extract the timber from the forest and saw for them, leading to a low stage of the value chain, although some CFO’s have tried or are considering further upgrading.

Summarizing, I will investigate the following factors\* in my case study, see table 2:

Based on the general *upgrading literature*:

1. Complexity of information (hardly possibility for upgrading in captive and hierarchy governance type, see table 1);
2. Possibility to standardize information (hardly possibility for upgrading in captive and hierarchy governance type, see table 1)
3. High capabilities of producers (also found in the case studies on Mexico and Cameroon);
4. Aligning with more powerful actors to take into account economic, social and environmental issues for producers (via: small traders or ‘brokers’ in alternative networks or region-specific institutions)\*\*; and
5. Demand of markets (also found in the literature on Bolivia) (effect up- or downgrading depending on market at specified stage).

And based on the *case studies on upgrading in Mexico and Cameroon*:

6. Devolution of land and forest use rights;
7. Availability of large and good quality forest;
8. Availability of financial resources and financial advise;
9. Violation of forest use rights that are (not) followed up in the juridical process; and
10. Historical realities.

And finally, additional factors based on literature on *Bolivia*:

11. Availability of well-working equipment;
12. Availability of infrastructure.

\* These factors enable upgrading, absence of them enable downgrading (except if it is explicitly indicated that their effect is different).

\*\*This factor directly refers to horizontal partnering

**Table 2 Factors that enable up- and downgrading**

With application the following has to be taken into account. Capabilities (factor 3) need to involve both technical and managerial skills (including marketing skills) and may be developed via former employment or supported by capable external supporters. In addition, with regard to the factor demand of markets, it is not only important that the volume that can be sold and the quality required are taken into account, but also the price in the market for timber. All these aspects play a role in the determination of profit at the several stages in the value chain.

Finally, it is discussed whether available infrastructure is influencing upgrading. In Bolivia it has been found that it did (especially the condition of the roads and availability of fuel) and in Mexico it has been found that it didn't influence upgrading. Nevertheless this factor is included, due to the fact that my case study is on Bolivia (factor 12).

## 2.2 Partnering

### 2.2.1 General

#### ***Reason for and mode of including partnering***

The second body of literature that might clarify the development in the Bolivian case is the one on partnering. The first reason for including this body of literature on partnering in a study on upgrading is based on a review of the literature on upgrading in the value chain. Horizontal partnering seems to be important for empowering producers in order to safeguard their economic, social and environmental interests in upgrading (Lee et al., 2011; Murphy et al., 2009; Riisgaard et al., 2010). Since this approach fits the perspective chosen in this thesis, it is seen as a valuable addition to explore the literature on horizontal partnering.

The second reason is that also in the literature on partnering it is mentioned that both horizontal and partnering may contribute to up- and downgrading in the value chain (Giuliani et al., 2005; Gregoratti, 2011; Vermeulen et al., 2008).

However, since partnering may contribute to various strategies for improving the position of a producer and the partnering literature is not primarily focused on up and downgrading, it is rarely made clear whether the contributions made by partnering relate to up and downgrading or not. Revision of the partnering literature on contributions to up and downgrading therefore had a more explorative nature than revision of the literature on upgrading. It was decided to make an indirect connection via the upgrading literature. First was investigated which contributions partnering could have to improving the position of producers; and secondly the identified contributions were compared with the factors mentioned to influence up or downgrading in the literature on upgrading in the value chain. The cases that matched were subsequently included in this paragraph. Through this detour these can only be interpreted as potential contributions of partnering to specified factors that influence up or downgrading. If a factor is found to influence upgrading in the case study, it will be checked whether partnering plays a role in the described way, or not.

Literature on both horizontal and vertical partnering is studied.

## ***Definitions***

In this thesis, partnering is defined as: the process of forming more or less formal arrangements between two or more parties from one or more sectors (private sector, civil society and/or government) oriented around at least partly shared goals (Ros-Tonen et al., 2008)<sup>15</sup>. With this definition it is made clear that both bilateral ‘vertical’ partnering in the value chain between CFO’s and clients and multi-actor partnering are included. Definitions that were used in the beginning of this century (FAO, 2001) referred only to bilateral vertical partnerships (or out grower schemes) between companies and communities as producers. Later, other types of partners were included as well (Ros-Tonen et al., 2008; Visseren-Hamakers et al., 2007). Furthermore, it is recognized that several forms of both more and less formal arrangements are being included. Often the term ‘partnership’ was only used for formal arrangements that seek to achieve mutually recognized equality among the involved partners (Vermeulen et al., 2008). I regard this state as another development stage in partnering. Finally, since the term ‘partnerships’ suggest that these are static realities, I speak about ‘partnering’.

FAO (2001) concluded that even vertical partnerships between producers (including CFO’s) and timber companies vary considerably in the extent to which inputs, costs, risks and benefits are shared between the two partners. Other variations can be found in the duration of the partnership (short or long-term), offering only financial benefits or a wider range of benefits to producers, producers may act individually or as group; and private or communal land can be used.

Also partnering with multiple partners varies, leading to the following possible combinations (Ros-Tonen et al., 2008; Visseren-Hamakers et al., 2007):

- Private inter-sectorial partnering (process of forming strategic alliances between civil society and companies); and
- Public-private inter-sectorial partnering (process of forming strategic alliances between governments, companies and/or civil society)

## ***Development in partnering in forestry***

Since it was recognized that starting commercializing forest products would imply an enormous step for communities, partnerships between companies and communities were promoted. This was also based on the UNCED in Rio de Janeiro in 1992, as a way to realize not only environmental, but also social and economic objectives (Vermeulen et al., 2008; Wiersum et al., 2013).

The expansion later on to include actors from civil society and the state, was due to several developments.

The first development was the awareness that if partnerships would need to contribute to sustainable development and poverty alleviation then it would not be enough to rely on company-community partnerships alone (Bitzer et al., 2012; Ros-Tonen et al., 2008;

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<sup>15</sup> In the original definition from Ros-Tonen et al (2008), p. 1483 is stated ‘various’ sectors instead of ‘one or more’ sectors, although in the article was made clear also partnering in one sector was included. Since in my case also partnering in one sector occurs, I made the change to make this clear in the definition as well.

Visseren-Hamakers et al., 2007). This aligns with the before mentioned reason based on the upgrading section, to include horizontal partners in order to safeguard economic, social and environmental reasons for producers (Lee et al., 2011; Murphy et al., 2009; Riisgaard et al., 2010)

The second development was the determination that not all producers were capable of entering commercialization successfully with the required quality, contradicting most larger companies. (Bitzer et al., 2012)

Global and local NGO's started to support CFO's in developing countries in reaching their objectives of sustainable development. These initiatives added to the NGO's that were already supporting small-scale forestry projects because of livelihood and (indigenous) land rights objectives. The sustainability and pro-poor orientation of NGO's and governmental organizations contributing to existing CFO-company partnership arrangements, led to various multi-actor arrangements (Bitzer et al., 2012; Ros-Tonen et al., 2008; Visseren-Hamakers et al., 2007; Wiersum et al., 2013).

Both type of partnering, horizontal and vertical, will be included in the conceptual framework. Horizontal partnering, because is mentioned in both the partnering and upgrading literature this type of partnering supports a producer oriented and sustainable approach. Vertical partnering is added, since indications are found that vertical partnering enables downgrading.

Hereafter, first the potential contributions by horizontal partnering to up- and downgrading, by NGO's and/or governmental organizations, are presented (section 2.2.2.). Subsequently, those contributions by vertical partnering, between producers (CFO's) and (timber) companies is presented (section 2.2.3).

### **2.2.2 Potential contributions of horizontal partnering to up- and downgrading**

Horizontal partnering appeared to contribute in several ways to improving the position of producers (CFO's). These contributions were studied and linked, in an indirect way, to factors that were distinguished to influence upgrading based on the literature on upgrading, as described in section 2.2.1.

Studied are experiences of CFO's with horizontal/multi-actor partnering which happened in combination with certification, based on the sustainability norm of the Forest Steward Council (FSC). Based on the growing international environmental awareness it appeared interesting for CFO's to align themselves to the niche market of environmental conscious consumers, based on a FSC-certificate. In December 2013 only 113 (9%) of the certificates were in possession of communities (FSC, 2013) and many others failed to reach certification, as they didn't have the capacity to try, or stopped using their certificate (De Pourcq et al., 2009; Molnar, 2004). Nevertheless a great deal was learned from their experiences.

Horizontal partners included NGO's, other donors and/or governmental organizations. Also being part of a regional producers group appeared to be useful (Carrera et al., 2006; Humphries et al., 2006; Richards, 2004).

Additionally, experiences of producers of other industries (coffee, non-timber forest products and some others) are included, in combination with certification on other sustainability norms. The producers were all oriented to the international market. No examples could be found in

the literature on multi-actor partnering of CFO's commercializing timber oriented to local markets, so that is why it was decided to take only these experiences oriented to the international market as a reference.

Before moving to the potential contributions to the factors that influence upgrading, I would like to mention that the literature on horizontal partnering confirmed that this type of partnering, combined with a sustainability certificate, contributed to socio-economic and environmental issues. Based on experiences of CFO's with a FSC-certificate, it was found that local level workers' rights were improved, including the issues with health and safety. On a national level the following issues were, among others, promoted: national dialogue on issues of forest tenure, provision of a measure that can be a proxy for loans and citizen participation in allocation of public resources. (FSC, 2011; Humphries et al., 2006; Molnar, 2004).

Regarding environmental issues, reduced impact logging (RIL) is commonly accepted as a tool within FSC. Although it has to be added, that RIL is mainly oriented to the mitigation of the negative impacts of timber harvesting (by, for example, directional felling and the conscious planning of skid tracks) and does not address other issues of sustainable forest management through the application of silvicultural treatments (Putz et al., 2008). These application of silvicultural treatments (like liana cutting and girdling of competing trees), in combination with timber harvesting<sup>16</sup> and RIL, was found to support growth of trees (Peña Claros et al., 2008).

Additionally it proved that the projects had a positive effect on the perception of biodiversity and forest conservation in their area by forest managers and CFO's, leading to improved biodiversity (Nussbaum and Simula, 2005 in: (De Pourcq et al., 2009)).

On the other hand, it proved that not only actors from the private sector and civil society are relevant actors to contribute to social, economic and environmental issues. As a basis it was still needed to have a sound regulatory and policy framework. The private sector and civil society could only partially play a role in sustainable forest management, because their effects stayed limited to niche markets. Forest management needs to be secured by land use planning and law enforcement, to provide clarity about competing claims and protect against illegal logging and trade (Ros-Tonen et al., 2008; Visseren-Hamakers et al., 2007).

If such a regulatory and policy framework is absent politically oriented partnerships could support this developing, rather than product-oriented ones. These politically oriented partnerships can stimulate creation of appropriate legal and political forestry framework and reduce competing claims to forest land, through awareness raising and advocacy activities (Ros-Tonen et al., 2008).

In the literature on horizontal partnering potential contributions have been found to the following factors (see also section 2.1.2, on factors influencing upgrading): capabilities of producers (factor 3), aligning with more powerful actors –which is in fact horizontal partnering (factor 4), devolution of land and forest use rights (factor 6) and (no) financial resources (factor 8).

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<sup>16</sup> Measured is until 14,4 m<sup>3</sup>/ha (approximately twice a 'normal' amount under Bolivian law).

### **Potential contributions to factor 3: Capabilities of producers**

Horizontal partnering contributed to the capabilities of producers through:

- *Capacity building*; and
- *Provision of information*.

Nevertheless, although pictured differently, initially the international market demanded other requirements in addition to those on *sustainability: high quality products of particular species, competitive prices and reliability of supply*. Unless support to fulfill these requirements, several authors indicated that these last requests are often beyond the reach of CFO's (Molnar, 2003; Richards, 2004). Other authors found it was doable for CFO's based on experiences on upgrading in combination with FSC, for example in Mexico (Antinori et al., 2005; Antinori et al., 2001).

To be able to fulfill the requirements on sustainability, quality, prices and supply, not only *technical capabilities* appeared to be needed, but also *organizational capabilities* (especially negotiation, management and marketing skills) (De Pourcq et al., 2009).

Bitzer, Glasbergen and Arts (2012) and Ros-Tonen, Van Andel, Morsello, Rosendo and Scholz (2008), based on multi-actor partnering in a variety of other products with other certificates on sustainability (Utz Certified, Rainforest Alliance, FLO and others), it was also concluded that organizational capabilities are mostly weak, especially in newly established associations. A reason for this was seen to be that the primary focus of these projects was on certification and limited influence and participation of producers. This caused many producers to be incapable of continuing independently after the finalization of a project.

### **Potential contributions to factor 4: Aligning with more powerful actors**

Bitzer et al. (2012) and Ros-Tonen et al. (2008) and Vermeulen et al. (2008) found that aligning with powerful actors is important, to generate more impacts for producers, by:

- *Keep effective control over resources of importance to the company* (Vermeulen et al., 2008);
- *Join alliances*: many alliances were producer associations and cooperatives. These were initially created to reduce transaction costs for companies, although later on they seemed, in some cases, to be useful as basis for improving bargaining power. This appeared to work best in countries with a longer tradition in negotiation though collaboration with *broader-scale cooperatives, federations and trade unions*. (Vermeulen et al., 2008). So this confirms horizontal partnering is useful in getting a more equal power balance, as has been discussed before in the literature on upgrading (Lee et al., 2011; Murphy et al., 2009; Riisgaard et al., 2010).
- *Brokers and other third parties, like local NGO's, credit agencies and development organizations* (Bitzer et al., 2012; Ros-Tonen et al., 2008);
- *Continuous involvement of local NGO's*: to function as a bridge between global and local worlds (Macqueen et al., 2008; Ros-Tonen et al., 2008). However, this

may reduce self-help, as has been found by De Pourcq et al. (2009) in the case of long term involvement of donors in FSC-projects;

- *Metagovernance*: Visseren-Hamakers et al. (2007) additionally found, based on several experiences, promoting forest biodiversity for metagovernance: active involvement of governments to initiate or support important partnerships, promote information exchange and bringing actors together as these are important to ensure that several initiatives don't contradict, but rather, support each other.
- It also helped to have a more powerful position in negotiation if *large investments* like in roads, as mentioned before, had *already been made* (Vermeulen et al., 2008). The same was found, sometimes in extreme extent, in Bolivia (Benneker, 2008). Some companies came up with very unfavorable long-term contracts for CFO's with the argument of the investments that needed to be made for management plans and infrastructure.

Bitzer et al. (2012), Ros-Tonen et al. (2008) and Vermeulen et al. (2008) plead for more equitable, efficient and accountable governance frameworks between CFO's and companies in general to have a more favorable contribution to the position of producers.

#### **Potential contribution to factor 6: Devolution of land and forest use rights**

Additionally a contribution of horizontal partnering was:

- *Stimulating a national dialogue on forest tenure* (Molnar, 2003). Through this devolution of land and forest use rights could be influenced.

#### **(No) potential contribution to factor 8: Financial resources**

The contribution of horizontal partnering to providing financial resources was:

- *Payment of initial costs*: frequently initial costs for setting up a system of sustainable forest management and certification based on the FSC-standard were paid by NGO's and other donors (Markopoulos, 2003).

Nevertheless, *recurrent costs* for evaluations and solutions of deficiencies found, mostly *needed to be paid by the CFO's* themselves. These recurrent *costs exceeded* in many cases *the return* (Molnar, 2003). In some cases, also periodical costs were paid for by NGO's and other donors. This made CFO's dependent on the donors that supported them (Richards, 2004), reducing self-help (De Pourcq et al., 2009).

What influenced the availability of financial resources was the failure of many CFO's to improve income. The expectations on improving income had been high, through a price premium, and international market access and only a few enterprises managed to realize this. A price premium was only realized by some in the early days of FSC-certification. (Richards, Molnar 2003, Carrera, Van Dam, Markopoulos) Additionally, CFO's met many difficulties in reaching the environmental conscious market, basically because these only existed in North America and Western Europe (Gullison, 2003).

What also played a role in receiving a lower income than expected, was increased *competition*. Supply of cheaper plantation wood had become available (Molnar, 2003) and big enterprises

(Richards, 2004), also with a sustainability certificate, were making it difficult to compete with CFO's.

However, adaptations are being made in the meantime by the FSC organization to meet financial objections. These adaptations included a combined certification of FSC and Fair Trade, efforts to reduce costs based on group certification and a special program for small producers with less requirements (SLIMFS) (Wiersum et al., 2013) (Karmann, 2009).

In the other international multi-actor partnerships oriented to sustainability with a variety of certificates, described by Bitzer et al. (2012) and Ros-Tonen et al. (2008), experiences were quite comparable, although in these cases a price premium could sometimes be obtained. Nevertheless, since in these cases partnerships neither covered the costs of certification nor provided sufficient credit opportunities, the result was that the producers involved were still facing a financial burden.

Also the potential contribution of vertical partnering to up- and downgrading is explored.

### **2.2.3 Potential contributions of vertical partnering to up- and downgrading**

Several international collaborative policy analyses were carried out in the period 2000-2002 on partnerships among producers (including community forest organizations, CFO's) and companies (clients) in the field of forestry by FAO, IIED, CIFOR and DFID (Vermeulen et al., 2008). Vermeulen, Nawir and Mayers (2008) compared several findings and concluded that, in general, vertical partnering contributed in several ways to the position of producers. Most of these also related to the factors distinguished earlier as influencing upgrading, based on literature on upgrading in the value chain. Since I apply the insights for CFO's, I will hereafter use the term 'CFO' for 'producers'.

Before I move on to the contributions to the several factors, I would like to remark that it was also found that vertical partnering between timber companies and CFO's contributed to social-economic and environmental issues. For some CFO's vertical partnering contributed to strengthening their land rights. Furthermore, many CFO-client deals included provisions for general community development, usually in the form of social funds. These could be oriented to much needed infrastructure (roads, bridges, and communication), grazing schemes and company-sponsored schools. Social spending was seen by companies as a tool to manage social risks. (Vermeulen et al., 2008)

Vertical partnering also contributed to local environmental issues. If, for example, reduced impact logging (RIL) was a condition in the agreements between timber companies and CFO it fostered improvements in environmental management. On the other hand, it is also seen that the vertical partnerships sometimes transferred environmental risks to CFO's, like reduction of water supplies downstream to eucalyptus plantations. Also, if more monoculture was applied, it brought higher risks of fire or spread of unwanted weed species. Sometimes the primary reason for logging natural forest was to set up large-scale monocultures, like palm oil in South East Asia. In these cases partnership arrangements between companies and local elites often led to inequitable and environmentally harmful practices. (Vermeulen et al., 2008)

The contributions of vertical partnering were related to the following factors that influence up or downgrading: capabilities of producers (factor 3) and availability of financial resources (factor 8).

### **Potential contribution to factor 3: Capabilities of producers**

Vertical partnering contributed to capabilities of producers by:

- *Training*; and
- Capacity building through *employment and spin-off economic opportunities*.

Vermeulen et al. (2008) found that this was provided where training schemes and guaranteed employment were explicit components of agreements, for both formal partners and the broader community.

Onsite training and advice in *silviculture and land management* appeared to be especially useful contributions to development of local capabilities. From the perspective of upgrading it is remarkable that this training and advice is oriented to activities in the first node of the value chain of timber with a low stage of the value chain, production.

Some direct employment and spin-off activities were generated, as well. Regarding employment it needs to be remarked, that around the world contract laborers often earn only a little, and for forestry work that is often dangerous where there are no adequate safety precautions and no personal insurance. Spin-off activities were mostly in the form of community members providing their services as labor contractor, chainsaw operator or transport provider. Vermeulen et al. (2008) found that forestry deals occasionally allowed *upgrading* in the timber value chain by including spin-off activities like harvesting, local transport and sawmilling. However, they found that it didn't progress further in sharing downstream activities and benefits, beyond this point to processing, while these activities are more profitable. Nevertheless, I have found a case in Mexico where part of the CFO's also process secondary products successfully (Antinori et al., 2001), as has been described before in the part of the literature on upgrading.

### **Potential contribution to factor 8: Financial resources**

Vertical partnering contributed to getting access to financial resources by:

- *Access to cash at harvest or credit up-front*: This also allows the poorest of the CFO's to join commercial forestry. Intercropping proved to generate additional necessary cash in a shorter time frame, especially where community partners have free choice of secondary crops.

Trees are, in general, an important form of savings for low-income CFO's and are able to be sold when cash is required. This saving function of trees is possible, because tree-growing is usually an additional rather than a primary source of income.

(Vermeulen et al., 2008)

- *Contribution to starting-up costs*: This was especially interesting for CFO's if starting-up costs were that high that they formed entry barriers. (Vermeulen et al., 2008) Examples of entry barriers are infrastructure, especially access roads (Vermeulen et al., 2008), and formal management plans that needed to be presented to

the authorities in Bolivia (Benneker, 2008). Such a management plan needs to include a commercial inventory, written by a forest engineer, which causes substantial costs. Under these circumstances producers were found to be prepared to accept more unfavorable conditions in the arrangement (Benneker, 2008; Vermeulen et al., 2008) and downgraded their activities. In the longer term, however, the partnering proved to be useful for communities as stepping stones to larger and more profitable market involvement with multiple clients, if they didn't have long-term contracts with the companies that they initially started with. Initial short-term contractual deals with a company tended to break down, if improvements in access roads were made and markets became more developed. (Vermeulen et al., 2008)

- *Sharing risk*: In partnerships the company, usually, took the financial risks of selling the timber to the market, while CFO's bear the financial risks related to production. While this was generally found to be the most important incentive for companies to enter into a partnership, risk was seldom if ever shared equitably between company and community partners. Timber mills, for example, closed for sales when the timber price was too high, placing the market risk on the community. Companies minimized their risks through partnering with a wide base of landholders or had an insurance scheme. For CFO's formal insurance schemes were not available. (Vermeulen et al., 2008) If CFO's decide to upgrade and sell their timber to multiple clients rather than to one vertical partner, it might be these multiple clients are not prepared to share the risk.

Summarizing, potentially the following contributions by horizontal and vertical partnering can be made to the following factors influencing up- and downgrading, see table 3:

Potential contributions of *horizontal partnering*:

To factor 3, Capabilities of producers by:

- Capacity building; and
- Provision of information.

I will take into account attention not only need to be paid to requirements on sustainability and technical capabilities, but also to requirements on quality, competitive prices and reliability of supply in addition to organizational capabilities.

To factor 4, Aligning with more powerful actors (horizontal upgrading) by:

- Joining alliances with broader-scale cooperatives, federations and trade unions and personal relationships;
- Cooperate with brokers or other third parties;
- Continuous involvement of local NGOs, with a risk of reducing self-help by producers;
- Metagovernance; and
- Effective control over resources of importance to the company.

I will take into account a sound regulatory and policy framework is needed as basis; and it is easier to reach if (initial) large investments are already been made

To factor 6, Devolution of land and forest use rights by:

- Promoting a national dialogue on forest tenure.

To factor 8, Financial resources by:

- Payment of initial costs related to building a structure for sustainable forest management and initial certification;
- It would be necessary to generate more financial resources to be able to pay periodical costs.

Potential contributions of *vertical partnering*:

To factor 5, Capabilities of producers by:

- Training; and
- Capacity building through employment and spin-off economic opportunities\*.

To factor 8, Availability of financial resources by:

- Access to cash at harvest or credit up-front;
- Contribution to starting-up costs (like infrastructure and management plans)\*\*;
- Sharing risk.

\*Indicated to enable upgrading

\*\*Indicated to enable downgrading

**Table 3 Potential contributions of horizontal and vertical partnering to factors enabling up- and downgrading**

These contributions will be reviewed in the case study if the indicated factor influencing upgrading is found.

## 2.3 Conceptual framework

The focus of this thesis is on finding factors that enable upgrading, downgrading or the continuing selling of tree<sup>17</sup> standings by a community forest organization (CFO) in time period.

For the conceptual framework which I will use in my field research, two bodies of literature will be used: upgrading in the value chain and partnering.

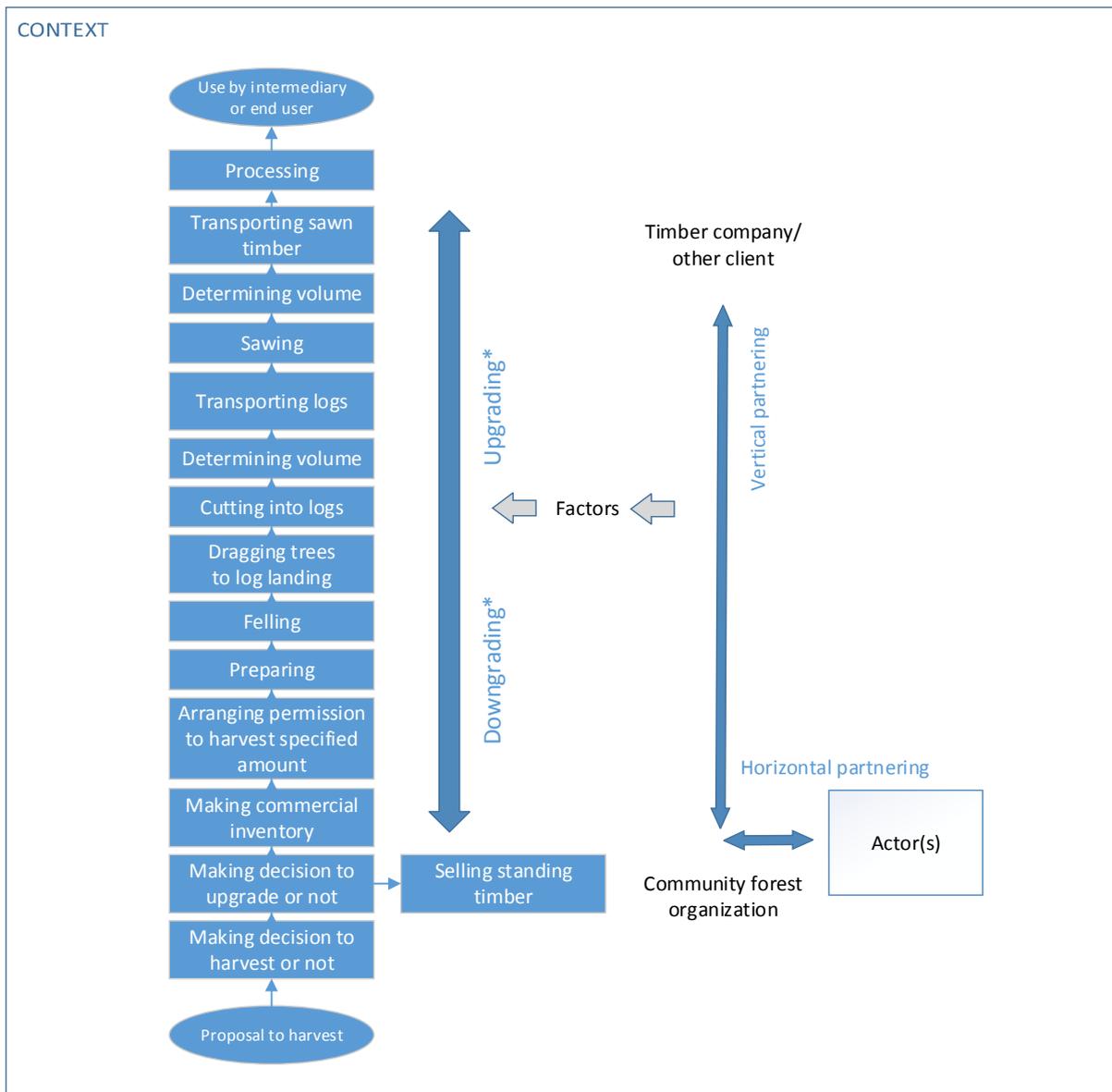
Based on both bodies of literature I will not only include a vertical dimension in my conceptual framework, but also a horizontal one.

With the vertical dimension I refer to activities in the value chain, from production to market. The timber value chain involves diverse activities related to harvesting (from making commercial inventory to determining volume, see figure 1), transporting, sawing (including determining volume after sawing) and processing secondary products in time.

It was said that for safeguarding economic, social and environmental issues it is important for CFO's to be empowered, by adding a horizontal dimension: partnering with horizontal actors like NGO's and/or governmental organizations (see figure 1).

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<sup>17</sup> The thesis started with finding factors that enable upgrading or continuing selling trees, but if a CFO upgrades first and afterwards it is selling standing timbers, it has to downgrade first. So downgrading and continuing selling trees are seen as its equivalent.



**\*Up- and downgrading may occur various times to various stages, in the course of time**

**Figure 1: Conceptual framework: factors enabling up- or downgrading in the timber value chain**

Most CFO's sell their standing timbers to a timber company (see figure 1). This timber company arranges all further activities. Some of the CFO upgrade, add one or more activities in the value chain, and/or subsequently downgrade (see figure 1).

In the body of literature on upgrading in the value chain various factors have been found which enabled up and downgrading, see table 4. Only some factors explicitly indicate that they enable operating at the stage of selling standing timbers to timber companies (by continuing operating at this stage or downgrading to it). It is assumed absence of factors enabling upgrading, encourages downgrading. Some of these factors are based on general insights on upgrading and some of them are based on context specific case studies. I will investigate whether these factors play a role in up- and downgrading by CFO Puesto Nuevo, TIOC Lomerío, Lowland Bolivia in the course of time.

In the literature on partnering it was found that horizontal and vertical partnering made several contributions to improve the position of a CFO. Since some of these contributed to factors that are found to influence upgrading, based on the upgrading literature, they potentially might influence upgrading as well, see table 4. Horizontal partnering might occur through strategic alliances with other actors, like (global and local) NGO's, trade unions, federations, large-scale cooperatives, financial institutions and/or governmental organizations.

<b>Factors that enable upgrading, absence of them enable downgrading (except if other influence is indicated):</b>	<b>Factors found potentially to be influenced by horizontal and vertical partnering:</b>
<ol style="list-style-type: none"> <li>1. Complexity of information (hardly possibility for upgrading in captive and hierarchy governance type, see table 1);</li> <li>2. Possibility to standardize information (hardly possibility for upgrading in captive and hierarchy governance type, see table 1);</li> <li>3. Capabilities of producers;</li> <li>4. Aligning with more powerful actors to take into account economic, social and environmental issues for producers (via: small traders or 'brokers' in alternative networks or region-specific institutions);</li> <li>5. Demand of markets (effect up- or downgrading depending on market at specified stage);</li> <li>6. Devolution of land and forest use rights;</li> <li>7. Availability of large and good quality forest;</li> <li>8. Availability of financial resources and financial advise (if provided through vertical partnering it enables downgrading);</li> <li>9. Violation of forest use rights that are (not) followed up in the juridical process;</li> <li>10. Historical realities;</li> <li>11. Availability of well-working equipment;</li> <li>12. Availability of infrastructure.</li> </ol>	<p>√ horizontal + vertical partnering</p> <p>=horizontal partnering</p> <p>√ horizontal partnering</p> <p>√ horizontal + vertical partnering</p>

**Table 4: Factors determined to enable up- or downgrading in the value chain and potential contributions of horizontal and vertical partnering**

## Chapter 3 Research methods

In this chapter the research design and sample are explained (3.1), the methods of data collection are described (3.2), methods related to the analysis are mentioned (3.3) and consideration about ethics are given (3.4)

### 3.1 Research design and sample

The research questions were investigated in a qualitative way, through an in-depth case study. Chosen was for this research design, since I was interested in finding rich and detailed information in order to be able to find and understand factors that influence up- and downgrading. Through this I was able to confirm potential factors as found in the theoretical framework and find new factors. These factors subsequently could be generalized and are possibly applicable in other cases as well. I realize that through this choice, by doing a qualitative research with limited case studies without control group(s), it is only possible to assess the *potential* influences on upgrading. It will be impossible to claim any definitive and directly attributable effects. (Hammersley et al., 2007)

I had chosen to select a case with a history in up- and downgrading. Since various periods of up- and downgrading could be compared in the same case during several periods, the statistical reliability of the results are enhanced in comparison to a case study without such a comparison.<sup>18</sup> Alternatively or additionally, I could have studied a case of upgrading that is successful at the moment and compare this with another case under the same conditions, that did not practice upgrading, since also would have enhanced its statistically reliability. However, no such case that is successful at the moment was found, besides in Mexico. And since cases in Mexico are already studied extensively by authors like Antinori et al. (2001, 2005) and Bray et al. (2005). I didn't choose to study those as well. Instead, I included the experiences in the theoretical framework, in order to be able to compare those experiences with the ones found in my case study.

I would have liked to make results statistically relevant by including more case studies with very varied aspects and results (with its minimum depending on the variation in the population), but in this research in the framework of my MSc thesis time is too limited to go for this option, since I am above all interested in rich and detailed information to be able to determine and understand influencing factors.

Subsequently purposive sampling is used for selecting a case study. First is chosen for Bolivia, since Bolivia is one of the countries with the largest areas in forest designed for and owned by communities and indigenous groups, together with Brazil, China, Mexico, Colombia and Papua New Guinea (Sunderlin et al., 2008). It has around 200 TIOCs, which are recognized by the state<sup>19</sup>. These areas cover approximately 20.7 million hectares, which are owned by approximately 536.000 indigenous people in both the Highlands and the Lowlands of Bolivia. (Fundación Tierra, 2011). In total Bolivia has 40.8 mln ha covered with 'permanent

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<sup>18</sup> Considerations about statistical reliability and relevance based on materials of and discussions about research designs in the framework of 'Ecological methods', course WUR, 2013

<sup>19</sup> In 2010 258 groups of indigenous people had requested recognition of their rights of ownership of the land as TIOC (before:TCO), of which 190 had received these rights.

production forest', meant for sustainable forest management and conservation.<sup>20</sup> (Quevedo et al., 2012)

Additionally, since I spoke Spanish, this facilitated doing research in Spanish speaking Latin America.

Subsequently is chosen is a case that is located in the department Santa Cruz, because:

- Some cases where upgrading has been practiced were available (CFO of Puesto Nuevo, TIOC Lomerío, La Chiquitania; several CFO's in the region Baja Paraguas and possibly CFO San José de Chiquitos or CFO San Ignacio in La Chiquitania);
- Doing research in department Santa Cruz is regarded as working under safe conditions. A case in Chapare, department Cochabamba had been considered, but going there was not recommended since its history in coca growth ;
- More than 50% of the Bolivian production forest is present in Santa Cruz (Quevedo et al., 2012);
- It is one of the two Bolivian departments (Santa Cruz and La Paz) where larger market dynamics are present than in other regions (Murphy et al., 2009);
- Officials located in the city, clients in the villages and CFO's could be visited within the time frame of five weeks, because of the infrastructure present.

It seemed to be interesting to study a case that is flourishing in its upgrading activities, to learn from their experiences and this would also have enhanced its statistical relevance as mentioned before. However, in Bolivia no case was known of being successful at that moment, although some CFO's have been upgraded in the past, some just started and some are considering it at the moment <sup>21</sup>.

Since cases that 'consider upgrading' or are 'not operational' yet are difficult to study, because no results are being known yet, a case was selected -as first option, that had been successful in the past: CFO of Puesto Nuevo in TIOC Lomerío. It was of course crucial whether the people CFO would like to join in the research. Planned was to contact the community and its CFO of first choice before arrival. However, it appeared no e-mail and no landlines for telephones were available, nor anybody of the institute with whom I was cooperating, IBIF, was travelling to the community Puesto Nuevo before the research. Via connections established upon arrival in the capital of the department, I nevertheless managed to receive useful references to people, with their mobile phone numbers, that helped me to reach and convince the community.

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<sup>20</sup> In Bolivia 10,7 mln of the total land for permanent production forest of 40,8 mln are located in protected areas, 2,2 mln have some other type of restriction and 28,0 mln have no restrictions.

<sup>21</sup> Personal communication via e-mail with Alfredo Alarcon, IBIF (*Instituto Boliviano de Investigación Forestal*/ Bolivian Institute of Research in Forestry), 5-11-2013; Rolando Vargas, Forestry specialists of AFIN (*Asociación Forestal Indígena Nacional* /National Association of Indigenous communities in Forestry), 5-11-2013; Ysaías Montero, APCOB (*Apoyo para el Campesino Indígena del Oriente Boliviano*/Assistance for indigenous peasants for East Bolivia), 5-11-2013; Javier Bejarano, independent Bolivian forestry specialist working for SNV, 29-10-2013; and Marielos Peña Claros, assistant professor at Wageningen University on 15-11-2013, before the start of the field research.

The selection of the interviewees and their organizations had been done via snowball sampling. This snowball sampling had been started before the field study through relations in the Netherlands that had been involved in the local situation before. The reason to do so was the relative short period of research in the field of five weeks. And it turned out to be useful, since it was possible to start the first interview within a day after arrival.

Since up- and downgrading had occurred in the past, it implied that I used a historic view, to analyze this total period. The case study covered a period of approximately 30 years, from the 1980s until 2013. Moreover, it was known before this CFO had experienced several periods of up- and downgrading, which enhanced the statistical relevance of the results.

The following periods were distinguished for the case study:

- Period T0: Before the start of commercial forestry
- Period T1: In which was upgraded, with the use of a permanent sawmill and FSC-certificate for TIOC Lomerío and its CFO's
- Period T2: In which was downgraded and standing timber was sold
- Period T3: In which was upgraded, with the use of a portable sawmill for CFO of community Puesto Nuevo, TIOC Lomerío
- Period T4: In which was downgraded and standing timber was sold

This research can be qualified as explorative, since it was oriented to gaining insight on enabling factors for up- and downgrading during the various periods for the CFO, during the case study.

### **3.2 Methods data collection**

During the case study the CFO and its client(s), in addition to involved actors were approached to gather primary data. Especially for the first three periods this was combined with secondary data. For period T1 two detailed descriptions were available from the scientific literature. I chose to use this secondary data for this period and completed it with some primary data that could be gathered via interviewees.

For the context a combination was made between primary and secondary data.

#### **Primary data**

##### ***General***

Primary data was principally gathered during fieldwork that was conducted during 5 weeks in November and December 2013. Additionally, some interviews were conducted later, by telephone and skype. It took me longer than expected (around 2 weeks instead of 1 week) to adapt to used terminology and acronyms in the sector, since the timber harvesting sector was unknown to me –also not in Spanish. Luckily I met gentle and helpful people who explained me about it.

During the research was focused on up- and downgrading in the timber value chain by a community forest organization, its vertical partnering with clients and horizontal partnering with other actors. This implied that I especially was oriented on interviewing members of a community forest organization, its (former) client(s) and representatives of (former)

horizontal actors with whom they were partnering.

Therefore I took a substantial period of three weeks (without planning and travelling) of the five weeks fieldwork in total, to build rapport with the members of the CFO, the (former) client(s) and horizontal partners that were (still) present in the region to gather primary information. I gathered information on the decisions the CFO had taken regarding up- and downgrading, activities that they are and were executing, the way they are and were partnering and internal and external factors that enabled up- and downgrading.

The community forest organization and community were seen as one decision making unit, although I realized that a 'community' is a designation for a group of individual persons, who have their own convictions and ambitions. This implied that I oriented on the results of their actions as a group and factors that influenced them as a group and did not take into account their internal relations. It was decided to not to take into had not taken into account.

The data was gathered through semi-structured interviews and participatory observation.

### ***Semi-structured interviews***

Semi-structured interviews were applied to gather data from members of the CFO, the client, horizontal actors that are and were involved and other actors that had knowledge on developments in the forestry sector and community forestry. For the interviews an interview guide had been used

In total 59 interviews with 41 interviewees were carried out. 14 members of the CFO were interviewed, 7 (former) employees of clients, and 18 horizontal actors with whom the CFO was partnering. Additionally, 2 persons from a transport company were interviewed, who provided services to the client and with whom the CFO was coordinating as well, since transport took place on their land. Finally, 8 persons were interviewed that were indirectly related to the CFO with insight in developments in the forestry sector in the region.

See table 5 for an overview of the number of interviews that were carried out, with the number of interviewees per type of actor. In annex 1 a complete overview can be found on all individual interviewees.

<b>Type of actor</b>	<b>No. Organizations</b>	<b>No. People</b>	<b>No. Interviews</b>
<b>Interviews</b>			
<b><i>Directly related to the case study</i></b>			
Members of the community forest organization of community Puesto Nuevo, TIOC Lomerío	1	6	14
Clients -Large timber companies in Concepción and Santa Cruz de la Sierra	2	4	6
Client -Small carpentry Lomerío	1	3	3
Transport company	1	2	3
Service provider	1	1	1
Member of neighboring community forest organization (of community Las Trancas)	1	1	1
Supra-communal organization TIOC Lomerío (CICOL and AFIL)	2	6	10
Nongovernmental organizations	4	8	11
Governmental organizations	2	2	2
<i>Subtotal</i>	<i>15</i>	<i>33</i>	<i>51</i>

<i>Indirectly related to the case study</i>			
Small carpentry in Lomerío	1	1	1
Large timber company in Concepción	1	1	1
Church in Lomerío	1	1	1
Nongovernmental organization	1	1	1
Companies	2	2	2
Governmental organizations	2	2	2
<i>Subtotal</i>	8	8	8
<b>TOTAL</b>	<b>23</b>	<b>41</b>	<b>59</b>

**Table 5 Number of interviews and interviewees per type of actor**

### ***Participatory observation***

In addition participatory observation has been applied. Although the rainy season was about to start in November 2013, I had hoped to be involved in some parts of the activities in the timber value chain, whether harvesting, sawing, transporting and/or commercialization. And this came true. The CFO was still involved in the transport stage and loading of the trucks on the log landings in the forest could be observed about which I could ask questions.

Additionally, participatory observation could be carried out in two community assemblies of the CFO. It was also planned to visit a former forest management area, but since no transport was available and people of the community were very occupied with finalizing the construction of six houses, it was not possible to bring me over there. On the other hand, I had not expected to find a tree nursery, but since the community just had started with nursing trees, this activity could be observed instead.

Furthermore, some participatory observations were carried out on other activities of the client of the CFO: on sawing with a permanent sawmill in Concepción, the closest town to Lomerío and their activities regarding preparation of commercialization in Santa Cruz de la Sierra, the capital of the department. In order to complete this picture I observed sawing in other companies with a permanent sawmill, their commercial activities and processing of timber. Finally, in the community participatory observation was carried on two additional type of activities that were important for the community: working on the land and a ‘*minga*’ (a feast after a collective effort to clear a piece of land). In total 16 participatory observations had been carried out. See annex 1 for a listing of these observations.

### ***Material artefacts and documentary sources available in the field***

In combination with the social processes that occurred during the observations I paid special attention to the use of material artefacts (‘things’) (Hammersley et al., 2007) p. 133, like the equipment that was used during the activities. Additionally, documentary sources were gathered and questions asked about their use. I regarded these documents as social products, that were created, read, interpreted and used in activities in the field (Hammersley et al., 2007). These types of information were useful to enhance understanding on the diverse activities related to timber value chain.

An additional advantage of observation of material artefacts and documentary sources is that these are also available when an activity is not taking place. Since activities related to the timber value chain of the CFO of Puesto Nuevo not only had a seasonal character, but also didn’t take place continuously, I was able to gather extra information on the case in this way. For example, by visiting the log landings in the forest, it was facilitated to ask questions in

relation to the felling of the trees -based on the numbers on the logs that indicated their former position in the forest.

Apart from the use of using this research method for observation after an activity has taken place in the same year, it also proved to be useful in this historic research. By for example observing the old hall where the former permanent sawmill was used –which had been sold, an impression was obtained of the dimensions of this sawmill and the flow of timber processed.

It was also found out that documentary sources were not frequently used since these were not available in the community, apart from formal documents related to the operational process like lists with trees that were gathered at the log landing. The search for documents, like a general forest management plan, annual operational forest plan and related maps subsequently led me to a forest engineer and in this way I found out the importance of his position in relation to the activities in the timber value chain.

Finally, it turned out that it was easier to retrieve electronic documents in the field than on paper. Both the forest engineer and the supra-communal organization were prepared to share their available digital information with me, like a development plan of the community and annual operational forest management plan.

## Secondary data

### *Literature review*

Since not all data could be collected on primary sources, within the boundaries of time and place, also secondary data was used. As mentioned, two scientific articles were found on the first period distinguished for this historical research. And it turned out to be very useful to have this information available, since memory of people did not turn out to be very reliable, especially on numbers, for example years.

Additionally literature review was the main source on contextual data in addition to semi-structured interviews. Among others, I reviewed articles on the Bolivian situation and laws and regulations. These can be found in the bibliography.

Unexpectedly, I also participated in workshop about the development of forestry certification with FSC in community forest organizations in Bolivia. Since results of an investigation were presented, this turned out to be an additional way of contextual data. See annex 1 for a reference to this workshop.

During the research and the analysis triangulation was used, to make sure that the information gathered was correct and interpret in the right way. In this way accuracy in the data because of researcher bias –my subjective view, is being improved. (Hammersley et al., 2007) It proved to be especially useful to do so during the research, since quite some inconsistencies came forward in the data retrieved in first instance. In a society like the Netherlands, with many documentary resources these also could have been used to check whether data is correct, but in this society that used mainly oral information it turned out to be useful to be critical, observe attentive and carry out multiple interviews with various people related to the same situation.

### **3.3 Methods used during the analysis**

The semi-structured interviews were codified. The research questions and conceptual framework were leading in this, but additional elements found during the field research were also taken into consideration. The recorded interviews were used as extra available information, to find out in more detail about certain aspects that were not completely described in my field notes.

In addition to the field notes, summaries of semi-structured interviews and codification of these interviews, a fieldwork journal was used to write up analytical notes, which were used for reflecting on the analysis during the process of investigation.

### **3.4 Ethics**

The ethical dimensions that were taken into account during the research were informed consent and confidentiality.

Regarding the informed consent, all interviewees were informed that I was a researcher and that the research was taking place, so it was an overt approach.

Subsequently they were informed that the results of the research were going to be published and they were asked if they had any objection against publishing their names, the name of their organization and the findings. Some sensitivity with regard to confidentiality on financial matters was found, as expected. As planned I only asked in more general terms about this, since this type of data was not within the direct focus of my research. Furthermore, no problems with confidentiality were met.

## Chapter 4 Introduction to the Community Puesto Nuevo, TIOC Lomerío and their forestry

*'We came here because we liked the beautiful land covered with savannahs, forests and sufficient resources for cattle farming and human life, on this land abandoned by unknown people'* (Ancestors of people of Puesto Nuevo-Las Trancas via oral history, written down in: (CICOL, 2003)).

In this chapter community Puesto Nuevo, the casus on which this thesis is based, the region Lomerío of which they are part and the way forestry is organized is introduced. First is indicated where Lomerío and Puesto Nuevo are located (4.1) and what their legal administrative status is (4.2). Subsequently, the history (4.3), social characteristics (4.4), characteristics of the forest and its use (4.5), the community forest organization (CFO) and forestry planning in Puesto Nuevo (4.6) are presented.

### 4.1 Geographical location



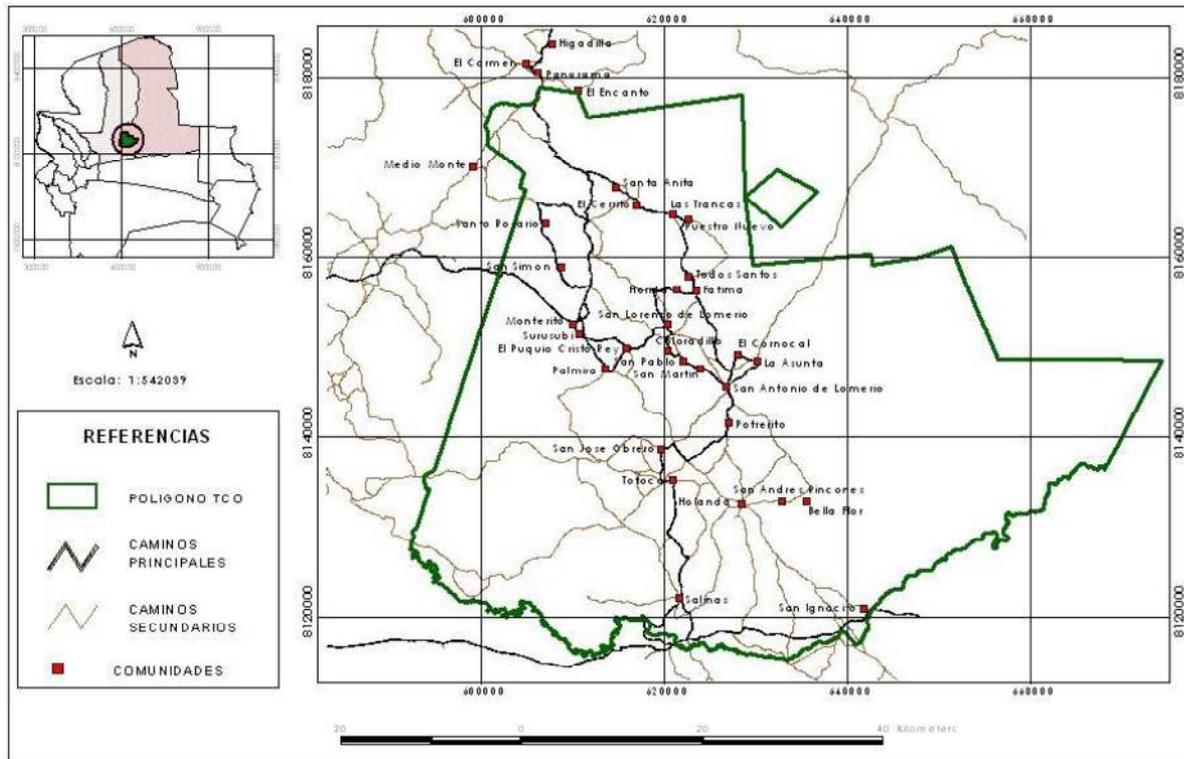
Puesto Nuevo is one of the communities of the region Lomerío. It is located in the Lowlands of Bolivia, in the southeast of the country. Lomerío is part of the department Santa Cruz. (CICOL, 2008). See also figure 2. Santa Cruz is the largest of the nine departments of Bolivia, where most forestry activities take place.

Lomerío is also part of a region crossing several provinces in Santa Cruz, called 'La Gran Chiquitania'. This larger region is the transition zone between the humid tropical zone of the Amazon basin in the north of the country and the dry zone with savannahs (*'pampa'*) in the south. (Birk, 2000) In total 29 communities can be found in Lomerío. Puesto Nuevo is located the northern part (see also figure 3).

**Figure 2: Map of Bolivia with indication of location of TIOC Lomerío**

Source: (Vadillo P. et al., 2013)

Puesto Nuevo owns 11.384 ha of land together with community Las Trancas, a community 2 km northwest of Puesto Nuevo. Approximately 75% (8.747 Hectares of the land) of commonwealth (*'mancomunidad'*) Puesto Nuevo-Las Trancas are covered with productive forests. (CICOL, 2008). TIOC Lomerío in total covers 308.412,1 ha. and 174.472 ha, around 55% of it are covered with productive forests. (Vadillo P. et al., 2013) The rest is covered with a mosaic of agricultural land (*'chacos'*), cattle pasture, natural savannahs, marshy areas, degraded forest fragments and community settlements (Markopoulos, 1998, own observations, 2013).



**Figure 3: Map of Lomerío**

In the small picture left: department Santa Cruz, with indication of the location of Lomerío in the circle. In the large picture right: the region Lomerío with indication of the diverse communities, principal roads and secondary roads. The community Puesto Nuevo can be found in the northern part of Lomerío (following the road from the north, the fourth community, after Santa Anita, El Cerrito and Las Trancas) Source: (CICOL, 2008)

## 4.2 Legal administrative status

Puesto Nuevo is, with respect to its forestry activities, not seen as a separate entity, but as part of TIOC Lomerío (INT 24) (Vadillo P. et al., 2013). Lomerío is a ‘Native indigenous peasant’s territory’ (‘TIOC’ based on its Spanish acronym of ‘*Territorio Indígena Originario Campesino*’),<sup>22</sup> based on the Law INRA (*Servicio Nacional de Reforma Agraria* / ‘National Institute for Agrarian Reform’) of 1996. (Fundación Tierra, 2011).

The legal body of TIOC Lomerío is the organization ‘Central indigenous organization of communities of Lomerío’ (‘*Central Indígena de Comunidades Originarias de Lomerío*’ (CICOL)). CICOL has its office in the community El Puquio Cristo Rey.

Lomerío has a double management and administration of the territory (Vadillo P. et al., 2013), since from political administrative perspective Lomerío forms the 5th municipal section of the province Ñuflo de Chavez, with the community San Antonio de Lomerío as its capital as well. (Birk, 2000).

Currently CICOL is in the process of changing the legal status of TIOC Lomerío into an ‘indigenous autonomy’ according to the new figure in the Constitution of 2009, an (‘*Autonomía Indígena Originario Campesina (AIOC)*’ / ‘Autonomy of native indigenous peasants’), based on the Political constitution of the state (*Constitución política del estado*) of

<sup>22</sup> Until 2009 it was called a ‘TCO’, an Indigenous communal land’ (*Tierra Comunitario de Origen*). But based on the new Political constitution of the State from 2009, by Supreme decree 0272, it was renamed ‘TIOC’.

2009, with municipal responsibilities (Faldin, 2010). This led to some friction with the current municipal administration in San Antonio (INT 4).

### **4.3 (Short) history (of la Gran Chiquitania)**

Before the colonization, that started in 1552, the region that is now known as La Gran Chiquitania and of which Lomerío is a part, was populated by more than 50 ethnic groups. Some of them were sedentary farmers living in large villages practicing agriculture using a slash and burn system and who additionally hunted, fished and gathered wild vegetables. Many of them were semi-nomadic groups; and a few small groups were a nomadic group of hunters, gatherers and fishers.

The history of the Chiquitanos of Lomerío since the Spanish conquest can be characterized by enslavement and repression. (Birk, 2000)

The Spanish conquistadores transported thousands of indigenous people as forced labor in silver mines in the Highlands or as servants. An estimation is that between 40.000 and 60.000 people were enslaved. Some of them managed to flee in the forest, but nevertheless it meant a decline in number of jungle tribes, also because of slaughter and diseases.

At the end of the 17<sup>th</sup> century the Jesuits arrived in Chiquitania and they established 'reductions' where thousands of indigenous people with different ethnic backgrounds were settled. Some of them came voluntarily, asking the Jesuits for protection against the Spaniards, others were 'hunted' in the forest or persuaded. It is estimated that during this period approximately 37.000 indigenous people lived in the reductions. The life in the reductions was very strict, and apart from practicing the catholic religion one had to work for a surplus that had to be given to the missionaries. New crops and cattle were being introduced by the Jesuits.

After the Jesuits left Latin America in 1767, some indigenous people returned to the jungle. Others stayed in the reductions. Most of them were recruited as unpaid work-force by people who came from Santa Cruz de la Sierra to found farms with the cattle from the missions. After independence of Spain in 1825, the government of the new Republic of Bolivia divided up the land of Chiquitania between the whites and mestizos. The indigenous people became property of their patrons and could be sold along with the lands. To make it worse, during the rubber boom between 1880 and 1920 thousands of indigenous people were hired out by their patrons to rubber industries or were deported from the forest to the rubber plantations in the north of the country. Many of the people died, but some managed to escape deportation by fleeing to an inaccessible area south of the ex-reduction Concepción, now known as Lomerío. During the war with Paraguay in 1932 and 1935 many male Chiquitanos were recruited for military service. After the war, they were finally able to establish free communities. However, the rubber boom caused by the Second World War, the construction of a railway and recovery of commercial cattle farming needed extra workforce, for which Chiquitanos were being hired. Only the second half of the 1940s Chiquitano families were dismissed and part of them returned to their original lands. They established communities that from architectonic and organizational perspective were comparable with the former Jesuit reductions. Only in the 1960s, based on the Agrarian reform law of 1953, it became possible for Chiquitanos to have recognized some of their land rights for the first time. (Birk, 2000)

The History of community Puesto Nuevo starts with the establishment of community Las Trancas in the beginning of the 20<sup>th</sup> century by some families. In the 1960s a family from this community, Las Trancas, established Puesto Nuevo. Later on two other families arrived, one from Concepción and one from San Miguel de Velasco, who were from the ethnical group Monkox Chiquitanos (the dominant ethnical group of Lomerío). In the beginning they were still part of the authority of Las Trancas, but in 1980, when an own Parochial home and elementary school were ready and more families were living the village, it was being recognized as an independent entity. This meant they were allowed to choose their own representatives (caciques), by vote through the community. Together with Las Trancas, they form a commonwealth and own one communal land. (CICOL, 2003)

In Puesto Nuevo currently are living 12 Families, in total approximately 100 persons. In Las Trancas approximately live the same numbers of people<sup>23</sup>. (CICOL, 2008)

During a national census that took place in the period 1992-1993 313 Chiquitano communities were being counted, with 44.122 inhabitants. Approximately 13.000 Chiquitano however lived in cities and towns. Lomerío has approximately 7.000 inhabitants. (Birk, 2000)

#### **4.4 Social characteristics**

The people in Lomerío are mainly of the ethnic group of Monkox Chiquitanos (PGMF-N, 2008). They are part of the Chiquitano tribe, one of the largest remaining Indian tribes of the Bolivian lowlands (Markopoulos, 1998). The principal language spoken is Spanish. Additionally one uses and is currently being educated again in the regional 'Besiro', the language that was being introduced by the Jesuit missions (1692-1767), as a way of communication among the several ethnic groups present. (CICOL, 2008). The Jesuit reductions are the basis of the Chiquitano as ethnic group, since before the people in the area were part of different indigenous groups, with distinct cultures and languages. (Birk, 2000; Markopoulos, 1998).

The majority of the indigenous groups were originally egalitarian societies which never produced more than what was needed, resulting that no economic differences existed among the extended families, forming the groups. Decisions affecting the group as a whole were taken by all adult members by consensus and when this was not possible the group split up. The head was a 'first among equals'. A few groups knew more hierarchy and had a leader ('cacique'). (Birk, 2000) The Jesuits had –among others- introduced the principle of producing a surplus and a more strict hierarchy, with a cacique leading a community. Later on their culture was influenced by the Catholic Church and the modern state of Bolivia. (Markopoulos, 1998)

Although Chiquitano culture has developed over time and has been adapting to new realities, their cultural background is still part of their Chiquitano identity.

Traditionally the Chiquitano vision of the cosmos is anthromorphic, they believe all cosmic elements were human in the beginning and for some reason they became winds, trees, plants and animals. So the cosmos, nature and human being are all directly linked. All elements in

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<sup>23</sup> During a census in 2003: 112 people were living in Puesto Nuevo and 94 people in Las Trancas

the cosmos and nature (so also crops, trees, and animals) have a jichi (spirit or owner) and it is important to keep the jichis satisfied. As human beings use natural resources, they have to ask for permission and thank the jichis for example for a successful hunt. Several social rules follow from this system and people that don't obey the rules can be punished, for example by a bad harvest or turning ill, in which the shaman can sometimes assist. These vision and social rules still play a role to a more or less extent –besides catholic believes. (Birk, 2000; INT 33 and 39)

**4.5 Characteristics of the forest and its use**

Bolivia is mostly thought of as a mountainous country, but two thirds of it is Lowlands. The Lowlands have tropical and subtropical climatic zones with moist tropical forests, dry forests and savannahs. As is being indicated before in section 4.1, La Gran Chiquitania of which Lomerío is a part is located in the transition zone, between the Amazon basin with its humid tropical forest and the savannahs in the south.

It is typical of the Chiquitano forest that it is partly semi deciduous: some trees seasonally lose their leaves (in the dry season), while others are evergreen trees. This type of forest generally has an average tree-height of 15 to 20 meters and underbrush of 6 meters high. (Birk, 2000) The soil is well-drained, although at some places big rocks can be found that are between 1.280 and 1.600 million years old, were trees can only root more superficially. (CICOL, 2008) The average temperature is 24°C, which varies little throughout the year. The annual rainfall is approximately 1,100 mm, with a rainy season in December-March and dry season in April-November (CICOL et al., 2003)

In the commonwealth Puesto Nuevo-Las Trancas, like in the whole northern part of TIOC Lomerío, four types of forests could be found, see table 6.

	<b>Technical-ecological name</b>	<b>Traditional name</b>
1	Sub humid semi deciduous pluviseasonal forest with well drained soils (Chiquitanian forest): with trees of 16-22 meters high, dense to semi-dense	‘Monte alto’ (High forest)
2	Low Chiquitanian forest on sandy or rocky soil: with trees of 10-16 meters, semi-deciduous and deciduous	‘Pampa monte’ or ‘monte medio’ (Savannah forest or medium forest)
3	Sclerophyllous chaparral and savannahs with Chiquitanian forest on well drained soils: with small trees, semi dense to open	‘Pampa’ or ‘monte bajo’ (Savannah or low forest)
4	Chiquitanian saxicolous shrubs and bushes on slabs	

**Table 6: Classification of forests in TIOC Lomerío** Source: (CICOL, 2008) and (CICOL, 2003), with a technical-ecological classification of Navarro (2007) in: CICOL (2008)

The presence of the several types of forest in TIOC Lomerío was the following: see figure 4.

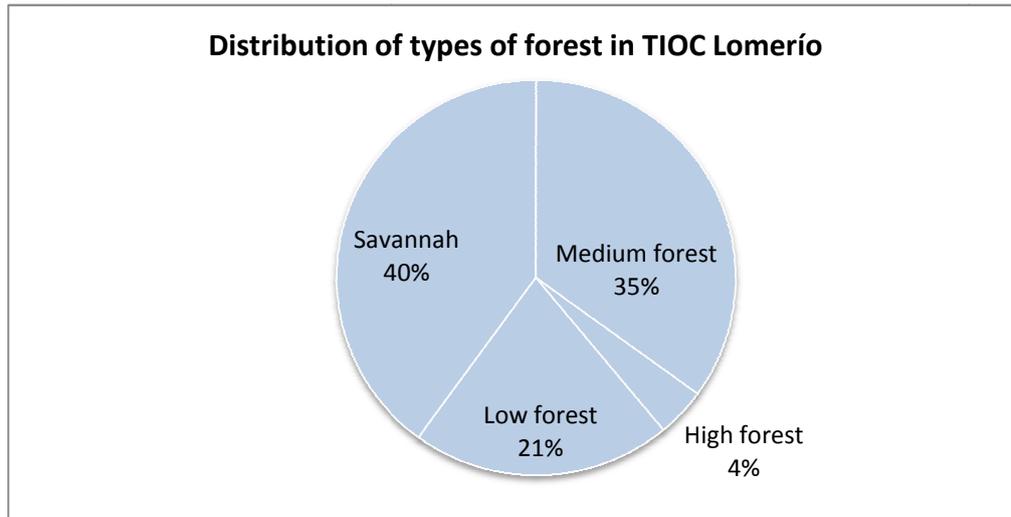


Figure 4: Distribution of type of forests in TIOC Lomerío Source: (CICOL, 2003)

In the meantime the forest present is less dense (only semi-dense to open) and lower, because of human and natural influences. In the meantime 5% of the surface that is approved to harvest commercially, is being harvested (Vadillo P. et al., 2013).

Since the amount of forest available also was found to influence the investment decisions of the community, further information on this can be found in the results chapter, section 5.7.3.

The forests are also home of numerous plants and animals. Five species of the mammals are mentioned in appendix I of CITES, and nine in appendix II. Also several types of birds (of the families Accipitridae, Strigidae, Cracidae, Psittacidae, Ramphastidae) are on both appendices. In relation to reptiles, several of the families (Alligatoridae, Boidae, Pelomedusidae, Testudinidae) are mentioned in appendix II of CITES. (CICOL, 2008) Among the animals with most abundance are: squirrels, diverse types of monkeys, tapirs, foxes and diverse types of fish. (CICOL, 2003) People of Puesto Nuevo indicated that less and less animals are present. As reasons are given noise of commercial forestry (INT 25), artisanal mining and hunting (CICOL, 2003).

The 15 species of trees that were planned in 2008 to be harvested in the northern part, were Puesto Nuevo is located, during a harvesting cycle of 30 years can be found in annex 2 of this thesis.

It is remarkable 11 of those 15 species are classified as 'valuable' and only 3 as 'very valuable species'. On the other hand only one specie is classified as 'not very valuable specie'. The selection of these species had been made based on an ecological evaluation (as being indicated in the Bolivian forest law nr. 1700).(CICOL, 2008)

On a map that the commonwealth has drawn during a participative workshop in 2003, can be seen that only a relative small part is being reserved for forest management (in the north of their area), see figure 5. In the meantime this has been extended to an area at the east side of the commonwealth during 2012-2013 (INT 19). It was remarkable that was indicated in the general forest management plan (CICOL, 2008) that approximately 75% of the area of

commonwealth Puesto Nuevo-Las Trancas (8.747 of 11.348 ha) is covered with forest. But it was found a ‘forest management’ area means that forest is not being burned for agricultural purposes (INT 36) and it doesn’t imply in other parts no forest exist. A difference can be noticed in practice though. In a forest management area trees are higher than trees in the agricultural, live stock and multiple use zone (INT 36).

Additionally an area has been reserved for ‘protection’, in the north western part of the area. Both the Cacique natural resources of Puesto Nuevo and Las Trancas pointed at the same area on the map (INT 16 and 19), although they could not tell how many hectares it includes. (INT 36).



**Figure 5: Map of commonwealth Las Trancas-Puesto Nuevo** Source: (CICOL, 2003) (Manejo de bosque = management of forest, area de caza= hunting area, agricola = agriculture, ganadería = live stock, uso multiple = multiple use. The two squares with a cross on it are the villages: left Las Trancas and right Puesto Nuevo)

It seems no conflicts on land use between the communities exist. If a family needs a new agricultural land they go into the forest meant for agriculture and clear a plot. This occurred around every 1-2 years, with a size of approximately 0,5 ha. A family approximately had three fields of approximately 0,5 ha, that each can be used for 3-5 years, depending on the soil. Having a new field available for agriculture also meant timber was harvested. Afterwards, the field that was abandoned was meant for secondary shrub growth for 15-20 years. At some place were communities had little land soil degradation occurred due to shortening the period of 15-20 years. Additionally, cattle pasture caused pressure on the available land. (Birk, 2000). For community member it is clear they don’t use an area already in use by another family (INT 16).

#### 4.6 Community forest organization and planning

Although Puesto Nuevo is being regarded as part of TIOC Lomerío for its forestry activities (INT 24) (Vadillo P. et al., 2013), a decision whether to harvest or not, is being taken in the community itself (INT 14). The structure for gathering information, taking decisions, executing and monitoring forestry in the community is called a ‘community forest organization’. Sometimes also the term ‘community forest enterprise’ is being used (Wiersum et al. (2013); Benneker (2008), but the community strongly indicated they didn’t see themselves as a community forest *enterprise* because their way of executing they didn’t regard as business like. The legal representative explained they for example didn’t work

according to the clock, people joined if they have time and no one is fully dedicated to forestry activities. (INT 15)

Hereafter the community forest organization is introduced.

### ***The community forest organization***

#### *Community assembly*

The highest decision making unit in Puesto Nuevo is the Community assembly (*Asamblea comunal*). This Assembly discusses and decides about all different kind of matters related to the community, including forestry. Examples of issues related to forestry are: a decision whether to harvest or not that year, a decision to accept a contract between a timber company or a NGO and the community or not and monitoring of operational forestry related matters. (CICOL, 2008, INT 15). Also the authorities of the community related to forestry and other fields are being chosen by the Community assembly. These are the Cacique mayor and other Caciques for natural resources, production, sports, health, education and eventually others depending on the productive sectors in the community. (CICOL, 2008) Their term, between one and four years, is being determined in the community's regalement (INT 41).

The Assembly is being formed by all men and women of the community. (CICOL, 2008) Different opinions exist about the age that community members can join the Community assembly. According to some interviewees (INT 5, 39) this is for both adults and youngsters in the community as soon as they are interested. The assembly is not excluding. Someone else indicated (INT 10) it is only for all adults (INT 10).

The Community assembly meets every week, on Tuesday nights after 8 o'clock, after the Cacique mayor 'sounds the bell'. Everyone is invited, although not everybody might be able to join. (KEY 2, OBS 2 and 10)

#### *Cacique natural resources and Forestry committee*

In Puesto Nuevo the Cacique natural resources is made responsible for the forestry related matters by the Community assembly. The name of the current Cacique natural resources is Venancio Faldin. He is being supported by a Forestry committee, which he chairs. The members of the Forestry committee are: Hugo Faldin, the Legal representative and Ignacio Surubí, the Treasurer and Secretary. (CICOL, 2008)(INT 17) They were all approximately in charge for two years at the time of the fieldwork. Before, Hugo Faldin was the president of AFIL, the representative body within CICOL of the communities that are involved in forestry, until 2011. Through this function he was also involved in the pilot where Puesto Nuevo was sawing the wood in 2008-2009. (INT 3, 10) Ignacio Surubí had been trained, as one of the 'youngsters', in sawing during this pilot (INT 17).

Contracts with wood companies are being signed by the Cacique natural resources as representative of the Forestry committee, together with the Cacique Mayor, the Treasurer/Secretary of the Forestry committee and the Legal representative. (Timber company la Arboleda SRL et al., 2012) The negotiations are being done by the Forestry committee, after being authorized by the Community assembly. The Legal representative plays a large role in these negotiations. (INT 5)

### *Legal representative*

The Legal representative is authorized by CICOL to realize the management of the harvest, during the year that a community is harvesting. This includes the coordination of the annual plans, the execution of the harvest and, according to the General forest management plan, coordination with AFIL (and before ESFOR) to fill out the legal transport forms (*Certificados Forestales de Origen*). (CICOL, 2008) See for information on these organizations the paragraph on CICOL hereafter. During the last harvest these transport forms were also being filled out by the timber company, in coordination with the Legal representative, in Puesto Nuevo (OBS 5).

Practically the Legal representative supervises the operational work being executed by the timber company. If problems or questions arise the Legal representative can ask a Forest Engineer for assistance (INT 15, 27). The community is responsible for all activities that are being executed in relation to forestry on their land until transportation (INT 12, 24).

### ***External parties involved in the community forest organization***

#### *Forest engineer*

A Forest engineer is hired to provide technical and administrative supervision during harvesting activities. This needs to be a registered Forest engineer with the Authority for monitoring and social control of forest and land (*'Autoridad de fiscalización y control social de bosques y tierras'* (ABT)) (INT 24). Diverse Forest Engineers are available to provide their services. Most of them are from Concepción, but there is one indigenous Forest engineer available in Lomerío since 2009, who had received his scholarship from CICOL (INT 5, 27). The indigenous Forest engineer was being hired to support the formulation and the execution of the Annual forestry management plan of 2012-2013 (TCO Lomerío, 2012). In 2009 he had joined in forestry as part of the central forest service provider in Lomerío, ESFOR.

Not all Forest engineers are very much involved in work in the community, partly because they have too much work to do. According to two interviewees in the past a lot of general forest management plans were a copy of a standard format, but now it is different. (INT 27, 36). The involved (indigenous) Forest engineer in Puesto Nuevo had trained several 'technicians' in each community, who could do the daily supervision. In the case of Puesto Nuevo this is Hugo Faldin, the Legal representative. If problems arise, he can always contact the forest engineer (INT 27).

#### *CICOL*

CICOL is the legal body of TIOC Lomerío, as is introduced in section 4.2. AFIL (*'Asociación Forestal Indígena de Lomerío'*/Association Indigenous Forests of Lomerío), is the official representing body within CICOL of the communities that execute forestry. ESFOR (*'Empresa de Servicios forestales en Lomerío'*/Forestry services enterprise for Lomerío) was involved before as supervisor and trainer in the community as well. (CICOL, 2008, INT5).

However, in the meantime ESFOR doesn't exist anymore, and AFIL took over its role as supervisor and trainer. AFIL at its turn is currently hardly involved in the communities, due to financial problems. (INT 10) Nevertheless, AFIL and ESFOR are still mentioned in the contract between Puesto Nuevo and Arboleda as inspector (*'veedor'*) (Timber company la Arboleda SRL et al., 2012). The communities had to pay during that time a percentage of

their income to CICOL, for their support for commercial forestry (not for forestry for personal, communal or domestic use, which one arranges with the municipality instead of the forest authorities ABT (*Autoridad de Fiscalización y Control Social de Bosques y Tierra*/Authority for monitoring and social control of Forest and Land). (INT 36)

CICOL is still the organization that provides authorization to an annual operational forestry plan, before a community can go to ABT. The reason being that CICOL is the legal body of TIOC Lomerío; and TIOC Lomerío received the forest use rights. (INT 10, 24, 28) During the time of the research all annual management plans were accepted by CICOL, according to its president (INT 20). Nevertheless, the Forestry authorities –ABT- still judges whether the amount that is being applied for is in line with the agreed amount in the general forest management plan. (INT 24, 41)

### ***Forestry planning structure***

Once in every ten years a ‘General Forest Management Plan’ (*Plan General de Manejo Forestal*) (PGMF)) is being made. The current PGMFs valid in TIOC Lomerío are three PGMFs that been made in 2008: a PGMF-North, a PGMF-South and a PGMF-Punto Diez. The total area was being divided in three, to reach a manageable harvestable area (INT 3, 10). Puesto Nuevo is joining the PGMF-North with 8 other communities: Santa Anita, Santa Rosario, Las Trancas, Todos Santos, Fátima, Florida, San Simón and El Puquio Christo Rey. As harvesting cycle is taken 30 years. The calculated maximum amount that may be harvested each year is 990 hectares, which equals in this case 12.103 m<sup>3</sup>. (CICOL, 2008)

The harvesting ‘calendar’ for timber is from March to March in Lowlands Bolivia. This means that can be harvested commercially from approximately May until November, because during these months the forest is accessible. From November until March the rainy season takes place and one has to wait a few months before the soil is sufficiently compacted to carry the machinery for harvesting. (INT 5, 15) During the most intensive time of harvesting timber, usually between October and November, also the harvest for other agricultural products has to be done. The harvest starts later than May, since also administrative preparation is needed. (INT 5, 12, 15) Additionally, sometimes a timber company plans to be involved in the harvest in two communities subsequently, what makes the time available for each harvest shorter (INT 12). If a community decides to harvest in a specific year, as is being decided in the Community assembly, a contract can be concluded with a timber company, an NGO or a community starts with executing a Commercial forest inventory themselves. The advantage of executing a Commercial forest inventory themselves first, is that the exact mixture of species is known before further decisions (about price) are being taken. Based on a Commercial inventory an Annual Forest Management Plan’ (*Plan Operativo Anual Forestal*) (POAF) is being made by the Forest Engineer, in coordination with the community. After CICOL authorizes the amount to harvest, an authorization needs to be requested from ABT. If this is being provided, the POAF is leading during the harvesting activities. After the harvest has ended, a report has to be made again by the Forest engineer, to be accountable to the ABT, a so called ‘Report of the Annual Forest Management Plan’ (*Informe Plan Operativo Anual Forestal*) (IPOAF). A PGMF, POAF and IPOAF are required instruments for commercial harvesting, based on the Forest law 1700 from 1996 (Sanchez de Lozada, 1996b).

## Chapter 5 Results

### 5.1 Introduction

In this chapter, the results are presented on the case study conducted on up- and downgrading in the timber value chain by the community forest organization (CFO) of community Puesto Nuevo, TIOC Lomerío in Lowlands Bolivia. Firstly, the determined stages are presented during the several periods of up- and downgrading, in order to answer the first sub question of this thesis (section 5.2). Before starting the field research it was known several periods of up- and downgrading in the value chain had occurred in the history of the CFO of community Puesto Nuevo. It was however not known yet until what stage had been up- and downgraded exactly and when each period started and ended.

Subsequently, the factors found to enable up- and downgrading by the CFO of community Puesto Nuevo are presented, in order to be able to answer the second and third sub question of this thesis. The second sub question was as follows, “what were enabling factors for up- and downgrading in the course of time ?” and the third sub question “what was the contribution of horizontal and vertical partnering to factors that influenced up- and downgrading in the course of time ?”. It was decided to present the results found regarding these two question in an integrated manner, since these were intertwined. The results are presented per period, from period T0 until period T4. An overview of these periods can be found in section 5.2. In the following sections the factors found to enable up- and downgrading are described for the respective period: period T0 in section 5.3, period T1 in section 5.4, period T2 in section 5.5, period T3 in section 5.6 and period T4 in section 5.7.

Finally, the results on three factors, factor 1 complexity of information, factor 2 possibility to standardize information and factor 3 capabilities of producers are presented in section 5.8. The reason to present these differently is that these factors influence up- and downgrading in a combined way and their combined result needed to be determined first. An overview of all factors found per period in combination with all contributions of horizontal and vertical partnering is presented in section 6.1, as start of the discussion.

The conceptual framework and the factors determined to enable up- and downgrading in the literature as presented in section 2.3 were used as a basis in the exploration for these relevant factors enabling up- and downgrading, during the fieldwork. To determine their relevance a review of findings based on interviews (INT), conversations with key informants (KEY) and observations (OBS) was carried out for the periods T3 (2009) and T4 (2012-2013). For the first periods, periods T0 until period T2 (before 1980s-2005), the review was principally done based on earlier publications. These were a PhD thesis of Markopoulos (1998), an article of Mc Daniel (2003) and a publication written by NGO APCOB (*Apoyo para el Campesino Indígena del Oriente Boliviano*/Assistance for indigenous peasants of East Bolivia) and the supra-communal organization of TIOC Lomerío, CICOL (*Central Indígena de Comunidades de Lomerío*/Central indigenous organization of communities of Lomerío) (Birk, 2000). Additionally, some other literature and interviews with people who were involved during these periods T0-T2 were taken into account. The last two periods were described in more detail than the first three, since these are new in relation to the earlier accessible publications.

This to facilitate further continuing insight in the development in community forestry and upgrading in Lomerío.

For an overview of interviews with diverse interviewees (INT), conversations with key informants (KEY) and observations (OBS), to which is referred in the text, see annex 1.

## 5.2 Stages of the value chain to which the CFO has up- and downgraded

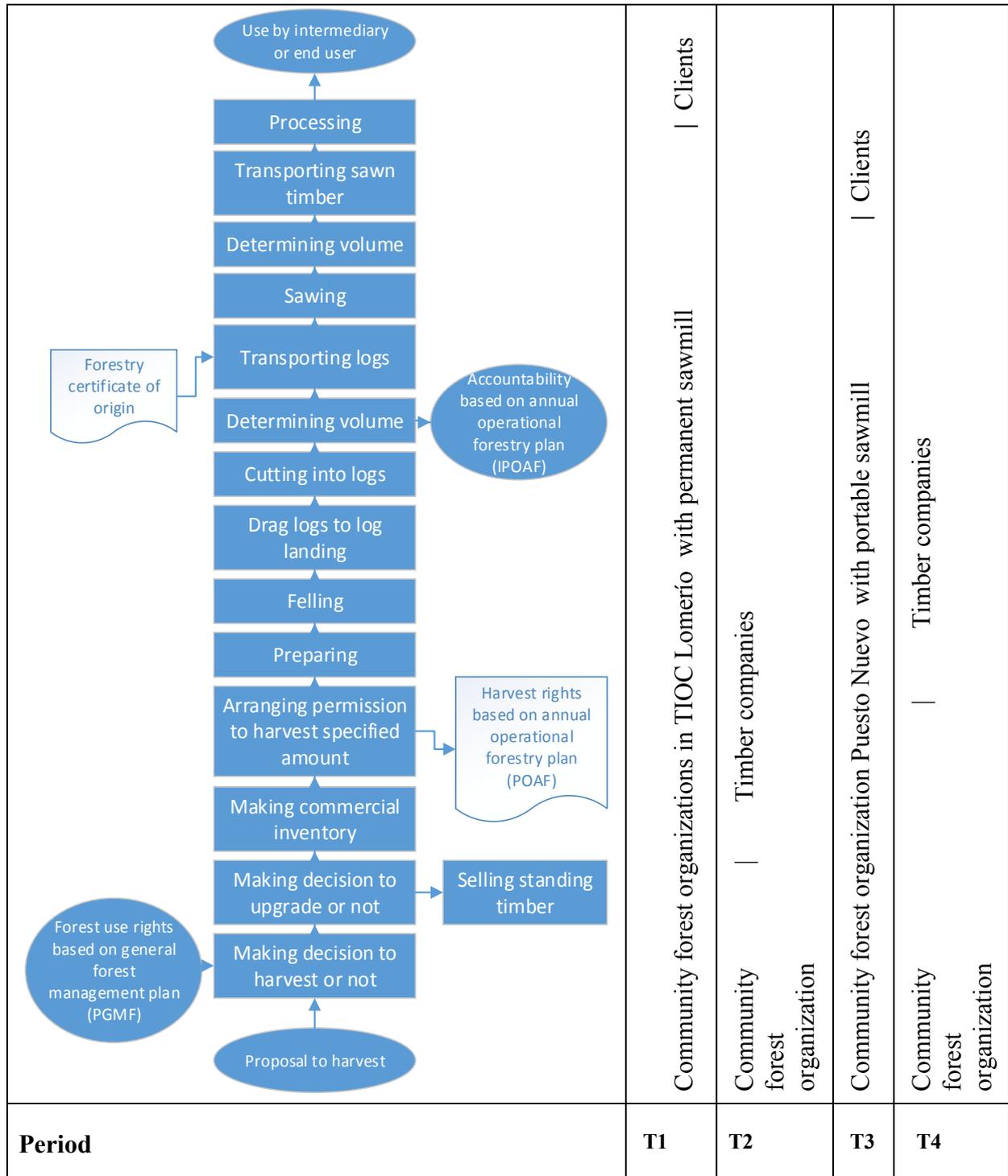


Figure 6: Stages of the timber value chain to which CFO of Puesto Nuevo, TIOC Lomerío has up- and downgraded, in the course of time

### 5.2.1 The stages in the distinguished periods T1-T4

It is found the CFO of Community Puesto Nuevo, and the region that it is part of -TIOC Lomerío, up- and downgraded to the following stages of the value chain in the course of time. See figure 6.

The periods that subsequently could be distinguished were, see table 7:

- Period T0 (before 1980s):  
in which was up- and downgraded to various stages of the value chain, before commercial forestry;
- Period T1 (1984-2003):  
in which was upgraded until the stage of transporting sawn timber from a permanent central sawmill with FSC for TIOC Lomerío to a local processing company and other local clients. In the same period sawn timber, after determining its volume, was sold directly from the sawmill to global and local clients and external transport was being hired;
- Period T2 (2003-2005):  
in which was downgraded until the stage of sales of standing timber to timber companies;
- Period T3 (2009):  
in which was upgraded to the stage sawing timber with a portable sawmill in CFO of Puesto Nuevo. In this period clients came to the forest to transport the timber they bought;
- Period T4 (2012-2013):  
in which was downgraded to the stage of arranging a permission to harvest a specified amount , based on a commercial inventory and annual operational forest plan ('POAF' according to its Spanish acronym , *plan operativo annual forestal*) after selling standing timber.

**Table 7: Periods of up- and downgrading by CFO of Puesto Nuevo and TIOC Lomerío**

(own elaboration, based on (Birk, 2000; Chubiru, 2010; CICOL, 2008; Markopoulos, 1998; McDaniel, 2003; Timber company la Arboleda SRL et al., 2012; TCO Lomerío, 2010, 2012; INT 27)

The periods are not serried, since not every year a (commercial) harvest took place.

### 5.2.2 Interweaving activities CFO and clients: challenges in determining stage in the value chain

For some periods it was quite straightforward to determine the level of upgrading, since tasks were clearly divided between the CFO and the client/timber company, like in period T1 and T3. In other periods, especially in period T4, activities were much more intertwined.

In period T4, Puesto Nuevo entered into a contract with timber company Arboleda after the decision to sell standing timber. However, in this contract it was agreed the CFO would be responsible for executing the commercial forestry inventory and arranging a permission to harvest a specified amount (Timber company la Arboleda SRL et al., 2012), condition 5 E and F, p. 2 and therefore the determined stage in the value chain to which was downgraded was 'arranging a permission to harvest a specified amount' (see figure 6).

After this stage, community member were still hired to execute several tasks, like felling trees and cut trees into logs (see figure 6), for which they were paid individually. But completion of these activities was the responsibility of the timber company (INT 12, 15, 17).

Additionally, the CFO would get paid for the volume of timber that was gathered at the log landing (Timber company la Arboleda SRL et al., 2012), condition 10, p. 6, although in

practice they got paid for what was loaded on the trucks (INT 15). So the CFO had interests in an effective and efficient process during the various stages until ‘transporting logs’ to have a maximum amount of logs loaded (see figure 6). And therefore a representative of the CFO supervises the work of the timber company. They especially take care all logs will be carried by the timber company and not only the valuable species (INT 15).

Finally, although the timber company was responsible for completion of the activities after ‘arranging a permission to harvest a specified amount’, the community is legally responsible for the process until ‘transporting logs’, as was explained by ABT, the forest authorities (INT 24) and the supervisor of the timber company (INT 12). Therefore a legal representative of the community has to sign for all formal documents (INT 24).

Although the stage to which was upgraded in period T4 could be determined based on the contract between community Puesto Nuevo and the timber company (Timber company la Arboleda SRL et al., 2012), in practice existed some unclarities among those involved. Although it was clear for the legal representative of CFO of Puesto Nuevo (INT 15) and the director of the timber company (INT 35), that the CFO was responsible for these stages in the value chain, the supervisor of the timber company stated the timber company was responsible for these stages (INT 12). Additionally, although was indicated in the contract (2012), condition 5F, p.2 that the CFO should contract a forest engineer and an (unsigned) contract was found between the CFO and the Forest engineer, both the Legal representative of the CFO and the forest engineer stated differently. They indicated the forest engineer was hired by the timber company to execute the diverse tasks, including supervising the commercial inventory and preparing the documents and maps for the POAF (INT 12 and INT 27). This unclarity could be caused because the costs were paid based on an advance payment of the timber company. And while it was agreed the final payment was transferred to the bank account of the community (Timber company la Arboleda SRL et al., 2012), condition 10, p. 6, for the advance payment no such clear arrangement was made and it could be a part was paid to forest engineer directly.

### **5.2.3 General considerations regarding selling standing timber**

Firstly, it was discovered that the timber company only was oriented to buying standing timber. Logs and sawn timber would not be accepted. As the only reason given, apart from the point they were not used to work in a different way, was that otherwise the timing of the flow of timber was not controllable (INT 12).

Subsequently, another consideration with regard to selling trees standing was the following. A disadvantage for a CFO and a timber company of entering a contract to sell standing timber *before* a commercial inventory has been finalized, is that it could be the agreed price is not right. As is the case in CFO of Puesto Nuevo, TIOC Lomerío they sell their trees based on one unit price for a mixture of more and less valuable species (Timber company la Arboleda SRL et al., 2012). The reason for selling a mixture of species is that they like to sell and keep in the forest a well-balanced combination of species. If they would only sell the valuable species, the relative abundance of this species would decline, since they depend largely on natural regeneration. (INT 15, 22) And since the exact mixture of species present is not known yet because this is to be determined during a commercial inventory, the unit price

could be too high or too low. Some experts however say this is not a large problem, since most communities know their forest quite well, especially if they already harvested commercially before. (INT 22)

A reason for entering a contract before a commercial inventory is done, is the possibility to receive an advance payment of the timber company in order to finance the commercial inventory and eventually a permission to harvest.

The legal representative of CFO of Puesto Nuevo argued they dealt with the risk of having agreed a too low price during period T4, by having the possibility to search for another timber company after the permission to harvest a specified amount has been retrieved (INT 15).

Since this is not incorporated in the contract (Timber company la Arboleda SRL et al., 2012) this would mean a break of the contract. However, a break of contract doesn't happen too often in TIOC Lomerío in contradiction in some other TIOCs in Lowland Bolivia (INT 41).

The reasons could be that the contract is consigned with a notary and a civil procedure could be started by the contract parties (INT 12, 15, 19, 41) and a general honest behavior in TIOC Lomerío (INT 41).

At the same time, one community in TIOC Lomerío was known to sell their standing timber *after* a commercial inventory was done (Santa Anita). They managed to finance all costs involved in the execution of a commercial inventory, by saving money from former harvests and keeping the costs low by only paying a forest engineer and not pay for the labor that is put in by community members. (INT 41)

Alternatively, some communities, when they have a lot of valuable species in their forest, ask a specific price for the specific specie (INT 22).

Subsequently, the various periods of up- and downgrading (periods T0-T4) are described in the following sections.

### **5.3 Period T0 (before 1980s, when commercial forestry started): with up- and downgrading to various stages**

Before the people of Puesto Nuevo and whole Lomerío started with upgrading in the commercial timber value chain, they harvested timber for subsistence.

As is indicated in table 7, during period T0 is up- and downgrading to various stages in the value chain. The stage of the value chain is low if timber is sold as logs, harvested by a family or by a chainsaw service provider on indication of a family. The stage of the value chain is rather high if the timber is sold as sawn timber, sawn with a chainsaw by a family or chainsaw service provider. But in both stages the volume is very low. The factors that influenced up- and downgrading to these stages in the value chain and its volume are: local demand sawn timber (factor 5), capability chainsaw operator (factor 4), (no) interest in further upgrading (new factor) and (no) land and forest use rights (factor 6).

#### **5.3.1 Capability chainsaw operator and local demand sawn timber (in period T0)**

Timber harvested during this period was meant for domestic use and for sale, in the occasional moments that one needed additional cash resources. Trees were seen as 'savings'

of the community that could be harvested and sold when necessary. Apart from harvesting trees with a specific purpose, also trees were harvested when clearing a new agricultural field as described in section 4.5.

Probably, community members upgraded their activities occasionally by selling sawn timber instead of logs, because of the demand of sawn timber in combination with the capability of the chainsaw operator involved to saw planks as requested.

Mostly, people cut a tree themselves if they needed timber, but not all communities in Lomerío had forest on their land. For them and for larger users, like the church, it was necessary to buy timber. Since not everyone owned a chainsaw or saw it was also useful to order sawn timber.

The requested quality of sawn timber depends on its use. When the wood is needed for construction the requirements are different than for furniture. Not only different species of trees with different characteristics are used, for furniture it is preferable if the boards sawn are straighter and finer. In this way it is less work to produce the furniture, as was explained by a carpenter in Lomerío (INT 28). During period T0, before 1980s, no carpentries existed yet in Lomerío; these were only established in the 1990s. Some skilled people made furniture manually, resulting in 'rustic' appearance.

In contradiction to cutting trees and cutting them into logs, for sawing boards in a straight way with the required thickness and for furniture in a fine way as well, operators need to have experience. (INT 14, 28) So the capabilities of the chainsaw operator are important, in order to provide a client the required quality of sawn timber.

The practice of sawing timber into boards with a chainsaw actually kept continuing after 1980s, to cover local demand, especially during the periods that no sawn timber was available in the region.

### **5.3.2 No interest in further upgrading (in period T0)**

People had no interest in increasing volume of harvesting or upgrading to a higher stage in the value chain until sawing with a sawmill, since they didn't regard forest management and possible additional processes like sawing as one of their regular sources of income, but only occasionally as an additional cash resource, mostly for specific purposes. For their regular sources of income they were oriented to agriculture, hunting, fishing, gathering natural resources from the forest and raising cattle instead (Birk, 2000).

### **5.3.3 No land and forest use rights (in period T0)**

Another important reason for not increasing volume of harvesting and upgrading was that indigenous people were not being regarded as capable of commercially exploiting a forest by law. The only entities that formally could exploit a forest were commercial firms, which could receive a concession for harvesting specified pieces of forest. Whether people were living in those areas who regarded themselves as legitimate owners of this land and its resources or not did not make a difference for the governmental institutions that provided these concessions to these commercial firms. Use rights for soil (agriculture), subsoil (resources in the soil deeper than 30 cm) and forest are being arranged separately in Bolivia. (Birk, 2000 and INT 39) Thus

even having formal land use rights didn't automatically mean one has rights to use its forest as well.

Lomerío had managed to arrange land use rights for a restricted area of 50 hectares per family, based on the Agrarian Reform Law of 1953 in the 1960s, although this was a lot smaller than the area that they regarded as theirs.

With the prioritization of exploitation of wood and use of land for monoculture and connected agro-industry, as a result from neoliberal policies in the 1980s (based on requirements of the World Bank and the International Monetary Fund), many land and forest use rights were being given to timber and agricultural industry. (Anthias et al., 2013; Birk, 2000) The timber industry entering the region started harvesting the most valuable species. This not only occurred on a legal basis through a concession, but often on an illegal basis as well. (Birk, 2000) So this situation didn't provide a stable basis for investing in forest management and upgrading for the people Puesto Nuevo and whole Lomerío.

In other areas in Bolivia it seemed to be a problem that (non-indigenous) people from neighboring villages freely harvested timber in addition to the timber industry (Benneker, 2008), but in Lomerío this didn't appear to be the case. The reason probably being the inaccessibility of the area from the nearest towns and villages.

#### **5.4 Period T1 (1984-2003): with upgrading until stage of transporting sawn timber with permanent central sawmill and FSC for TIOC Lomerío**

During this long period, various factors played a role in upgrading. These factors will be described hereafter. First the actors involved during this period, with whom the TIOC is partnering, are introduced, in combination with the most important developments during this period.

In 1982 the communities of Lomerío established CICOL (*Central Indígena de Comunidades de Lomerío*/Central indigenous organization of communities of Lomerío), as their supra-communal organization. NGO APCOB (*Apoyo para el Campesino Indígena del Oriente Boliviano*/Assistance for indigenous peasants of East Bolivia) became their partner, who started supporting the development of commercial forestry and upgrading in the 1980s. NGO BOLFOR (Bolivia Sustainable Forest Management Project), which was established based a large project funded by USAID, joined in 1994 to support preparation for certification. A permanent sawmill had been acquired in 1986, but it was only legalized by the government in 1994. In 2003 it was sold (INT 38). Lomerío managed to obtain an FSC-certificate for sustainable forestry in 1995, which they kept until 2001. (McDaniel, 2003)

Before certification, clients were found in Lomerío -like the Church- and in Santa Cruz and other Bolivian cities -like wholesalers. The timber was used for both construction purposes and furniture. After certification also clients from North America, Europe and other Latin American countries joined, in the framework of environmental consciousness. (Markopoulos, 1998; McDaniel, 2003) A lot of the clients were involved in the certification process as well, but its main promoter was the director of timber wholesale company Sylvania Woods from Wisconsin, USA. Sylvania Woods produced high value products like musical instruments and

furniture components.

To meet international standards after certification, it proved to be necessary to contract processing facilities to dry and mill the timber. These were Jolyka and La Chonta, who subsequently became important buyers of timber of the sawmill. Jolyka was a German-owned company based in neighboring department Cochabamba, which manufactured solid wood, laminated and parquet flooring products for international markets. (Markopoulos, 1998)

The main factors that enabled upgrading in this period were: defense of land and forest use rights (factor 6), availability of financial resources from an NGO (factor 8) and availability of a permanent sawmill (factor 11).

#### **5.4.1 Defense land and forest use rights (in period T1)**

The problems of timber industry entering indigenous territories, in addition to –at many places- large agricultural firms and petrol, gas and mining companies, were brought under government’s and societies’ attention by a growing indigenous movement in the 1980s. The movement was strengthened in Bolivia in 1990, by a march of indigenous people of the Lowlands from 800 km from Beni to La Paz. This was the first time indigenous people brought their demands under attention of the public in Bolivia. In Lomerío the just established organization CICOL joined the indigenous movement through CIDOB (*Confederación Indígena del Oriente, Chaco y Amazonia de Bolivia*/Indigenous Confederation of the east, Chaco and Amazon of Bolivia). (Birk, 2000) Like in many other countries, especially in Latin-America, indigenous people rose against the problems. In 1991 Convention 169 of the ILO on Indigenous people and tribes in independent countries was being launched, that was ratified by Bolivia through Law no. 1257 in 1991. (Cárdenas et al., 2012; Vadillo P. et al., 2013) Based on the indigenous movement in Bolivia and ILO Convention 169, the existence of indigenous people was being recognized through the notion of a ‘multiethnic’ and ‘multicultural’ State as well as their land rights by including Indigenous communal land (*Tierra Comunitario de Origen (TCO)*) in a new Constitution of Bolivia in 1994. (Birk, 2000)

Additionally, as being described in the introduction as well, another development was a growing environmental awareness by the international community in the 1980s. This resulted –among others- that measures of sustainability were written up in international conventions. Based on this the Bolivian government developed an Environmental law (*Ley del Medio Ambiente*), no. 1333 in 1992, that indicates that the State needs to ‘create factors to guarantee the traditional communities and indigenous people participate in the processes of sustainable development and rational use of natural resources, both renewable and non-renewable. To be taken into account are their social, economic and cultural particularities, in the way they develop their activities.’ (Cárdenas et al., 2012)

CICOL started requesting concessions for exploitation of its forest in the 1980s already, as a strategy of defense of their territory, supported by APCOB. However, it was a problem to harvest timber legally. Their existence like indigenous people was only recognized in 1994 based on the new constitution; and they were seen as partners that participate in use of natural resources in 1992, based on the Environmental law. Additionally, it took until 1996 before

they were recognized as possible executors of commercial forestry based on the Forest law. So their requests for concessions were refused.

Nevertheless, the people of Lomerío continued preparing and started commercial harvesting in 1987. Because they wanted to prove to the world that they, as indigenous people, were capable of exploiting a forest not only in a commercial, but also in a sustainable way, they applied for a FSC-certificate as well. At the same time such a certificate would give them international recognition of their capabilities, which they liked to use to stimulate the Bolivian government of providing them legal rights. And they managed to do so, in 1995 they received an FSC certificate, without a proper legal basis, until the new Forest Law (*Ley Forestal*), no. 1700 that they supported in its design, came into force in 1996. (Birk, 2000)

They could have decided to leave it at this stage and try to sell their timber as logs to local timber industry or international markets. But they didn't do so. At first, because local timber industry, that also could saw and were selling to both national and the international market in addition to harvesting, were not exactly being regarded as their natural allies after their entrance in the region on both legal and illegal basis.

Alternatively, their timber could have been transported to international markets that started to develop their interest for FSC certified timber as logs, but they didn't choose for this way either for the following reason. In the energy that was created in their struggle for defense of their territorial rights and the offer that was being made by the international community (see also below) they decided to prove to the world as well that they were capable of providing transformed timber. This implied that they were going to saw the wood with a sawmill and upgraded in the timber value chain. They first upgraded to the stage of selling sawn timber to local and regional private clients and wholesalers. After certification in 1995 they upgraded to the stage of selling sawn timber to processing facilities for the international market as well. So through their efforts, together with external partners, Lomerío not only managed to reach a higher stage of the value chain and FSC certification, but also to influence the design of the new Forest law. (Birk, 2000)

In the meantime also a new (agrarian) land law was drafted, Law INRA (*Servicio Nacional de Reforma Agraria*/National Institute for Agrarian Reform) no. 1715. This land law, like the Forest law and Constitution of 1994, was influenced by the earlier mentioned ILO Convention 169 of 1991 (Cárdenas et al., 2012; Vadillo P. et al., 2013) And both new laws, the Forest law and Law INRA and came into force in 1996 (Sanchez de Lozada, 1996a, b).

Lomerío immediately reacted by applying for the status of recognition of their land rights as Indigenous communal land (Tierra Comunitario de Origen (TCO))<sup>24</sup>, based on Law INRA. The status was assigned in 1998. (Birk, 2000) This implied that they received access rights and rights to exploit agriculture for an area based on a new notion of 'rights of peoples concerning to use lands not exclusively occupied by them but to which they have traditionally had access for their subsistence and traditional activities' (art. 14-1 ILO Convention 169) in (Assies, 2000). With approximately 8.000 people they became the formal owners of an area

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<sup>24</sup> In 2009 all TCOs were renamed 'TIOC': '*Territorio Indígena Originario Campesino*'/'Native indigenous peasant's territory' and this term is generally used in this thesis.

of 308.412,1 ha, which is a substantial larger area than 50 ha per family, like before under the regime of the Agrarian Reform Law of 1953. (Birk, 2000) At the same time Lomerío also obtained rights over their forest through the Forest Law. The reason being that the Forest Law recognizes the exclusive use rights to the forests on land of TCOs and other private property via Law INRA, whether it is domestic or commercial forestry. They even received rights to refuse access of others (Vargas et al., 2009), although they didn't receive rights to sell the forest, since all forests are owned by the State (art. 4 Forest law) (Cárdenas et al., 2012). In fact, through their success by recognition of their land and forest use rights, one of the most important reasons for commercial forestry including upgrading largely expired in 1998. Nevertheless, they continued commercializing sawn timber to both international and national markets, with the FSC-certificate. (Birk, 2000)

Parallel of their occupation with commercial forestry and upgrading, TCO Lomerío continued striving for self-government, what would be the case when having a status as an autonomy. The reasons being 'taking their own decisions within their territory and administrating their own resources' (Faldin, 2010), p. 222-223. For these, they were still dependent of the municipality. (Faldin, 2010; Perez Ayala, 2013)

However, for reaching a status of autonomy it proved at the end of the 2000s that they don't need –strictly spoken- to continue with commercial forestry or upgrading.

Being recognized as a TCO (later: TIOC) they already fulfilled a 'social function', by providing at least subsistence to families. Without this social function (and for medium sized properties and large agricultural enterprises a social economic function) the land would have to be returned to the State, based on Law INRA (and later on Law of General Renewal of the Agrarian Reform (*Ley de Reconducción Comunitaria de la Reforma Agraria*), no. 3545 of 2006). (Assies, 2000; Vargas et al., 2009) Later on it proved they still would need to prove not to cause illegal harvesting or harm the conservation of biodiversity on risk of expropriation of the TIOC, based on the Law of General Renewal of the Agrarian Reform (2006). This could be controlled by continuing sustainable harvesting and generating sufficient resources for all, possible by upgrading. (Cárdenas et al., 2012; Vadillo P. et al., 2013)

What kept continuing as well was the threat of large scale exploitation of petrol, gas and minerals, for which their forest would need to be cut and their land being used. Later on it proved, that the Mining Code (*Ley del Código de Minería*), no. 1777 of 1997 and Law of Hydrocarbons (*Ley de Hidrocarburos*), no. 3058 of 2005 its exploitation is considered a 'public utility' that superposes other uses. And it is a realistic threat, since also Lomerío seems to have a high potential, like the rest of la Gran Chiquitanía, although it still would last until 2000s until explorations would start. And by then some extraction companies could be stopped because they didn't fulfill environmental norms. (Vadillo P. et al., 2013) By generating high incomes through forestry and upgrading, possibly mining activities could be discouraged as well.

#### 5.4.2 Availability of financial resources, permanent sawmill and other equipment (in period T1)

Based on the growing awareness on environmental issues by the international community, not only international conventions were supported, but also projects funded that promoted conservation and sustainable exploitation of natural resources. One of these projects was Lomerío, with its effort of achieving FSC-certification. This provided the people of Lomerío the necessary financial resources to prepare, start commercial and sustainable exploitation of the forest and to invest and maintain a permanent sawmill. The donations were obtained by APCOB from HIVOS, OXFAM-America, SNV and the Dutch government (Birk, 2000) and by BOLFOR's funds from USAID, to support the people of Lomerío with their operation (McDaniel, 2003).

A permanent sawmill had been acquired, in addition to some other equipment, like trucks, tractors and a log loader (INT 10).

It proved not to be easy to operate the whole process in the region. To maintain the stage of the value chain that they reached, with sales to both national and international markets, it would be necessary to overcome at least the main problems. The problems found were the following (based on: (Birk, 2000; Markopoulos, 1998; McDaniel, 2003), filled in with experiences based on INT 5 and 10. The information based on the interviews in 2013 is indicated separately).

Operational problems related to the sawmill:

- Difficulty in reaching required quality for the international market, because of the quality of logs delivered, difficulty in mastering cutting techniques (also caused by high labor turnover, because of a rotation scheme of half of the workers and other priorities, see also next point), poor quality control and initially poor processing and packaging. This last issue was also caused by a lack of suitable processing facilities like a drying chamber, which had been contracted later on. Additionally, frequently too much timber was being cut of a specific species for a client; and for the rest no buyer could be found (INT 10). This led to waste and inefficiency;
- Workers didn't show up for work, because of prioritizing other activities like work on their lands and participating in festivities. At the same time they were not all very involved in the work at the sawmill. McDaniel (2003) indicated that some of them even felt ashamed when they didn't work on the land, based on the cultural view that agriculture was the basis of life and providing security for Chiquitanos. A former operator informed me that he remembered that the sawmill was not paying so well -so they had to continue working on their land (INT 10).
- Losing money, sawmill vehicles and equipment meant for operation of the sawmill, because of lending it to friends and family which was partly not being returned. The former operator (INT 10) explained that people involved didn't understand for what purpose the money needed to stay in the company. Additionally, the tradition of sharing income with other community members might have played a role. Income (before: natural resources) was traditionally shared in order to reach an egalitarian

society, with no economic differences among the families. In this way conflicts about economic differences were prevented and social ties strengthened. (Birk, 2000) Nevertheless, this issue lead to low productivity of the sawmill as well;

- Problems with repair and maintenance of the sawmill (INT5): in general production was seen as low (processing efficiency was 35-40%) and deliveries were 6-18 months late. One of the causes of this was that it was only possible to buy a used sawmill, since the funds that were pledged were transferred late. The exchange rate had changed that drastically that too less money had been available for buying a new sawmill;

Operational problems related to the timber and mode of harvesting:

- The most abundant species of trees in Lomerío was Curupaú (*Anadenanthera Colubrina*). This was not only a very hard species and difficult to cut (INT 5), but also an unknown species in the market outside Bolivia;
- The most commercially valuable species, Roble (*Amburana Urundeuva*), Cedro (*Cedrela fissilis*) and Morado (*Machaerium scleroxylon*), were relative scarce. One of the reasons being selective harvesting by timber companies which harvested legally or illegally during this period and before;
- Trees were harvested on basis of demand of the sawmill and not based on sustainable capacity of the forest. In the first general forest management plan of 1984-1986 had been made an overestimation amount that could be harvested sustainably (20 m<sup>3</sup>/ha instead of 2 m<sup>3</sup>/ha). This had been corrected in the next management plan of 1994.

Managerial problems:

- Low managerial capabilities, among others verbally agreeing on matters opposing written contracts in the beginning of the operation and (INT 10) unpractical decisions because the management stayed in their office. This lead to unclarity and conflicts. Additionally there was a high turn-over in management (INT 10). In 1994-1995 management capabilities were strengthened by involving an experienced foreign manager;
- CICOL didn't take up management responsibilities, so they kept relying on the management support of the project organization of APCOB, SNV and BOLFOR;
- CICOL had a double function, as management of the sawmill and representing body of TCO Lomerío;
- Communities were not participating nor involved in decision making, leading to non-transparency and social conflicts between CICOL and communities;
- Poor marketing of the sawn timber in the beginning. With involvement of BOLFOR in 1994 this had been strengthened and oriented especially to development of environmental conscious export markets of the former unknown species;
- As a result of low profitability, payments for logs to communities were often overdue.

In the end, it appeared not to be possible solve all main problems. Because of this TCO Lomerío lost its FSC-certificate in 2001. Additionally, the NGO's involved concluded it was

not possible to reach a productive organization and they cut their financial support. The sawmill was sold in 2003, after a short period of renting it out by CICOL to a company called Emacruz, who in the end refused to pay because they had to invest that much in being able to operate the sawmill (INT 38). This short period was the first movement of downgrading, to the stage of selling harvested timber to a sawmill. Hereafter the whole operation ended.

**5.5 Period T2 (2003-2005): downgrading until stage of sales of standing timber to timber companies**

After the successes and failures of the first period of upgrading, the communities were looking for alternatives, since they were still interested in commercial forestry, whether upgraded or downgraded.

CFO of Puesto Nuevo chose to partner with a timber company and sold its standing timber to them. This implied it downgraded its activities.

It is known that in 2003 and 2005 the following amount of hectares were harvested, see table 8:

Year	Surface (ha)
2003-1	242
2003-2	118
2005	310

**Table 8 Known commercial harvest area in period T2 (CICOL, 2008)**

During 2005 the logging had been executed in a partnership with timber company Petunos of Concepción (INT 14, 17 and 32). The other amounts were also being harvested in a partnership with a timber company (INT 14, 17), but no further information could be retrieved about this.

The main factors that played a role in continuing in a downgraded way of cooperation were: availability of an advance payment of the timber companies (factor 8), availability of harvesting equipment (factor 11) and the conviction to work with lower quality standards than required internationally (factor 10).

**5.5.1 Advance payment from timber company(in period T2)**

Puesto Nuevo was willing to continue with commercial forestry, since they had some experience now and they needed cash income, in addition to the natural resources they retrieved from agriculture and the forest.

However, income based on timber is generally being generated when the timber leaves the forest, so it is necessary to pay all costs of the activities executed before on another basis. Based on a traditional habit of advance payments, timber companies –who now realized they had to cooperate with TCOs when having no concession themselves- were prepared to pledge an advance payment (‘adelanto’ or ‘habilito’), without any interest to be paid (INT 36). An

advantage for Puesto Nuevo was that they already had available a costly general forest management plan (of 1998) that was still valid and on which basis they could continue commercial harvesting on a legal basis. This management plan was being paid by the NGO's with whom they had cooperated before.

Nevertheless, CFO of Puesto Nuevo was paid a rather low price by the timber company, according to a member of the forestry committee (INT 17). It was indicated by another member of the forestry committee that the main reason for this was their lack of negotiation skills by then (INT 15).

In addition to a price that is paid for the timber, most costs for harvesting were carried by a timber company directly. Community members who work for the timber company, for cutting trees and logs, were being paid a salary (INT 32).

At that time, no alternatives to access financial resources were available.

It was not possible for the community to self-finance harvesting activities during period T2.

They were largely involved in agriculture for subsistence, that didn't generate cash.

Theoretically money could be saved from a former harvest, to be able to bear the costs of a new harvest. But in Puesto Nuevo all income from forestry was divided among the families (INT 17). Some other CFO's in another TIOC, Monte Verde, spent a part to forestry, for example by buying equipment (INT 22).

In a Bolivian study on financing systems in department Santa Cruz, including CFO's in Lomerío, also other self-financing mechanisms were being distinguished: contribution of work force by community members without being paid and payment of forest engineer in kind –which is a part of the harvest (Benavides et al., 2014) The first way of financing didn't occur in Puesto Nuevo (INT 32) and it is not known whether the last way was practiced during T2, although it is not very likely, taking information based on period T4 as a reference (INT 15, 17).

The NGO's that they had cooperated with before, during the first period of upgrading, had left the area and they and other NGO's were not prepared to finance the harvesting and/or sawing costs. In Lomerío no banks or other financial institutes are present, although in Concepción, the nearest town, there were. (INT 5, 8)

However, it appeared banks and other financial institutes traditionally are not involved in the forestry and timber sector. Only a few got involved, like IDEPRO in department Santa Cruz, but they requested a company guaranteeing a credit to a community or small forest enterprise as well. Since this credit was higher than the expected price for sales of the harvest, is also was important the company itself was solvent. (Benavides et al., 2014) So a CFO would need to find, additionally to a financial institute a company that is willing to support a credit.

Furthermore it was remarkable Benavides et al. (2014, p. 30) remarked that 'as guarantee for a credit never the community harvest rights was considered'. The reason for this is not being discussed, but it might be the legal framework is contributing to this. In the Forest Law (1700, 1996) it is made clear all forest is owned by the State; and they are the ones that distribute the use rights. Additionally, TCOs have the exclusive harvest rights. (Vargas et al., 2009)

(Cárdenas et al., 2012; Tamburini, 2010) In the Political Constitution of the State (2009) the discourse changed somewhat, because over there is stated that all natural resources are owned

by the 'Bolivian people' and the State is administering it, but still the use right are being granted by the State. (Valenzuela, 2008) So the State is the entity to distribute the use rights and these might not be sold.

Moreover, in Law INRA, where also the rights for TCOs (per 2009 renamed TIOCs) are being mentioned it is stated that land rights of TCOs are 'inalienable, the land rights can't be sold; irreversible, it may not be attached; and imprescriptibly, the rights can't be lost in the course of time; in addition that it is indivisible' (Valenzuela, 2008), p. 44. So this makes it also impossible for a bank to take over land rights of a CFO, being part of a TCO, in case they don't comply with paying back the credits.

Several other reasons for banks and financial institutes not to be involved in the forestry and timber sector found are the following. For Bolivia has been found, that 'financial institutions and forest organizations have a lack of mutual understanding, the quality of the financing proposals is low and inadequate financial instruments, products and guarantee systems exist' (Hamers et al., 2012) p. 109. Lack of mutual understanding was influenced by inexperience in judging whether a proposal was based on credible forest management and fear of contributing to deforestation from the side of the financial institution, from the side of financial institutes; and no understanding of the need of all paperwork in combination with no believe that all effort that would need to be contributed to this would result in a loan. (Hamers et al., 2012) Additionally, based on experiences in other Latin American countries, reasons behind the mentioned ones for banks and financial institutes not to be involved in the forestry and timber sector found were: inequity in the division of benefits and costs in the timber value chain, the long-term nature of forestry cycles and high perceived risks. Low productivity and efficiency, by use of obsolete technologies, often without sustainability considerations didn't support interest in the forestry and timber sector either (Savenije et al., 2008) If Puesto Nuevo would use an alternative formal financing system in case it would be available and not work with a timber company, they probably also would work with simple technologies. The responsible authorities in both Lomerío and Puesto Nuevo indicated they are committed to work in a sustainable way, in line with the Forest Law (INT 19, 28).

In an Bolivian study on financing mechanisms in Santa Cruz (Benavides et al., 2014) also the following external financing mechanisms were found: loans to community members with a salary who could use this for financing forestry activities, advance payment by clients with equipment or transport vehicle other than timber companies or an exception of the Forest authorities for not having to pay for a forest management plan. Additionally they mentioned that most small enterprises (incl. CFO's) used the diverse financing mechanisms in combination.

However, in Puesto Nuevo they didn't use these opportunities.

They accepted the offer of the timber company/ies with an advance payment; and sold their standing timber.

### 5.5.2 Availability of special harvesting equipment and unavailability of sawmill (in period T2)

The community already possessed some chainsaws. To harvest commercially it is however important to have some additional mechanized equipment available as well. In the region some equipment was available like (agricultural) tractors, cars/ pickup trucks and trucks, but no specific harvesting equipment (INT 15, 28). As later on was proved in 2009 (T3), specific harvesting equipment like track dozers (*'orruga'*, used for making larger tracks that allows cars and other machinery to enter), skidders (used for dragging cut trees) and log loaders (*'pala cargadora'*) is not indispensable, but it makes harvesting a lot easier and more efficient (INT 5, 15). Additionally, no sawmill was available in the region that could facilitate upgrading. The permanent sawmill that was being used before had already been sold. Apart from this, the community had no money available to rent or buy additional mechanized equipment, whether these were specifically for harvesting and sawing or not, as is being described as factor above.

Since it sounded attractive to use the specific machinery for harvesting offered by the timber company/ies, they accepted their offer, which was part of the contract. The timber company harvested the logs and subsequently transported them to their sawmill in Concepción, which was a permanent sawmill with a band saw. (INT 32)

### 5.5.3 Conviction to work with lower quality standards than required on the international market (in period T2)

Based on the experience with upgrading through sawing with the permanent sawmill during T1 people of Lomerío were very convinced they didn't want to continue based on these high kind of quality requirements requested by the international market (INT 5, 10, 28). A lot of the sawn timber had been refused and even sent back. In the beginning this was due to cracks caused by a too high moisture percentage since drying was not applied yet. But in general because it was –among others- not smooth enough, had knots or its fibers were twisted. This had cost them a lot of income and already harvested wood had been wasted. (INT 5, 10). They themselves called the wood 'rustic' (*'rustico'*) and are aware that it is very hard wood of good quality. They for example expressed they appreciate to use it for improving their houses and other uses (INT 5). What also played a role is that timber sawn by a sawmill is much straighter than sawn with a chainsaw. People in Lomerío didn't have access to this kind of timber before. Clients outside Lomerío normally only use wood sawn with a sawmill. (INT 28) Due to this experience in period T1 they didn't want to sell it to the international market any more. At the same time timber companies were interested in the timber, which they wanted to saw themselves with their a sawmill, since they are aware of its quality and hardness (INT 12). This contributed to a choice for selling their standing timber to timber companies; and downgrading in comparison to the global value chain that they were covering during T1.

This factor conviction to work with lower quality standards than required on the international market, was found to still play a role during the field research in 2013. By then the president of TIOC Lomerío ascertained that in case one would upgrade again this would be to regional and national markets and not to international ones, because of this factor (INT 20).

This period T2 came to an end, because of the characteristics of the round wood as well. Timber company Petunos indicated that a reason to end the partnerships with communities in Lomerío was that the trees were too thin to use for floors, which was the main product of this timber company (INT 32) CFO of Puesto Nuevo on the other hand indicated that the partnership ended because the price offered was too low. (INT 15, 17)

**5.6 Period T3 (2009): upgrading until stage of sales of sawn timber with a portable sawmill by CFO of Puesto Nuevo**

The community assembly of the CFO of Puesto Nuevo decided to join in a pilot in upgrading to the stage of selling sawn timber. The total project took place during a few months in 2009. (INT 15), Sawing took place during 39 days (Chubiru, 2010), until the start of the rainy season in November 2009. This pilot was part of a larger project of NGO WWF in Lomerío. Other horizontal partners in the project, apart from NGO WWF were: NGO APCOB (*Apoyo para el Campesino Indígena del Oriente Boliviano*/Assistance for indigenous peasants of East Bolivia) in the initial stage and NGO IBIF (*Instituto Boliviano de Investigación Forestal*/Bolivian Institute for Forestry Research) during the implementation of the pilot (INT 3, 33, 36). The CFO of Puesto Nuevo was supported via organizations that were part of the supra-communal organization CICOL: AFIL (*Asociación Forestal Indígena de Lomerío*/Association indigenous forests of Lomerío) and ESFOR (*Empresa de Servicios Forestales en Lomerío*/Forestry service enterprise for Lomerío). (INT 3, 15, 36)

As clients for the sawn timber were found:

- Community carpentry association of TCO Lomerío (Asociación de Carpenterías comunitarias de la TCO Lomerío) in Puquio (Chubiru, 2010);
- Private client Martín Luis Mendoza from Santa Cruz de la Sierra (Chubiru, 2010); and the rest was sold after the pilot to
- Several wholesalers in Santa Cruz de la Sierra (since the local market in Lomerío was not interesting enough with regard to the price) (INT 27).

Additionally, some sawn timber was used by families in Lomerío, to improve houses (INT 21).

The following amount of hectares and volumes of timber were harvested, see table 9:

Year	Surface (ha)	Surface (ha) approved	Volume (m3)	Volume (m3) approved
2008-2009	4,8	241,63	61,3	1.103,42

**Table 9 Known commercial harvest area and volume in period T3 (TCO Lomerío, 2010)**

At the end of the project, the only 4 species harvested of the 14 approved were: Roble

(*Amburana cearensis*), Tajibo (*Tabebuia impetiginosa*), Tarara (*Centrolobium microchaete*) and Tarara colorada (*Platymiscium ulei*) (TCO Lomerío, 2010). Reasons were the demand in the market during this short period of sawing and the hardness of the wood, since harder species are more difficult to saw (INT 27). All the harvested species were softer species, of which Tajibo is suitable for construction. The others are suitable for making furniture. (INT 6, 27, 28) It was seen as a disadvantage that only a few species could be sawn, in relation to profitability of the sawmill, since in the area of Puesto Nuevo a lot of harder species grow, especially Curupau and Serari (INT 27).

To saw the project organization had rented a portable sawmill, Wood-Mizer LT40. This sawmill came from Chapare, department Cochabamba, where it was used for a large project financed by FAO before. (INT 3)

The main objective of the pilot during period T3 was gaining experience with the use of a portable sawmill in Lomerío and to determine whether this was profitable or not. (Chubiru, 2010; INT 15, 19, 27)

In Puesto Nuevo several factors were found to enable upgrading until the stage of sales of sawn timber: interest in increasing cash income (new), availability of financial resources (factor 8), availability of portable sawmill and other equipment (factor 11), personal relations (factor 13) and capabilities of community members (factor 3).

### **5.6.1 Interest in increasing cash income (in period T3)**

#### *General*

The most common reason mentioned to be involved in commercial forestry and upgrading by the people of Puesto Nuevo during this period was ‘money’. By asking, it was found out they meant an expected increase in available cash resources.<sup>25</sup> The people of Puesto Nuevo produced and gathered almost everything they need from the forest themselves. They don’t buy their rice, yucca and construction material in a shop and they generally don’t have a paid job. So if they need cash resources, whether for transport, household utensils, beer or education, it needs to be generated somehow. Hereafter will be discussed the current economic resources, a development in needs, expected increase in cash resources because of upgrading and other competitive resources that might fill in the need for cash.

#### *Economic resources*

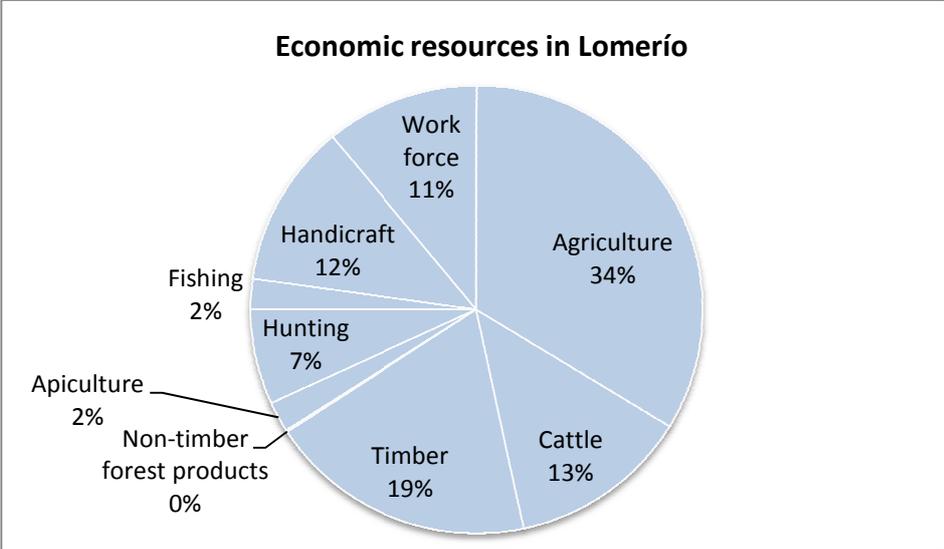
Of the diverse economic resources of people in Lomerío, agriculture for subsistence, forestry and cattle pasture are the main ones. See figure 7.

It can be noticed the largest economic resource, agriculture, is a resource for subsistence. This implies no cash is generated by a large part of the activities they are involved in, but they also don’t have to spend money for it. Other economic resources for subsistence are: non-commercial forestry, non-timber forest products, hunting and fishing. (Vadillo P. et al., 2013; INT 4, 14, 19, 43). Hunting has become less important, because of a reduction in availability of wild animals and increase in raising poultry and pigs (INT 25). The non-timber forest in

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<sup>25</sup> With my own background as researcher, coming from a society built on generation and use of cash resources, I first didn’t understand the full impact of this. But it appeared not a lot of cash is available in this self-supporting society, as will be explained.

Lomerío include more than 250 different plants and honey from the forest, used by the people for nutritional, medicinal, ritual and construction purposes (Markopoulos, 1998); INT 4, 14 and 18).



**Figure7: Economic resources in Lomerío** (in percentages). Source: (Vadillo P. et al., 2013), p.4.

Work force, cattle farming, commercial forestry (timber), apiculture and handicraft in addition to artisanal mining are the economic resources that generate cash income (Vadillo P. et al., 2013), INT 4). The first three resources were also found to be present in community Puesto Nuevo (INT 14, 19)

Cattle was introduced in the region by the Jesuits in the 17<sup>th</sup> century. Commercial forestry plays a role since the 1980s, although harvesting doesn't take place every year. (Birk, 2000; CICOL, 2008) In Puesto Nuevo income generated by forestry is equally divided over all families (INT 17). In other CFO's in TIOC Lomerío and another TIOC in department Santa Cruz, TIOC Monte Verde, sometime also goods for the whole community are bought or parts are reinvested in forestry. (INT 22, 30)

Work force first consisted mainly of work on agricultural estates and in towns outside Lomerío. (Birk, 2000) Nowadays, also service related activities occur in Lomerío. These activities vary from service undertaken if necessary to more permanent services. In Puesto Nuevo two youngsters provided transport services with their motor cycle and some persons occasionally offered their service in tree felling with their chain saw to other communities. (INT 12, 43, 44 and own observations, 2013). More permanent services are the small shops - in Puesto Nuevo and in almost every other settlement in Lomerío. In community San Lorenzo also a hostel existed (in other communities the few people that stay are offered a place in the school or parochial home without costs, but with the opportunity to give a contribution) and in community San Antonio de Lomerío, the capital of the municipality, some restaurants (although it depends on availability of the cook and food if they are open). (INT 4 and own observations 2013).

Large-scale industries are not present in Lomerío (INT 4).

The main economic resources in the department, Santa Cruz, are: large scale agriculture

(sugar cane, rice and soya), cattle farming, mining and forestry. Large economic growth of the department Santa Cruz had generated important income for the whole country. The economic activities in the department are however concentrated around Santa Cruz de la Sierra, the capital of the department. (Birk, 2000)

### *Development in needs*

Usual expenditures in Lomerío are expenditures on health, education, transport, improving houses, matters for the community or short term oriented expenditures like clothes, food, beer, coca and presents. In only some communities part of the income based on forestry is reinvested in forestry related matters (INT 10, 22, 30, 41).

During the last few years, services like electricity and mobile phone connection were introduced in Lomerío (KEY 1, 2). Based on this, several electrical appliances were bought as well, like refrigerators and televisions in addition to mobile phones (own observations 2013). Subsequently, use of mobile phones needed to be paid as well.

In 2000, Birk still described Lomerío as a society based on subsistence. In the meantime, this society seems to develop from subsistence to commercialization, especially after the introduction of electricity and mobile phone connection.

This also implies an increase in need for cash income. During period T3 this increased need for cash income led to interest to explore upgrading in the timber value chain and joining in the pilot. And since the pilot involved upgrading to the stage of sawing timber, the CFO upgraded to this stage.

Apart from using the regular economic resources mentioned before and exploring productive opportunities like upgrading in the timber value chain, also other opportunities were created. It was for example noticed some families started to sell their fruits instead of sharing them like before (INT 26). And this development continued. Later on, in 2013, it was discovered some people started to steal, with the motive of wanting a mobile phone (INT 26). The local priest<sup>26</sup> warned that in order to keep a moral healthy society it would be important to point at other possibilities to have access to goods, like saving and having patience; or point at values of wellbeing through sharing instead of wealth through goods. (INT 26)

### *Expected increase cash resources through upgrading*

The reasoning behind upgrading as a mean to generate more cash income, was the expectation that it could provide an increase in cash income in comparison to selling trees standing to timber companies (Chubiru, 2010).

Prices for sawn timber were substantially higher than prices for standing wood during this period. However, it was not clear yet how high the possible income would be for a community, because the related costs were not known yet. Therefore, the pilot was focused on calculating costs related to upgrading and building experience in upgrading. In the pilot was upgraded to the level of sawing with a portable sawmill.

TIOC Lomerío had already been involved in upgrading before, during period T1. During that period the permanent sawmill had not been profitable. The result had been that communities

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<sup>26</sup> The priest came from South-Korea and had been part of a comparable societal change in his home country.

were only paid for their logs –although not always- and extra cash income, that should have been generate through the permanent sawmill, didn't reach the communities. (Markopoulos, 1998; McDaniel, 2003)

Nevertheless, as has been mentioned in the project evaluation of the pilot in period T3, the donor and diverse partners wanted to 'brake with the myth that it is a risk to facilitate communities with a portable sawmill' and share their experiences with other communities in the TIOC (Chubiru, 2010) p. 7. During the project, various costs were calculated, like rent and maintenance of the equipment, fuel and lubricants, salary and food. The outcome was that (per unit) profit was made. Based on this was concluded an added value had been generated for the community. (Chubiru, 2010). The author of the evaluation added during the field research in 2013, that profitability is highly dependent on prices in the market. These prices are different in different locations (in Lomerío lower prices are paid than in the cities, Concepción and Santa Cruz de la Sierra), the market developments in both the market for standing timber and sawn timber, capacity of self-prefinancing of parts of the timber value chain improving negotiation position of a CFO if selling timber standing (INT 27) and negotiation skills (INT 22). In the project evaluation (Chubiru, 2010) was subsequently found that both various variable and fixed costs were taken into account in the evaluation. However, the initial costs like training and other operational fixed costs like salary for supporting staff, were paid for by the donor and not included in the calculation. The project manager during the time of the project, explained these supporting staff contracted by the donor were: specialists in the area of forestry, administration, commerce, a manager and a driver (INT 36). Additionally, the volume that had been produced was small.

#### *Competition on land use*

Forestry possibly competes with cattle for the use of available land. Until now, Puesto Nuevo executed both activities. Some people however favored cattle as a mean of cash income, since it generates a higher income per family according to them and one is paid faster, since a 'tree takes ages to grow'. (Birk, 2000)(INT 14). So with the increase in needs for cash income, cattle might be favored, based on its faster return on investment.

#### **5.6.2 Availability of financial resources from NGO (in period T3)**

Although many of the costs were covered by the profit during the pilot, as discussed above, the initial project costs were paid for and an advance payment was pledged by WWF (INT 36). It had been explored as well whether other possibilities were available, for example an advance payment by a private client from Santa Cruz de la Sierra or a credit from the own service organization ESFOR, but these options didn't work. (Chubiru, 2010). So the CFO upgraded based on financial resources from an NGO.

#### **5.6.3 Availability of portable sawmill and other equipment (in period T3)**

For the pilot project a portable sawmill had been rented, which was being transported and legalized to use in Puesto Nuevo. However, what had not been available in the beginning, was equipment necessary for harvesting. And since a harvest needs to be done first, before one can saw, general equipment for harvesting had to be acquired as well (WWF, 2010), INT 3).

### ***General harvesting equipment***

As described before, for period T2, in the region some equipment was available like chainsaws, (agricultural) tractors, cars/ pickup trucks, trucks and motor cycles, but no specific harvesting equipment. For the project in period T3 were rented a tractor and a motor cycle. Additionally, a pick-up truck of the project organization could be used. ((Chubiru, 2010), INT 3 and 15) The tracks were cut by hand since no track dozer was available, with the use of machetes, axes and chainsaws (INT 15, 18). Ten people were involved in clearing the tracks (INT 18). This was being experienced as a lot of work (INT 15). The trees were cut with a chainsaw. For dragging the trees to the log landing the tractor was being used instead of a skidder, which was more difficult but doable (INT 15, 18). Lifting logs without a log loader was heavy work, although it had been done with a few people together assisted by a pole (INT 5).

Working in this way, with machetes, axes, tractor and manpower had the ecological advantage the soil was not being compacted as much and roots of trees damaged less than with the heavier machinery. In this way trees can easier re-grow. (Chubiru, 2010)(INT 36)

### ***Portable sawmill***

Specified logs were, after being selected and the requirements were made clear by the clients, sawn at the log landing with the portable sawmill Wood-Mizer LT40 with band saw, operated by community members (INT 25). They had available protective equipment like helmets, goggles, gloves and protective shoes (pictures available in IBIF's project file, 2009). In the forest a tent had set up for equipment and shelter (INT 25).

The portable sawmill had been brought to the forest, in the forest itself it could be moved on its wheels (INT 15). The sawn timber needed to be transported to the client, but since no transport was available from the community, the clients were requested to pick up their wood themselves, against a reduction of the price of the wood. (INT 17)

### ***Operational problems related to the sawmill***

A motor cycle was being provided during the period harvest for retrieving fuel and lubricants for the portable sawmill and warning the project management in case of problems.

Additionally for bringing the workers to the forest, including material for building a shelter and provision of food, a car was available at times. However, the motor cycle was frequently being lend to family members by community members involved, so at times the sawmill could not continue because of lack of fuel and lubricants. (INT 3) A storage possibility for fuel was not available in the forest and distance to be travelled before fuel and lubricants could be retrieved was large (WWF, 2010). If the project management visited the project fuel never was a problem, since their car was being used to buy fuel instead. (INT 3)

Unfortunately frequently problems occurred with the portable sawmill, because its electrical circuit and band saw failed. Reasons were that the sawmill was old and the timber was hard. Timber in Lomerío is harder than in Chapare, where the sawmill first was been used (INT 15). Since parts nor knowledge about how to repair an electrical circuit were available in Lomerío, these parts and a specialist had to be brought from Santa Cruz a few times (meaning each time one day travelling) (Chubiru, 2010; INT 3, 36). It appeared especially this brand of sawmills,

Wood-Mizer, has a more complex electric circuit. (INT 3) It was remarkable that the community members involved in sawing didn't mention problems with the electric circuit nor the band saw specifically, nor problems with availability of the sawmill in general, only that it was 'an old one'. Instead they were all very positive about the experience and they were proud that they had been producing 'beautiful' wood. (INT 15, 19, 25) Only after asking the community members involved directly about these problems, which were being indicated by the project management to me earlier, they agreed. They explained that for them it had not been a problem, since it was being taken care of by the project management. (INT 17). Nevertheless throughout the project they had to wait several times because of the sawmill that was not functioning (INT 18), so they were aware of a problem. Based on this can be concluded the project management had been organized quite centrally by the NGO involved and the community had not felt problem owners. This could color their experience in a too problem-free view with an eye on future plans of upgrading and using a portable sawmill.

What also was experienced during the pilot project, was that people were showing up later than agreed upon (Chubiru, 2010). The reasons found for this were that people had other obligations like work they have to do on their land (INT 15, 27). Additionally, often people gave priority to festivities as well, as already became clear during the experience with upgrading with the use of the permanent sawmill during period T1. After quite some delay in the project, the project management had requested them to provide an extra effort to saw wood before the rainy season would start. Which they agreed upon. (Chubiru, 2010)

#### *Operational problems related to the timber*

The main operational problem related to the timber was the hardness of most species. This had caused failures in the sawmill. Therefore it had been decided to continue with softer species of timber (Roble, Tajibo, Tarara and Tarara Colorada), but it meant the rest of the species were not used (INT 15, 25, 27). Since the CFO preferred to sell all species, it was according to them, necessary to look for another type of portable sawmill than the used Wood-Mizer LT 40, or at least a different type of saw (a disk instead of a band saw). (INT 15, 21) However, a specialist in sawmills indicated also different types of bands for a band saw exist, also for harder types of wood. (INT 34)

During the pilot project also some problems were encountered through the quality of the logs. Clients of sawn timber outside Lomerío have high demands on the quality of the wood. (Chubiru, 2010) The quality of the product was however sufficient for these local and regional clients. It would have been a different case in relation to the requirements on the international market. (INT 3)

In this case the pilot only had been executed during 39 days and this was fine for the experience in operation. Nevertheless, the operational problems could have been a constrain in the longer term for operating on this upgraded stage, since it causes loss of income –what in the end wouldn't support durability of economic activities. It was remarkable all operational problems encountered were comparable with those during the first experience in upgrading with a permanent sawmill (during period T1): the mentioned missing motor cycles

to retrieve fuel, not having knowledge about repair in addition to people showing up late for work. Only during period T1 also money of the sawmill had been borrowed and given to family and friends, which was not the case during this second period of upgrading, period T3. A large difference was they didn't encounter that many problems related to the timber: in period T1 many problems occurred as described in section 5.4.2 and in period T3 no problems were encountered through the sawn timber as described above.

In addition to physical availability of equipment to be used, the financial side of the story, money necessary for renting or buying equipment, maintenance and repair requires attention as well. In this case a donor was available but if this isn't the case, and for most CFO's and for Puesto Nuevo after the project this is reality, the availability of equipment and subsequently upgrading will be a challenge.

#### **5.6.4 Personal relations (in period T3)**

Puesto Nuevo was being selected by the project management as one of the communities of Lomerío to execute the pilot. What helped during this selection was that the president of AFIL one of the organizations closely involved, was Hugo Faldin<sup>27</sup>. And he originates from Puesto Nuevo.

The reasons given for using this connection was: that it was useful, since it was first thought another community would participate in the pilot project of another TIOC, but this didn't continue. Therefore another community had to be found (INT 15). Additionally, for implementation purposes it was thought to be helpful that a personal connection existed, since Hugo knew all people in the community (INT 3). So the personal relation enabled being selected for the pilot project, and since this pilot project involved upgrading, the personal relation enabled upgrading.

#### **5.6.5 Capabilities of community members (in period T3)**

To be able to operate the portable sawmill six community members ('youngsters') from Lomerío and some people from other communities were trained to do so. They participated in a course of a few days organized by IBIF in relation to the pilot project. During this course they were explained about how to operate a sawmill and what preventive measures to take against its risks, especially related to the band saw. The content of this course was: installation of a portable sawmill, procedures for sawing, sharpening the saw, maintenance of the equipment, use of personal protective equipment and industrial safety and determining volume of sawn timber. (WWF, 2009)

Operating the sawmill was not difficult according to operators involved (INT 17, 18 and 25), although in the final report was mentioned some training on the job was necessary as well, before one could operate productively (WWF, 2010). No capacity was available for maintenance and repair. What turned out to be difficult to do was determining the volume of the sawn timber, which is important during sales of sawn timber (INT 19).

Related to harvest activities, the community members already knew how they had to execute a commercial forest inventory, since they already had been involved in this before, during the

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<sup>27</sup> Hugo Faldin was the legal representative in Puesto Nuevo during the field work in 2013 as well.

former periods T1 and T2 (INT 15). Additionally they were informed and trained continuously by AFIL (INT 5). It was not necessary to completely master all skills themselves, since also a forest engineer was available to supervise the activities (INT 15). This forest engineer had prepared the inventory, had written an annual forest management plan (POAF) for T3 and had arranged the necessary harvest permissions. However, only for arranging necessary harvest permission a registered forest engineer is strictly needed. Other activities could be executed by community members as well as they would like to.

Community members knew how to use GPS and maps to find the right tree and operate a chainsaw to cut a tree. Regarding directional felling, some of them were more experienced and skilled than others. Other silvicultural techniques like liberation of trees of lianas had partly been applied during the execution of the commercial forest inventory. During harvesting it usually was not done (INT 17). The reason given by some people involved was that it takes too much time (INT 25, 27). Setting free future trees to harvest or other silvicultural techniques were not applied (INT 15, 17). All measures that are taken to promote efficient and sustainable harvesting (both from economic and ecological perspective) were described in the general forest management plan (CICOL, 2008). This forest management plan is based on the Forest law and related Forest norms. Activities were at times more and other times less intensively supervised by the forest engineer and promoters of AFIL (INT 27). A member of the forest community indicated that if specific measures need to be taken with regard to sustainable harvesting, the forest engineer would indicate it (INT 17). Nevertheless, the forest engineer himself doubted whether the indicated measures were carried out (INT 27).

Although the specific harvesting equipment was not available during this period (T3), with this equipment alone the community still couldn't have done much with it. Operating it requires quite some experience. Operators of the timber company of Arboleda, who was partner of CFO of Puesto Nuevo in 2012-2013 (in period T4) explained they had learned operating the equipment by watching carefully to others in their operation and experience (Conversation during OBS 5)

During the pilot no community members had been involved in the project management, marketing and accounting aspects (INT 36). Members of the forestry committee of the CFO additionally indicated that administrative capabilities -especially related to financial matters- and organizational capabilities to organize the whole exploitation were weakly developed in the CFO. Based on this he felt upgrading would be a challenge for the CFO without further training at this point (INT 15, 19). Some people even were found to doubt (INT 5), based on this weakly developed administrative skills, whether large capital intensive investments needed to be made again for upgrading, since the experience with a permanent sawmill during period T1 was not successful at this point. But others thought it would be feasible since investments in portable sawmills and simple equipment for harvesting are less capital-intensive (INT 10, 20).

**5.7 Period T4 (2012-2013): downgrading until stage of arranging permission to harvest**

In period T4 Puesto Nuevo has downgraded again until sale of standing timber to a timber company. Nevertheless, Puesto Nuevo managed to upgrade two stages in period T4 in comparison to period T2: to carrying out a commercial inventory and arranging permission to harvest a specified amount (see also section 5.2). The CFO of Puesto Nuevo still sold their timber standing, but they were contractual responsible for the commercial forest inventory and arranging a permission afterwards (Timber company la Arboleda SRL et al., 2012), p 2. A reason given for this construction is that they know their forest best. (INT 15) Since this is still at a lower stage than the period before, period T3, when they were selling trees after sawing in total the activities of Puesto Nuevo downgraded.

The timber company, their vertical partner during this period is: Arboleda SRL. They have a contract for 2012, but because they couldn't finish the work in 2012 before the rainy season started, they continued harvesting and retrieving the logs from the forest in 2013 (INT 27).

The following amount of hectares were harvested, see table 10:

Year	Surface (ha) approved
2012-2013	357

**Table 10 Known harvested area in period T4** (TCO Lomerío, 2012)

During period T4 (2012-2013), the following factors were found to influence downgrading, which will be described in the following sections: advance payment from a timber company (factor 8 in 5.7.1), availability of special harvesting equipment in combination with unavailability of a portable sawmill (factor 11 in 5.7.2), no availability of large and good quality forest (factor 7 in 5.7.3), increase in demand standing timber and logs (factor 5 in 5.7.4) and prioritizing other activities by the community (factor 15 in 5.7.5).

Two factors that enable downgrading, were both found in period T4 (2012-2013) and period T2 (2003-2008): advance payment (factor 8) and availability of harvesting equipment in combination with unavailability of a portable sawmill (factor 11). Furthermore the factor conviction to work with lower quality standards than required on the international market (factor 10) was not playing a role during this period. In period T2 the communities of Lomerío just had the experience of delivering to the international market with problems in the field of quality during period T1, so as a reaction they didn't want to get involved in practices alike in period T2. In period T4, 10 years after the permanent sawmill had been sold and period T1 ended, this was not the first thing on people's mind any more as a reason to downgrade. At the same time, when talking about plans of upgrading again in 2013 with the president of CICOL, this factor was used again as an argument to upgrade and commercialize to the local market instead of the international market. (INT 20)

In addition to the comparable factors described above for period T2, the following factors played a role during period T4 in downgrading: availability of a large and good quality forest (factor 7), increase in demand for standing timber and logs (factor 5) and prioritizing other activities by a community (new factor).

The factors will be described hereafter.

#### **5.7.1 Investment and advance payment from timber company (in period T4, differences with period T2)**

The CFO of community Puesto Nuevo used financial resources from a timber company in period T4. This factor, more precisely described as investment and advance payment from a Timber company played almost the same role in period T4 as in period T2. The differences are described in this section. For further information see the description of period T2 (section 5.5.1).

Accepting financial resources from a timber company implied downgrading, since the timber company preferred to control the several activities in the value chain (INT 12). In this case they needed an advance payment to be able to pay a forest engineer, paying salaries for their work, making a camp site in the forest with the necessary facilities, food and transport. The difference with period T2, is that by then the timber company was responsible for executing the commercial forest inventory and paid all costs, in addition to a salary to the community members who were involved.

Puesto Nuevo still had a valid general forest management plan available (CICOL, 2008), paid before by WWF in the framework of the project that ran in period T3. So this didn't need to be paid for or pre-financed by the timber company in period T4.

The price negotiated for the standing timber had increased in comparison to the former period of downgrading, period T2. This was according to those involved, influenced by better negotiation skills and an increase in market price (INT 15, 27).

#### **5.7.2 Availability of special harvesting equipment and unavailability of portable sawmill of the right dimensions (in period T4, differences with T2)**

The factor availability of special harvesting equipment in combination with unavailability of a sawmill enabled downgrading in the same way as in the former period of downgrading, period T2. The only difference is that in the meantime two portable sawmills were available, both of the type Wood-Mizer LT15.

One portable sawmill of the type Wood-Mizer LT15 was located in Puquio, in the old facility of the permanent sawmill, where also the Community carpentry association of TCO Lomerío was located (own observation, 2013). The other portable sawmill was located in San Lorenzo. These two portable sawmills have a lower capacity than the Wood-Mizer LT 40 used for the pilot during T3. Therefore these were not considered to be useful by the CFO of Puesto Nuevo nor by AFIL, the representing body of communities that execute forestry, part of the supra-communal organization CICOL. (INT 10, 15, 21) Therefore was added to the title of this subsection portable sawmill 'of the right dimensions'.

Nevertheless, at least one of the portable sawmills was occasionally used on spot or in the forest in other communities. When it was used on spot in Puquio, communities brought their logs to the portable sawmill and carried the planks afterwards or sold these to the carpentry. It was necessary to arrange transport for this option. (INT 6, 7) In the past the portable sawmill was also used in the forest. This was done in the following way: after an advance payment was pledged by the carpentry to a community, a truck was rented to carry the portable sawmill and assistants contracted to carry the logs and planks. Subsequently, the timber was delivered and the final payment done. (INT 6) The portable sawmill afterwards was not used anymore, because of the distance to the forest and the small capacity of the transport means and general harvesting equipment (a tractor to skid the logs) didn't work well. (INT 11) Also this smaller portable sawmill was a used one, retrieved from Cochabamba, with the assistance of a donor. It was first meant to be used in another location in Lomerío, but due to political problems the sawmill was denied and transported to Puquio instead. The sawmill had not been legalized. (INT 7, 28)

A few other CFO's in department Santa Cruz, like the CFO of community Palestina in TIOC Monte Verde, acquired equipment based on money saved from the harvest. This equipment was mostly a pickup car and a truck, but the CFO of community Palestina bought a portable sawmill in 2013 as well. (INT 22)

Finally, what was mentioned several times as well in TIOC Lomerío, is that it is easier for communities to work with timber companies. In this way all necessary equipment is already available, in addition to financial resources to organize a harvest (INT 15).

### **5.7.3 No availability of large and good quality forest (local) (in period T4)**

CFO's in TIOC Lomerío have small amount of forests available in comparison to CFO's of other TIOCs, for example TIOC Monte Verde, both in department Santa Cruz, Lowlands Bolivia (INT 3, 36, 41).

Apart from a small amount of forest it was not of a good quality either. This was a result of legal and illegal harvesting in the past by large timber companies, before people in Lomerío started with commercial forestry and gained land and forest use rights (1980s). These large timber companies had reduced quality of the forest, because they had harvested principally the most commercial valuable species. (Birk, 2000)

When studying the current forest general management plan or the northern region of TIOC Lomerío (CICOL, 2008), it was found that based on the determined harvesting cycle for sustainable yield of 30 years, a maximum amount of timber of 12,103 m<sup>3</sup> can be harvested each year for a sustainable yield. This maximum amount of timber was in the northern region of TIOC Lomerío equal to a maximum of 990 hectares per year, based on the quality of forest present. The amount of timber needed to be shared by nine CFO's, including the CFO of Puesto Nuevo. Since this amount was regarded to be small, the CFO's didn't plan to harvest every year<sup>28</sup>, whether in an up- or downgraded mode (INT 3, 15, 41). ABT, the forest

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<sup>28</sup> The forest stock that theoretically could be harvested sustainably in a year is saved to combine with harvests in later years

authorities, was the body that monitored whether still sufficient forest was available to provide a harvest permission for that year in the region. (INT 24, 41)

The timing of the planning depended on other factors found as well though, like availability of financial resources (factor 8, see section 5.7.1) and available people in the community that could be involved (new factor, see section 5.7.5) (KEY 2, INT 41).

Timber could be sold standing to timber companies, like was the case in this period T4. Since timber companies needed to make investments, for example for construction of roads and bringing their equipment to the region, their decision to start depended on a minimum area of forest that was regarded as worth to invest in (INT 3). In general the minimum area of forest to harvest appeared to be around 200 ha per year by timber companies with the quality of forest present in the area. This minimum was not seen as attractive though, since with a smaller forest the profits were also lower. (INT 36) At the same time, it can be concluded the perception of what was attractive or not was variable. Especially in this period T4, when an increasing demand for standing timber and logs in the country (see factor 5) made timber companies more interested in making investments for small amounts of forests, approaching CFO's actively. Also prices for CFO's were found to be higher during this period. (INT 38) Additionally, a different perception on the attractiveness of an area of forest, was provided by a new business initiative in another TIOC in department Santa Cruz, TIOC Monte Verde. A company in cooperation with a few CFO's were about to use residuals productively: smaller logs, that normally would be left behind in the forest<sup>29</sup>, were going to be processed for use in furniture or other applications for which smaller pieces of wood can be used. (INT 34) Especially with smaller forest it would be interesting to combine timber harvesting with other kind of commercial activities.

Apart from the mentioned point that for selling standing timber a minimum amount of forest needed to be present, it also constrained upgrading in period T4.

It was mentioned several times by the legal representative of CFO of Puesto Nuevo when talking about upgrading that it wouldn't worthwhile to invest in upgrading to the stage of selling sawn timber at the moment, because only a little amount of forest is left in their area (INT 15). Also other members of the forestry committee of CFO of Puesto Nuevo mentioned not much forest was left (INT 17 and 19), although the treasurer of the forestry committee first indicated he was interested to see the financial picture if a portable sawmill might become available again (INT 17).

In this framework it is interesting the donor involved in the second period of upgrading (T3) had exactly had reasoned the other way round: they thought upgrading to the stage of sawing would provide a higher added value, and less forest would be needed (Chubiru, 2010; WWF, 2010; INT 3). The difference in reasoning depends though on the height of the investment taken into account and who pays for it. If the costs are higher, for example because a new portable sawmill needs to be bought, a large amount of forest is needed to pay for the investment. If costs are lower because a used portable sawmill is rented (if available) which

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<sup>29</sup> In the CFO of community Puesto Nuevo logs shorter than 2,5 meters were regarded as residuals during period T4

not too much problems with maintenance occur a smaller amount of forest can also cover the costs. A solution for this point probably could be found in sharing the costs of investments for harvesting equipment and a portable sawmill among more CFO's. (INT 10, 20)

Further more it is remarkable the members of the forestry committee indicated (INT 15, 17), as reflected in the former paragraph, that not much forest was 'left', so they pointed at a reduction of the amount of forest available. The authorized commercial amounts of forest to harvest are based on sustainable harvesting principles, so it is not assumable that this is the main cause of reduction of forest. The minimum harvesting cycle for whole Bolivia is 20 years by law (Sanchez de Lozada, 1996b). It is questionable whether is large enough, since no evaluation had been done. Especially in Lomerío, where trees grow slow due to its dry climate this is an issue. (INT 12, 33, 36) Therefore in region that the CFO of Puesto Nuevo is part of, a harvesting cycle of 30 years was taken (CICOL, 2008; INT 36), although it is the responsibility of the government to decide about the right length of a harvesting cycle (INT 36).

In addition to commercial harvesting, also other harvesting takes place that reduces the amount of forest. This is for example harvesting for domestic or communal use or when clearing a field for agricultural purposes, which is allowed. Nevertheless an authorization from the municipal authorities is required. (INT 8, 36) This is not always is done, because its costs time and money to retrieve such an authorization. This is regarded as illegal harvesting. (INT 36) See table 11 for an estimation of the area used for non-commercial harvest in communities in TIOC Lomerío.

What also occurs is illegal harvesting by other people than those of a community in the communities area (INT 3, 8, 19, 36). Mostly harvest illegally is the species Cuchi (CICOL, 2008). It is difficult to control this 'pirateo' (piracy) (INT 3, 8, 24, 36), although it was mainly done by people from the area itself (INT 38). Illegal harvesting didn't motivate people in putting their efforts in sustainable harvesting (INT 3). An estimation given by people of Lomerío of their non-commercial harvest is the following (INT 36), see table 11:

<ul style="list-style-type: none"> <li>• Based on clearing of agricultural land by families on their own land, via the formal way, in coordination with ABT and verified by UFM, and with use of official transport documents (INT 36): 200-250 feet per family = for 12 families is 2400-3000 feet = approximately 5,7-7 m3, not every year on an area less than 1 ha. (This is sawn with chainsaw).</li> <li>• Harvested without authorization and sold to small buyers by families on community land (INT 36): 300 feet per family/1-2 times per year = for 12 families is 3.600 feet/1-2 times year = approximately 8,5 m3/1-2 times per year<sup>30</sup>=12,75 m3/year and this probably on an area less than 1 ha. (This is also sawn with chainsaw)</li> </ul>
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**Table 11: Estimation of the area of non-commercial harvest in communities in TIOC Lomerío (INT 36)**

<sup>30</sup> The conversion factor taken is 424 feet = approximately 1 m3. How much timber is in a feet, sawn by a chainsaw operator, depends on the quality of the trunks (36)

Additionally, during legal commercial harvesting occasionally was harvested an illegal extra amount by the timber companies and/or forest engineers. (INT 33, 41) A certain margin between an amount authorized and harvested is not strange (25%), because one doesn't know exactly when felling a tree how much volume is being produced, but in these cases it was substantially higher (INT 41). Therefore recently more inspections have been carried out by the authorities, in Lomerío and other areas. In Lomerío some communities were fined. (INT 41) Diverse specialist pointed therefore at a need to monitor activities of a timber company by a CFO after selling their timber standing. (INT 33, 41) Actually, this seemed mostly be the problem in the case a forest engineer from elsewhere is being contracted. (INT 41) In the case of the CFO of Puesto Nuevo for period T4 the indigenous forest engineer from Lomerío was contracted, who also promotes the interest of TIOC Lomerío. He was trained, based on funds of the TIOC (INT 5). Therefore it is not very likely that during this period was harvested much more than authorized, although in former periods this could have been the case.

Finally, unplanned land use change occurred, that could have caused a reduction of the amount of forest. These were slash and burn agriculture and cattle pasture (CICOL, 2008), INT 36) With slash and burn agriculture only limited amounts of forest were cleared, because the size of an agricultural field was limited through its labor-intensive character. In contrast cattle pasture could be extended. (Birk, 2000) So cattle could be a potential threat, especially since some people indicated they were interested in cattle pasture (INT 14). In the area of CFO Puesto Nuevo no other (economic) activities occurred (INT 17, 19) that could have reduced the amount of forest. Although occasionally forest fires occurred that were caused by a natural cause, lightening. (CICOL, 2008)

**5.7.4 Increase in demand standing timber and logs (national and regional) (in period T4)**

Another factor that enabled downgrading in period T4 was an increase in demand for standing timber and logs, caused by an increasing pressure in the market. While before CFO's - especially in Lomerío with their relative small plots- had to search for clients, gradually timber companies had become more interested in their timber (INT 38), as result of a reduction in access to forest resources for private companies.

In Bolivia 28 millions of hectares of forest are potentially available for sustainable forest management. The objectives in this area are production combined with conservation. Since the Forest law (1700) of 1996 the access to forest resources for the market has changed drastically. Before 1996, around 22 millions of hectares of forest were exclusively being exploited by timber companies. Since 1996 a large part of the rights to manage the forests is in the hands of communities: approximately 1.4 million of the in total 8.5 million of forest in use, see table 12. (Quevedo et al., 2012)

Type of organization distinguished in the Forest law 1700 (1996)	No. of PGMFs	Surface forest in PGMFs (ha)
Forest concession for timber companies on public land	51	3.880.744

<b>Forest harvesting permits for indigenous communities or indigenous villages</b>	<b>83</b>	<b>1.420.162</b>
Forest harvesting permits for private properties	261	1.441.809
Agricultural communities	108	804.278
Forest concession to ‘ASLs’ ( <i>Agrupación Social del lugar/Social local groups</i> )	20	473.155
Contracts for forest management on public land	2	225.400
Forest concession on public land for research	3	262.367
<b>Total</b>		<b>8.507.915</b>

PGMF=*plan general de manejo forestal*/ general forest management plan

**Table 12, Number and area of forest use rights until 2010 in Bolivia (of areas larger than 200 ha)**  
(Quevedo et al., 2012), p. 5

In total 20.7 million of hectares of forest were granted to TIOCs (Fundación Tierra, 2011), so communities have a large area available that could be used for forest management (Quevedo et al., 2012). For commercial forest exploitation a general forest management is needed authorized by the forest authorities ABT.

Forest concessions to timber companies on public land had been reduced in the meantime. In 1996, 87 concessions of 40 years were authorized, covering 5.590.194 ha (Quevedo et al., 2012)). These had been reduced in 2010 to 51 concessions, covering 3.880.744 ha (see table 12). Since 1996 less concessions for forest use are granted and the government has even indicated after the launch of the new Political constitution of 2009 they didn’t want to grand concessions at all anymore. Because old concessions were still respected, but no new ones were granted, this form of access to forest is expected gradually to face out. (Vargas et al., 2009)

Some timber companies have fully integrated timber value chains. They own land themselves on which they harvest (private properties), they saw and process the timber and subsequently sell it to national or international markets.

For other timber companies, who don’t own land themselves and for whom only a few concessions are still valid, it practically means the area available for commercial harvesting has become smaller. Therefore they started searching for other ways of having access to timber. Working with communities has large potential because of the quantity of the forest in their possession and available forest harvesting permits.

Nevertheless, it is required to have a permission based on an annual operational harvest plan (POAF =*Plan operative Annual Forestal*) in addition to the forest harvesting permits based on the general forest management plans (PGMFs). So the total amount of annual operational harvest plans granted provides even a better insight in the actual supply available in a specific year. (Quevedo et al., 2012)

In 2011, the year that this period for the CFO of Puesto Nuevo started, the authorities (ABT) authorized a total surface of 214.052 ha of forest (via annual operational forest plans (POAFs)). A large part, 30% of this surface was authorized to indigenous communities, see figure 8. (This authorized surface was equal to 2.221.841 m<sup>3</sup> of timber and 29% of the total volume (m<sup>3</sup>) was authorized to indigenous communities). (ABT, 2012)

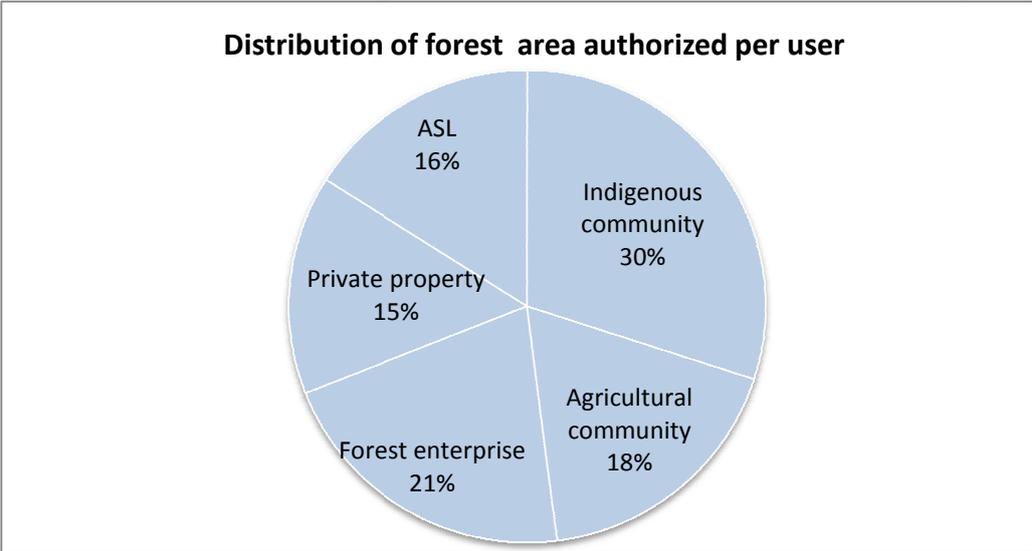


Figure 8: Distribution of forest area authorized per user for forest exploitation in 2011 (ABT, 2012), p.30

Due to the fact communities possessed most permissions for forest exploitation, timber companies became especially interested in cooperating with communities. Additionally they were prepared to visit places that looked less interesting before. (INT 38) In addition to this gradual development, the pressure in the market had increased drastically in 2011, because the authorities were occupied in inspection activities, resulting in less annual harvesting permissions to be authorized (Verdeser, 2013).

This resulted for Lomerío in period T4 that the CFO's didn't have to search for timber companies who could potentially be their client any more, but that these companies visited the communities actively. In addition better prices were offered. It could be that the higher demand also led to a better negotiation position for the CFO of Puesto Nuevo, making it possible for them to demand to include the commercial inventory and arranging permission with the authorities as their responsibilities in the contract. This led to downgrading to a higher stage in the value chain than before in period T2 (see also section 5.2).

So an increase in demand for standing timber and logs, caused by an increasing pressure in the market -as result of a reduction in access to forest resources for private companies, had enabled downgrading to the indicated stage in the value chain.

**5.7.5 Prioritizing other activities by community (in period T4)**

A last factor enabling downgrading in period T4, was prioritizing other activities by a community. These other activities involved agricultural and social activities.

In the CFO of Puesto Nuevo various people had indicated they saw themselves in the first place as a farmer. Forestry is seen as an additional activity. (INT 15, 17, 19)

Since agricultural activities are executed in a labor intensive way, it required efforts from the whole family at times, especially for activities like clearing, sawing, harvesting of the diverse crops (Markopoulos, 1998; Birk, 2000). Since these activities required a lot of attention and not sufficient people were available in the community, because they were for example studying abroad, it was a lot 'easier' -as members of the CFO put it- to work together with a timber companies in period T4 (INT 15, KEY 2)

This factor prioritizing other activities, enabling downgrading, had also caused problems during the periods of upgrading (period T1 and T3).

During the first experience with upgrading with the central permanent sawmill in period T1 it became for example clear a difference in priorities existed between the management and employees. Being an employee of the sawmill meant, in the beginning, working from Mondays to Fridays, from 9:00 to 17:00 o'clock. Additionally, everybody has his own land to grow their food. During times that agricultural activities require a lot of efforts, employees of the sawmill didn't have time to go to the sawmill or turned up later. In the course of time they had changed these strict times, but employees not being present or late continued to be a problem. (Markopoulos, 1998)

Additionally, in the region many festivities are being celebrated related to religious and other events, that also take place during these hours. Some of the festivities take place during weekends, but because many people consume a large quantity of alcoholic beverages, on Mondays they need to recover from their hangover. Additionally a part of the people continue partying a few days, so it also includes Mondays or additional weekdays (Markopoulos, 1998). I could confirm his findings are still valid during my fieldwork in 2013 (own observations<sup>31</sup>). The employees mostly prioritized working on their fields and participating in these festivities, instead of working on the sawmill.

Also during the second experience with upgrading with the portable sawmill in Puesto Nuevo during period T3 it had the same effect. Although this period only covered a short period of time, people showed not to turn up in the morning at the agreed time. (INT 27; WWF, 2010)

## **5.8 Complexity of information, possibility to standardize information and capabilities of producers for periods T1-T4**

Finally, factors 1 complexity of information, factor 2 possibility to standardize information, in combination with factor 3 capabilities of producers, that were mentioned in the literature, were found to be as follow in the case study.

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<sup>31</sup> After a yearly festivity of the patron of El Puquio Cristo Rey in the weekend of 23-24 November 2013, which implied the weekly meeting of CICOL on Mondays was not taking place, some people could still be observed drinking on the central plaza on Tuesday and some people that I liked to interview were still too drunk on Tuesday as well. Additionally, I joined a '*minga*' a feast after a collective effort to clear a piece of land on Saturday 30 November. The party continued –at another place than the original one of the host- until Sunday night.

It was found during all periods the complexity of information that needed to be exchanged on operational matters in the production process and ability to standardize information were comparable: somewhat complex, but possible to standardize. The information that needed to be exchanged was somewhat complex since about various operational matters needed to be exchanged between the community and its clients. In periods T2 and T4 the timber companies were responsible for the process, but the community was involved in monitoring carried out the process, so they exchanged for example about the distribution of species, quantities harvested and logs of disputable quality and official transport forms. This was possible to standardize since the forest law indicated how to arrange the several steps. Also in periods T1 and T3 had to be exchanged about various matters like on the species, measures of the product that were required and required quality of the wood –for example no twisted fibers and no knots. To determine the right timber clients came both during T1 and T3 to the sawmill to discuss about the mentioned matters. This complexity was possible to standardize, since the forest law was available for the activities during T1 and T3 and during T2 and T4 the members of the CFO became more used to informal standards about measures and qualities.

The factor that changed over time was the capabilities in the producers.

During the periods of upgrading (T1 and T3) the capabilities of the producers were not high enough to master all requirements (low, see table 1 in section 2.1.2), while the capabilities needed during the periods downgrading were more than sufficient (in period T2) to sufficient (in period T4) (high). Therefore, Gereffi et al. (2005) expected a client would take the lead in those cases that capabilities were not high enough (T1 and T3), leading to a captive governance type, what –according to Schmitz et al. (2006) limits the opportunity for upgrading. But exactly the opposite was found in the case study.

In the cases that capabilities were not high enough (T1 and T3) not a captive or hierarchical governance type was found as would have been expected based on the theory (see table 1 in section 2.1.2) - limiting the opportunity for upgrading, but a market or modular governance type- providing opportunities for upgrading. The governance type during periods T1 and T3 were classified to be market or modular since it was easy to switch from one buyer of sawn timber to another based on the specifications of the product (which didn't change too much between one buyer and another).

And in the cases that capabilities were more than sufficient (in period T2) to sufficient (in period T4) not a market or modular governance type was found as would have been expected based on the theory –providing opportunities for upgrading, but a captive governance type (in period T2) and a relational governance type (in period T4) –of which the first one is known to limit upgrading. During period T2 it was a captive governance type since the timber company largely determined the activities, by deciding how and when a harvest would take place, hiring a forest engineer for the forest inventory and arranging transport to their own sawing facilities. During period T4 the governance type could be classified as relational since the CFO hired the forest engineer for the forest inventory, in this way partly determining how the harvest would take place, this influenced mutual dependence between the CFO and the timber company.

For period T3, when the CFO was upgraded oriented to the local and regional market, they might reach to master the required capabilities when practicing a bit longer than the 3 months of time during period T3. In this way, the resulting theoretical configuration for the type of value chain governance (see also table 1 in section 2.1.2) and in practice would be both a market or modular governance type –with a high opportunity for upgrading.

So in the periods T1, T2, T3 and T4 the intended effect of the factors was not found. Only in the long run for period T3 Gereffi's theory could have been applicable. It could be this difference is caused by a strong involvement of horizontal partners –some NGO's via the central organization of the region- replacing vertical partners in supporting lacking capabilities of producers (members of the CFO), which Gereffi et al. (2005) had not taken into consideration.

On the other hand the governance types that were found, as described above, confirmed the effect on upgrading. Since in the captive governance type during period T2, no upgrading occurred.

An overview of the factors found to enable up- and downgrading in CFO of Puesto Nuevo is presented in section 6.1.1, the discussion, as a start of the reflection on the results in relation to the literature. Although the starting point of the research had been the factors found in the literature, for CFO of Puesto Nuevo, TIOC Lomerío, some factors were found to play a role in a different manner, some were not found to play a relevant role and some new factors were distinguished.

## Chapter 6 Discussion

In the discussion first is reflected on the results found in this thesis on factors enabling up- and downgrading in the timber value chain by a community forest organization (CFO) (section 6.1). To do so, the factors found to enable up- or downgrading in the literature (chapter 2) were compared with those found in the case study, the CFO of community Puesto Nuevo, TIOC Lomerío, in the course of time (chapter 5). Subsequently, is reflected on the theoretical framework (section 6.2) and finally on the methodology used (section 6.3).

### 6.1 Reflection on results

#### 6.1.1 General

The main research question in this thesis was “what were enabling factors for up- and downgrading in the timber value chain by the community forest organization (CFO) of community Puesto Nuevo, TIOC Lomerío in Lowlands Bolivia, in the course of time ?” In this thesis ‘upgrading’ and ‘downgrading’ were seen as executing extra respectively less activities or functions by producers in the value chain (Riisgaard et al., 2010). Factors enabling downgrading were seen as equivalent to factors constraining upgrading. Taken into account were both external and internal factors that influenced up- and downgrading by the CFO, although the CFO was seen as one decision making unit and differences among individuals who form the CFO were not taken into consideration.

It was found the CFO of community Puesto Nuevo had known various periods of up- and downgrading:

- Period T0 (before 1980s): in which was up- and downgraded to various stages of the value chain, before commercial forestry;
- Period T1 (1984-2003): in which was upgraded to the stage of sawing timber with a permanent central sawmill, with FSC for TIOC Lomerío. The sawn timber was subsequently sold to international and local clients;
- Period T2 (2003-2005): in which was downgraded to the stage of selling of standing timber to timber companies;
- Period T3 (2009): in which was upgraded to the stage of sawing timber with a portable sawmill in CFO of Puesto Nuevo. This sawn timber was sold to local clients ;
- Period T4 (2012-2013): in which was downgraded to the stage of arranging a permission to harvest a specified amount, based on a commercial inventory and annual operational forest plan. Before the standing timber had been sold to a timber company.

So periods T1 and T3 were two periods of upgrading. Two differences were that in period T1 the CFO studied, together with other CFO’s in the region, sold their timber to both the international and the local market and in period T3 only to the local market. Additionally, in period T1 the timber was sawn by a permanent sawmill, while in period T3 it was sawn with a portable sawmill that was taken to the forest.

Periods T2 and T4 were two periods in which the CFO downgraded. In period T2 this was to the lowest possible stage of selling standing timber to timber companies. In period T4, some activities were added by the CFO as described above, leading to a modest higher stage.

To determine factors that enable up- or downgrading, two bodies of literature were used: one on upgrading in the value chain and one on horizontal and vertical partnering, as can be read in chapter 2.

Subsequently, the factors distinguished were explored on its relevance in the case study. The relevant factors were presented in chapter 5. For some factors based on the upgrading literature, a more specified description was found in the case study, which often provided more insight in its specific effect on up- or downgrading. These specified descriptions found in the case study are added under each concerning factor based on the upgrading literature. See table 13.

Most factors enabling up- or downgrading based on the literature were found in the case study in the several periods (T0-T4) (see table 13), although sometimes in a different way. The only factors that were not found to play a role in the case study were: factor 9 Violation of use rights that are not followed up in the juridical process and factor 12 no availability of infrastructure, for which both was indicated in the literature they enabled downgrading (Beauchamp et al., 2011; Murphy et al., 2009).

Additionally, all potential contributions of horizontal and vertical partnering to factors enabling up- or downgrading based on the literature, were found in the case study. Horizontal partnering contributed to capabilities of producers (factor 3), devolution of land and forest use rights (factor 6), availability of financial resources (factor 8) and availability of a sawmill (factor 11). See table 13.

Vertical partnering on the other hand also contributed to capabilities of producers (factor 3), availability of financial resources through an investment and advance payment (factor 8) and availability of special harvesting equipment (factor 11). See table 13.

Since horizontal- and vertical partnering contributed to the various factors that subsequently enabled up- and downgrading, these are discussed in an integrated manner hereafter.

Factors that enable upgrading and downgrading based on the literature*	Relevant factors found in case study in the various periods (T0-T4)					Contribution partnering to factor based on literature	Relevant contribution partnering to factor found in case study
	T0	T1	T2	T3	T4		
1. Complexity of information (hardly possible to upgrade in captive and hierarchy governance type)***							
2. Possibility to standardize information (hardly possible to upgrade in captive and hierarchy governance type) ***							
3. Capabilities of producers	X			X	X	hp + vp	hp + vp
4. Aligning with more powerful		X		X		hp	hp

horizontal actors							
5. Demand of markets (effect up- or downgrading depending on market at specific stage)	X				X		
• Demand sawn timber (local)	X						
• Increase in demand standing timber and logs (national and regional)					X		
6. (No) devolution of land and forest use rights	X	X				hp	
• No land and forest use rights	X						
• Defense land and forest use rights		X					Hp
7. (No) availability of large and good quality forest					X		
8. Availability of financial resources and financial advice (if provided through vertical partnering it enables downgrading)		X	X	X	X	hp + vp	
• Availability of financial resources from NGO		X		X			Hp
• Investment and advance payment from timber company (enabling downgrading)			X		X		Vp
9. Violation of forest use rights that are (not) followed up in the juridical process							
10. Historical realities			X				
• Conviction to work with lower quality standards than required on the international market (enabling downgrading)			X				
11. Availability of well working equipment		X	X	X	X		
• Availability of (permanent/portable) sawmill		X		X			Hp
• Availability of special harvesting equipment (enabling downgrading)			X		X	vp	Vp
12. Availability of infrastructure							
<b>Factors found in the case study that were not described before in the literature</b>	<b>T0</b>	<b>T1</b>	<b>T2</b>	<b>T3</b>	<b>T4</b>	<b>Relevant contribution partnering to factor found in case study</b>	
13. Personal relations				X			
14. Interest in increasing cash income				X			
15. Prioritizing other activities by Community	X				X		

\*Factors are formulated in the way that they enable upgrading. Absence of them enable downgrading (except if other influence is indicated)

\*\*Hp= contribution horizontal partnering, vp= contribution vertical partnering

\*\*\*Effect of these factors is described in results in section 5.8 and discussion section 6.1.3

**Table 13: Factors enabling up- and downgrading and potential contributions of horizontal and vertical partnering based on the literature compared with factors and contributions found in the case study in the various periods**

Factors that were indicated to be present during the periods T1 and T3 were factors that enabled upgrading. Additionally, factors indicated to be present during the periods T2 and T4 were factors that enabled downgrading.

Hereafter, are discussed: factors based on the literature that were confirmed to play a role in the case study (in section 6.1.2), factors that were found to work in a different way than described before in the literature (6.1.3), new factors found (6.1.4) and some general final reflections on the results (6.1.5). Further information on the literature can be found in chapter 2, the theoretical framework; and further information on the factors found in the case study can be found in chapter 5, that is structured by period (T0-T4).

### **6.1.2 Factors found that confirm the literature**

Five of the twelve factors based on the literature were confirmed by the results in CFO of Puesto Nuevo, TIOC Lomerío to enable up- and downgrading in a comparable way: factor 4 aligning with more powerful horizontal actors, factor 5 demand of markets, factor 6 devolution of land and forest use rights, factor 7 no availability of large and good quality forest and factor 8 availability of financial resources and financial advice, both by financial resources from a NGO (enabling upgrading) and an advance payment from a timber company (enabling downgrading). In this section shortly will be discussed the way that these factors are filled in, in comparison with the literature on upgrading and partnering.

#### ***Factors enabling upgrading***

*Factor 4, aligning with more powerful horizontal actors who promote economic, social and environmental issues for producers*

Aligning with more powerful horizontal actors enabled upgrading during period T1 and T3. The reason that aligning with more powerful horizontal actors enabled upgrading, was that the contribution of this actors (financial means, capacity building) caused that the CFO didn't have to align with timber companies. As was found in section 5.2.3, timber companies preferred to be responsible for all activities in the value chain related to production of timber, this would have implied downgrading.

Subsequently, this factor also had been selected to be included in this thesis, in order to explore whether upgrading contributes to economic, social and environmental issues, in relation to a higher goal of contributing to improving quality of life and forest conservation in CFO's, that is beyond the direct scope of this thesis. The horizontal actors involved in upgrading in both period T1 and T3 were found to base their actions on economic, social and environmental objectives and contributed in various ways to these issues during upgrading. In period T1, social and environmental objectives were reached through the strategy of defense of land and forest use rights, as is described in the next paragraph. During period T3 the CFO was supported to exploit timber in a sustainable way by meeting the requirements of the Bolivian law, which was based on principles of sustainable forest management. Additionally, through the use of simpler equipment the soil was less compacted what stimulated re-growth of trees. From an economic perspective, it was found the permanent sawmill used in period T1 had not operated in a profitable way. During period T3 a project evaluation indicated the portable sawmill could be operated in a profitable way, although this is not completely certain.

The reason is that not all costs, costs for activities like marketing and administration were taken into account. On the other hand also vertical partners were found to contribute in some extent to economic, social and environmental issues by meeting the requirements of the Bolivian law and contributing to a social issue, an improvement of the parochial building in the community.

So it can be concluded horizontal partners, especially in the beginning, were more pro-active in reaching social and environmental objectives and they had managed to generate major improvements in the respect, especially by adapting the Bolivian law. Nevertheless, it is not clear of the most recent experience (2009) whether their economics objectives were met.

Vertical partners were less pro-active and more oriented to meeting the requirements in the law and paid the CFO for their timber and labor as temporal employees.

Herewith, the insights from Riisgaard et al. (2010), Lee et al. (2011) and Murphy et al. (2009) that powerful horizontal partners pay attention to economic, social and environmental can be confirmed, although is uncertain what the precise results were of their contributions.

Of the diverse possible horizontal actors from civil society and the state that were mentioned in the literature on horizontal partnering (Bitzer et al., 2012; Ros-Tonen et al., 2008; Visseren-Hamakers et al., 2007) CFO of Puesto Nuevo partnered with national and international NGO's, through its supra-communal organization CICOL (*Central Indígena de Comunidades Originarias de Lomerío*/Central Indigenous organization of communities of Lomerío).

Especially one national NGO, APCOB (*Apoyo para el Campesino Indígena del Oriente Boliviano*/Assistance for indigenous peasants of East Bolivia) was involved in supporting the region Lomerío for an extensive period of time, around 20 years (especially during period T1, from 1984 until 2003). During period T3 (2009) the NGO's WWF and IBIF (*Instituto Boliviano de Investigación Forestal*/Bolivian Institute for Forestry Research) had been involved.

#### *Factor 6, defense of land and forest use rights*

Defense of land and forest use rights had enabled upgrading during the first time of upgrading (period T1). The reason was that the chosen strategy for defense of land and forest use rights had been starting commercial forestry and upgrading to the stage of transporting sawn timber in combination with a FSC-certificate. Devolution of land and forest use rights safeguarded, at its turn, upgrading in the timber value chain in the region, as found to be crucial by Antinori et al. (2005) in case studies in Mexico before.

What was a new element found, that horizontal actors involved in Lomerío during period T1, notably NGO BOLFOR (Bolivian Sustainable Forest Management Project), had contributed to the design of a new forest law in Bolivia that supported devolution of forest use rights. In additional literature it was found this law was based on the principles of sustainable forest management as well. And although the law still could be improved, it contributed to a more sustainable way of practicing forest management –especially sustainable harvesting (Quevedo et al., 2012).

#### *Factor 8, financial support from NGO's*

Financial support from NGO's also enabled the TIOC and CFO to upgrade, during both periods of upgrading T1 and T3, which confirms findings of Beauchamp et al. (2011) and

Antinori et al. (2005). Financial support by NGO's meant they didn't have to partner with timber companies for their financial means. Since timber preferred to be responsible for all activities in the value chain related to production of timber, this would have implied downgrading. Additionally, both during periods T1 and T3 the NGO had the same objective to upgrade as the CFO.

Mostly, only costs for certification were paid for and no recurrent costs as found by Molnar et al. (2003). However, in the case study was found during the first period of upgrading, were a FSC-certificate had been used, the TIOC was supported in all related costs. They were probably willing to do so, since TIOC Lomerío had been one of the first cases. Through provision of financial means TIOC Lomerío and its CFO's became dependent on the NGO's that supported them during this period, what supports findings of De Pourcq et al. (2009) and Richards et al. (2009).

In case no financial support from NGO's was available, the CFO relied on an advance payment of a timber company, that enabled downgrading (since timber companies preferred to carry out all activities by themselves, see also factor 8 below). Alternatives to this were self financing and credit. As described in section 5.5.1, it was found some other CFO's in the region financed modest upgrading themselves and some CFO's in Bolivia were interested in credit. Credit is especially interesting for upgrading, since it provides an alternative to advance payments by a timber company –who enable downgrading and therefore constrain upgrading- in case it can't be pre-financed by CFO's themselves or by NGO's.

Based on additional literature, it is found having access to credit would involve diverse requirements for both the financial institute and the CFO, including guarantees (Benavides et al., 2014; Hamers et al., 2012). In Bolivia, land and forest use rights can't be used as a guarantee, since forest use rights are granted by the government and land rights of TIOCs many not be alienated (Valenzuela, 2008). Additionally, having credit available requires administrative capabilities (Benavides et al., 2014), which was found to be weak in the CFO in the case study (factor 3). As a final remark, in case one uses credit, also other factors potentially enabling downgrading would have to be challenged.

#### *Factor 5, demands of markets*

Finally, in a reference period T0, before commercial harvesting started in Lomerío, demands of markets (factor 5) already played a role in upgrading. In case demand for sawn timber existed (and someone was capable to saw timber with a chain saw really well, factor 3, see hereafter with section 6.1.3), the timber was sawn thus the operator upgraded a few stages in the value chain. This confirms the insights at this point of Ponte et al. (2009).

#### ***Factors enabling downgrading***

##### *Factor 8, investments and advance payment by a timber company*

It was found investments and an advance payment by a timber company was enabling downgrading during periods T2 and T4, as was indicated by Vermeulen et al. (2008) before. The reason was that timber companies preferred to be responsible for all activities, implying downgrading.

### *Factor 7, not having available a large and good quality of forest*

Furthermore, in period T4 not having available a large and good quality forest enabled downgrading, since the CFO felt it was not worth it to invest in upgrading by buying a portable sawmill themselves as was found by Antinori et al. (2001) and Beauchamp et al. (2011) before. Antinori et al. (2001) had found in Mexico that an increasing amount of hectares was needed for upgrading to further stages. The reason was, as described in section 5.7.3, that a large and good quality of forest provides larger volumes of timber to guarantee – against a certain price in the market- sufficient turnover, from which costs of –for example- a portable sawmill related to upgrading can be paid. If costs for investments like a portable sawmill can be shared, it is possible to have these lower costs paid back earlier and a smaller forest might also be sufficient. But it was found in the CFO of Puesto Nuevo that they could not share costs of investments yet. Selling standing timber to timber companies required no investments and since a timber company was available (and this timber company preferred to be in charge of most activities) it resulted in downgrading.

What was remarkable was that the donor during the second period of upgrading (T3) had reasoned exactly the other round: that less forest would be needed because of the higher added value of the product. However, for reaching this added value also investments needed to be made. So it depends on the height of the investment (that need to be paid by the CFO) together with the height of the price of sales, how much volume of timber thus volume in the forest is needed.

Like Beauchamp et al. (2011) was found the quality of the forest was influenced by the exploitation history, especially the legal and illegal logging of large timber companies in the past, before the people of Lomerío started exploitation of their forest themselves.

### *Factor 5, demands of markets*

Finally, also through an increase in pressure by demand for standing timber and logs in Bolivia enabled downgrading during period T4, confirming insights of Ponte et al. (2009), since timber companies were interested in buying this standing timber and arranging all further activities in the value chain. The reason behind this effect was a general reduction of available harvesting rights for timber companies since 1996 and a reduction in harvesting rights that were given out by the authorities in Bolivia, since they were involved in monitoring during period T4 as can be read in section 5.7.4.

### **6.1.3 Factors that work in a different way**

Factors that were found in the case study to work in a different way than described in the literature were: factor 1 complexity of information, factor 2 possibility to standardize information, factor 3 capabilities of producers, factor 10 historical realities and factor 11 availability of well working equipment. Finally, also a connection with factor 8 availability of financial resources through an advance payment of a timber company (described before in section 6.1.2) and a connection with factor 15 prioritizing other activities by the community (see section 6.1.4) were found.

### ***Factor enabling upgrading***

#### ***Factor 3, capabilities of producers***

Capabilities of producers were found to enable upgrading in the case study in T0 and T3, and confirmed in that sense findings by Antinori et al. (2001) and Beauchamp et al. (2011). Also Gereffi et al. (2005) indicated that capabilities of producers is one of the three determining factors for type of governance in the value chain (in addition to factor 1 complexity of information and factor 2 possibility to standardize information, see table 1 in section 2.1.2), leading to a governance type with a higher possibility to upgrade (Schmitz, 2006) as further described in the last paragraph of this section 6.1.3.

In the case study is found in the CFO of Puesto Nuevo technical capabilities needed for executing activities at several stages of the value chain, were well developed in period T3. This enabled them to upgrade because they were able to execute the related activities themselves instead of relying on timber companies. These technical capabilities included capabilities for executing a commercial inventory, felling of trees with a chainsaw, cutting trees into logs and determining volume of logs. What the CFO and supporting partners additionally stressed, was that the administrative skills in the CFO and in the TIOC were weak. This confirmed partly the insights at this point from Beauchamp et al. (2011), De Pourcq et al. (2009), Bitzer et al. (2012) and Ros-Tonen et al. (2008), who indicated that organizational capabilities (especially negotiation, management and marketing skills) were often weak. (Administrative skills can be seen as part of management skills.) During period T3 activities related to administration in the CFO of Puesto Nuevo were implemented by the NGO involved, but for upgrading in future this could form a bottleneck.

However, in contradiction to findings in the literature capabilities present in producers were not found to be a relevant factor for upgrading for whole period T1, although those developed during the period. What was found was that the central organization of region Lomerío was supported intensively in execution of activities and developing its capabilities. Training was oriented to technical skills and later on also to organizational skills. However, it was also found the permanent sawmill had a high turnover of staff. This turnover was partially intentionally, since after a specified period people of another community was given a chance to earn cash income, but also unintentionally, because many people left. This meant every time new staff needed to be trained in technical skills regarding this sawmill and gain experience on the job, in addition to a decrease in productivity of the sawmill. (The reason people left, as was found during my fieldwork, that people had *different priorities* as well, because they had to work on their fields to produce food (*factor 15*, a new factor that will be described in further detail in section 6.1.4)). So capabilities of producers was not found to be a relevant enabling factor for upgrading –although it developed over time- because of a high turnover of staff of the sawmill, new staff were continued to be trained and the sawmill continued to be financed (factor 8, see also section 6.1.2), that enabled upgrading instead.

### ***Factors enabling downgrading***

#### ***Factor 10, conviction to work with lower quality standards***

A conviction to work with lower quality standards than required on the international market in the first period of downgrading (period T2), was found to be a result of an historical reality was found. The historical reality itself was the negative experience with the requirements of

the international market during T1. Because the TIOC lost a lot of money because of timber being refused and people of Lomerío themselves were quite proud on the quality of their wood, they indicated they definitely didn't want to work for the international market again. In period T2 it enabled downgrading, because they preferred to cooperate with timber companies (and timber companies prefer to be in charge of all activities, implying downgrading). In period T3 –a period of upgrading- time was too short (approximately 3 months) even to consider an international market and in period T4, it was not one of the relevant factors for downgrading. Nevertheless it was indicated by the president of TIOC Lomerío during period T4 that in case one would upgrade this would be to regional and national markets and not to international ones, because of this factor. Antinori et al. (2001) had found before another historical reality in the cases in Mexico, a history of parastatal leasing that caused to unite forces against this activity and to upgrade in the timber value chain themselves as producers.

### *Factor 3, capabilities of producers*

Capabilities of producers was also found to play a role in period T4, a period of downgrading, while it would be expected to play a role during periods of upgrading (Antinori et al., 2001; Beauchamp et al., 2011; Gereffi et al., 2005; Schmitz, 2006), like was described before in this section 6.1.3. But actually it smothered the effects of the other factors enabling downgrading: in period T4 the CFO not completely downgraded to the lowest stage, selling standing timber to timber companies after making the decision to do so in the CFO. Instead the CFO in the case study downgraded until the level of arranging permission to harvest (see figure 6). Incorporating the related activities, making a commercial inventory and arranging permission to harvest were agreed upon in the contract with the timber company to be executed by the community. They could do so because they were capable of doing it, based on their experiences in periods T1, T2 and T3 and experience in forestry of a community member outside the community. For the supervision of this activity and for activities related to the stage of arranging a permission to harvest they hired a forest engineer. The costs related to these activities could be paid based on an advance payment (factor 8) that was already provided by the timber company. The timber company was found prepared to allow upgrading by incorporating these activities during period T4, probably facilitated by an increased demand for logs and standing timber on the market (factor 5, see also section 6.1.3 and section 5.7.4).

### *Factor 11, availability of well working equipment*

Additionally, well working equipment, played a role in downgrading in both period T2 and T4. As indicated before by Benneker (2008) and Moreno (2006), by provision of special harvesting equipment timber companies enabled downgrading, since this equipment was not available in a different way. And timber companies, apart from the finding they only wanted to have their own staff working with the equipment -since it requires special capabilities, preferred to carry out all other activities in the value chain as well, implying downgrading. Availability of well working equipment proved unexpectedly to be an important point for the CFO, since the alternative, harvesting with small equipment like a machete and chainsaw –as applied during a period of upgrading (period T3)- proved to cost a lot of time and labor force, which they not have available extensively. (This also had a relation with a new factor, factor

15 prioritizing other activities (that will be further described in section 6.1.4)).

### ***Factors 1, 2 and 3, enabling up- and downgrading***

*Factor 1, complexity of information; factor 2, possibility to standardize information; and factor 3, capabilities of producers*

Factors that were mentioned in the literature, but were found to work in a different, even reversed way in the case study were: factor 1 complexity of information and factor 2 possibility to standardize information, in combination with factor 3 capabilities of producers, based on the theory of Gereffi et al. (2005). Gereffi et al. (2005) had claimed that three factors would clarify the governance type in a value chain present. And subsequently –as Schmitz (2006) had stated- this would indicate the opportunity for upgrading.

The connection between governance types and up- and downgrading, according to Schmitz (2006) was nevertheless confirmed by the research findings. In the periods T1 and T3 a market or modular type has been found, contributing to upgrading. Additionally, in period T2 a captive governance type was found, contributing to downgrading; and in period T4 a relational governance type, with no explicit effect on up- and downgrading. See section 5.8 for a further description.

However, in the periods T1 and T3 the combination of the three factors distinguished by Gereffi et al. (2005) didn't lead to downgrading but to upgrading; and in the periods T2 and T4, the combination didn't lead to upgrading but to downgrading, see section 5.8. Only for period T3 Gereffi's theory could have been applicable in the longer run. It could be this difference is caused by a strong involvement of horizontal partners –some NGO's via the central organization of the region- replacing the role of vertical partners in supporting lacking capabilities of producers (members of the CFO), which Gereffi et al. (2005) had not taken into consideration.

### **6.1.4 New factors**

New factors found in the case study were: personal relations (included in the table above as factor 13), interest in increasing cash income (factor 14) and prioritizing other activities by community (factor 15). To the new factors found no contributions are made by vertical and/or horizontal partnering.

### ***Factors enabling upgrading***

*Factor 13, personal relations*

Personal relations were found to play a role in period T3 in upgrading. In this case a person from the supra-communal organization of the region, with whom the NGO's cooperated was a member of the community that was selected to upgrade. Since another community that was first thought of to participate in the project of another TIOC, didn't want to join, the personal relations led to approaching the CFO of Puesto Nuevo, enabling them to upgrade.

*Factor 14, interest in increasing cash income*

Interest in increasing cash income was also found to enable upgrading in period T3.

Upgrading was seen as an opportunity to increase cash income in future for CFO's in TIOC

Lomerío and therefore the CFO of Puesto Nuevo joined in the pilot on upgrading. It was felt it was necessary to increase cash income because of increasing material needs that needed to be paid for with cash. This interest to increase their cash income was not only based on regular expenditures, but also on a recent introduction of electricity and mobile phone connection, that influenced an increase in expenditures.

### ***Factor enabling downgrading***

#### *Factor 15, prioritizing other activities by a community*

Prioritizing other activities by a community, is the last new factor found in the case study. The activities that the CFO prioritized and enabled downgrading in period T4 were agriculture for subsistence and social activities. It enabled downgrading because the community member had no time and workforce available to invest in activities related to upgrading, especially if community members were not available, because they were for example studying abroad. Additionally, it played a limiting role at the background during the periods of upgrading, since people didn't turn up for work, influencing a lower productivity.

### **6.1.5 General reflection on the results**

On the enabling factors for up- and downgrading also some general reflections can be made. Hereafter are described factors that were found to be more important than others, factors that functioned like a basic resource, a factor that developed over time and risks involved. Additionally, reflections are made with respect to the research objective.

### ***Important factors***

It was found in the CFO of Puesto Nuevo, TIOC Lomerío, several factors enabled up- or downgrading in each period. These factors together caused up- and downgrading over the several periods. It was not measured what the extent was of the influence of each factor to enable up- or downgrading in each period, although it was found some factors were more important than others. Nevertheless these more important factors alone could not have caused up- or downgrading. It was found important factors were defense of land and forest use rights (factor 6) and prioritizing other activities by the community (factor 15).

#### *Defense of land and forest use rights*

Defense of land and forest use rights against larger timber companies that harvested legally and illegally in their area was found to be the most important factor enabling upgrading during period 1 (see also section 6.1.4). This importance confirms earlier findings by Antinori et al. (2005). Defense of land and forest use rights was found to be the most important factor since it had mobilized both people of Lomerío and NGO's to put dedication and time in supporting upgrading to the stage of sawing with a FSC-certificate. Although it would not have been possible to upgrade without financial resources, capacity building and equipment provided by the NGO's, probably they would not have chosen for upgrading based on these financial resources, capacity building and equipment alone, based on the following indications. Firstly, as reason for upgrading was given that they liked to show the world –as one of the first groups- that indigenous people were also capable of practicing commercial and sustainable exploitation of their forest. Subsequently was found in the case study that all

interviewees, if talking about this period, indicated defense of land and forest use rights had been their first objective. Additionally, it was indicated that with the acquisition of land and forest use rights not only its forestry activities had been safeguarded, but that also the most important reason to upgrade had expired. Finally, it was shown in the results that after receiving formal land and forest use rights in 1998, the period of upgrading (1984-2003) continued for a short term, but afterwards came to an end.

#### *Prioritizing other activities by community members*

The most important factor enabling downgrading was that community members prioritized agricultural activities for substance and social activities above putting their efforts into activities that were related to upgrading in the timber value chain (see also section 6.1.4). This factor was the most important factor enabling downgrading since these other priorities had a more urgent character than upgrading: if no food was produced, there would be nothing to eat. Additionally, it was indicated during the fieldwork the people of Puesto Nuevo identified themselves as a farmer and forestry was regarded as a secondary activity.

#### ***Basic factors***

It can also be concluded, based on the results that the factor availability of financial resources provided by NGO's and the factor availability of a large and good quality forest were basic factors for upgrading in the timber value chain in the case study. These were not of the same importance though as the factors described above, defense of land and forest use rights during the start of the CFO's involvement in commercial harvesting and prioritizing other activities than those related to upgrading. The argument will be described hereafter.

#### *Financial resources from NGO's*

Based on financial resources provided by NGO's alone, without the drive of the people of Lomerío to defend their land and forest use rights, the CFO probably would not have upgraded. However, without financial resources from an NGO it would not have been possible for the CFO and TIOC Lomerío to upgrade in the value chain, since they did not have other financial resources available from actors that allowed them to upgrade (see also section 6.2.1). This doesn't imply a contribution of a NGO always leads to upgrading, since a NGO might also choose to support other strategies for development of a CFO. Additionally, only one CFO in TIOC Lomerío was found to finance some activities related to upgrading themselves and none of the CFO's in the region used credit provided by financial institutes, stressing the importance of financial resources from NGO's for upgrading. The importance of this factor already had been indicated by Antinori et al. (2005) before, since they had stated active support of the state and civil society, which also meant financial support, had been crucial in Mexico for upgrading.

#### *No large and good quality forest*

No large and good quality (see also section 6.1.2) was found to be a basic factor for upgrading, since without a certain amount of forest it is not possible to have sufficient turnover to carry the costs of investing in upgrading. What is obvious, is that without forest available no exploitation could have been practiced at all. At the same time it was not found the amount of forest was one of the most important factors, like defense of land and forest use rights and a

community having other priorities as discussed above, since based on a certain amount of forest alone the community had not shown to start exploiting their forest.

### ***Development of factors***

It was also found one factor developed in the CFO over the several periods (T1, T2 and T3), *capabilities of producers (factor 3)*, which caused a difference in factors to enable up- and downgrading in different periods, as has been described in section 6.1.3.

This confirmed earlier insights described in the literature. It was known vertical partnering during downgrading (in the case study during T2) enabled upgrading later on through capacity building by provision of employment (Antinori et al., 2001; Vermeulen et al., 2008). Also horizontal partnering was indicated in the literature to enable upgrading through capacity building if this was oriented to further stages in the value chain (Beauchamp et al., 2011), as has occurred during periods T1 and T3 in the case study.

Finally, also Gereffi et al. (2005), Schmitz et al. (2006) and Ponte et al. (2009) had found a relation between development of capabilities of producers and higher opportunities for upgrading, although they didn't point at a connection with capacity building through vertical or horizontal partnering.

### ***Risks***

Finally, seen as threats for commercial and sustainable forestry and therefore also for up- and downgrading, are unplanned land use changes like illegal harvesting and cattle farming, as also recognized by Beauchamp et al. (2011). Based on *factor 14, interest in increasing cash income* (described in section 6.1.4) it would be possible more pressure is put on this fast types of provision of cash income in future. At the same time, by law a TIOC needs to prove not to cause illegal harvesting or harm conservation of biodiversity on risk of expropriation of the TIOC, based on the Law of General Renewal of the Agrarian Reform (2006) of Bolivia. And sustainable harvesting is seen as an appropriate way. (Cárdenas et al., 2012; Valenzuela, 2008) Other risks for commercial and sustainable forestry in the region are, according to Cárdenas et al. (2012), Valenzuela et al. (2008) and Vellido et al. (2013): agro industry, large scale agriculture and cattle farming; illegal settlements of migrants of the Highlands; artisanal mining by people from the Highlands and large scale exploitation of petrol, gas and minerals.

### ***Research objective***

Based on the research, more insight was provided on how a CFO can fulfill their role in exploitation of forest resources after devolution of land and forest use rights.

It was found various enabling and constraining factors for upgrading might play a role for a CFO in their decision to upgrade or not in the course of time, as is being presented in section 6.1.1. It is also found to be important that a (combination of) enabling factors is present that are important enough to generate time and dedication for upgrading, after devolution of land- and forest use rights. Their decision may lead to various options for fulfilling their role in exploitation of their forest resources. These options are –among others- selling standing timber to timber companies, sawing for the international market, sawing for the local market, and arranging a permission to harvest based on a commercial forest inventory. The most likely of those options is selling standing timber to timber companies, due to many

constraining factors for upgrading that might play a role for a CFO, unless an important reason is found to overcome these constraints.

## 6.2 Reflection on theoretical framework

The theoretical and conceptual framework could largely clarify the enabling and constraining factors for upgrading in CFO of Puesto Nuevo, TIOC Lomerío, Lowlands Bolivia. It is remarkable though, that most factors were based on case studies on upgrading from Mexico and Cameroon and earlier research findings from Bolivia and not on more general upgrading literature. This asks for an extension of general upgrading theories based on context specific cases.

The theoretical insights on horizontal and vertical partnering provided useful additions to the insights based on literature on upgrading in the value chain by enhancing understanding of the role of the diverse factors that were externally provided. However, in the literature on partnering, upgrading was scarcely mentioned. I managed to make logical combination based on both theories, but it would be interesting to add the dimension of upgrading to the partnering literature as well, to get a broader spectrum of experiences. Additionally, it pleads for an extension of theories on upgrading in value chains, not only with the contextual insights on upgrading, but also with insights on horizontal and vertical partnering.

One of the most important reasons the combination of bodies of literature on upgrading and partnering had been made was that –especially horizontal- partnering was found to support upgrading with attention for economic, social and environmental issues for producers. And since contributing to quality of life and forest conservation was a higher goal, outside the direct scope of this thesis, the combination was interesting to use. It turned out to be possible to do, as was indicated above, but not on every point it was that easy to do so. Especially the included factor ‘aligning with more powerful actors to take into account economic, social and environmental issues’ proved to have a kind of ‘double face’. It contributed on one hand to upgrading, which was the research question within the thesis, and on the other hand to the mentioned sustainability issues. Although these sustainability issues were not within the direct scope of the thesis, it proved to be a valuable addition to have an impression of the effects of the several up- and downgraded forms of operating. It would however gone too far within the framework of this Master thesis, to also include a study on effects, in addition to the study that was carried out to clarify influences of various factors on up- and downgrading.

Furthermore, it proved to be useful not to limit myself in this thesis to external factors, because two important factors found to enable or constrain upgrading were internal factors. These factors were: defense of land and forest use rights (in the earlier days of upgrading) and prioritizing other activities by community.

Additionally, at first instance was thought to orient the thesis to upgrading oriented to local markets only, but based on a case study available that was involved in both upgrading

oriented to the local and the global market, it appeared partly the same kind of factors are found and it seems differences in factors are more determined by a difference in time period than by the difference in market. For example in period T3 (2009) already capabilities are present among CFO members, that were not available yet during (the beginning of) period T1 (1984-2003), based on a continuous learning of the CFO members. From this perspective it is an advantage of being involved in earlier experiences of upgrading (whether for the international market or the local market), if starting a new initiative on upgrading. Another difference between the two periods of upgrading was that in period T1 first attention needed to be paid to devolution of land and forest use rights, before commercial forestry and upgrading by the communities could start.

The intensity of the factors for local or global markets is different though. For global markets capabilities for example need to be further developed, due to higher requirements on quality of the product, competitive prices and reliability of supply.

Nevertheless, for studying upgrading oriented to the local or international market, a same theoretical framework can be used.

Finally, it is remarkable how the theoretical framework used and related theories oriented to small enterprise developed. In the 1990s the approach of ‘clustering’ of small enterprises in an ‘industrial district’, oriented to inter-firm relations was used. This approach included horizontal and vertical partnering on local level. However, this approach was missing a more regional, national and global orientation on markets. At the end of the 1990s therefore an addition was searched and found in insights from the global value chain approach. (Giuliani et al., 2005)

It appears now that for clarifying developments of a small enterprise, in this case a community forest organization, based on literature on upgrading in this value chain, it is useful to add local factors again, like availability of well working equipment (factor 11), personal relations (factor 13) and prioritizing other activities by community (factor 15). These local factors can partly be provided by the partnering literature on those related to external partners, for example availability of well working equipment (factor 11). Nevertheless, it would have been interesting to revise what additional insights theories on clustering, that is explicitly oriented to various dimensions on local partnering, provide to the literature on upgrading in the value chain and literature on vertical and horizontal partnering.

Additionally, local internal factors are also studied by literature on local or endogenous economic development, like social capital (of which personal relations (factor 13) is a part), traditional knowledge systems and organizational forms (Babili et al., 2013; Müller, 2013; Pilecek et al., 2013). The insights related to this body of literature also would have been interesting to take into consideration for analyzing up- and downgrading a community forest organization.

### 6.3 Reflection on used methodology

The methodology used was a case study and its development in the course of time, in combination with studying literature. This limited the data and its results in a qualitative sense because not more cases were available to compare the factors found. To provide statistical significance it would have been interesting to have a few cases in an upgraded situation and a few cases in a downgraded situation. However, due to a restricted timeframe in relation to this master thesis, it was not possible to include more cases with the same level of detail as is being applied.

Nevertheless, various periods of upgrading and downgrading of the same case could be compared in the same community forest organization. The difference in time caused in change of context, what could be seen as a disadvantage. An advantage thought was that other characteristics of the case didn't vary unexpected as might occur when comparing different cases.

## Chapter 7 Conclusions and recommendations

This chapter consists of three sections. In the first section, conclusions (section 7.1), the research question of this thesis is answered after shortly discussing the general background of this question. In the second section, recommendations for further research are given (section 7.2) and in the third section practical applications of the conclusions are presented (section 7.3).

### 7.1 Conclusions

The aim of this thesis was to determine which enabling and constraining factors might play a role in upgrading in the timber value chain by community forest organizations (CFO's), in order to get more insight into the way a CFO can fulfill their role in exploitation of forest resources after devolution of land and forest use rights.

Community forestry nowadays is a widely used approach of practicing forestry globally. Since a trend of devolution of land and forest use rights is continuing, more communities or other small forest enterprises will have the opportunity to start exploitation of their forest products for the market. This could involve commercializing timber, non-timber forest products, tourism, environmental services like carbon credits, biodiversity or a combination of those. For this thesis various ways of production of timber were explored. The reason was that, based on a possibility to have large profits in production of timber, it has a potential for increasing the quality of life within communities and forest conservation.

Subsequently, it could be observed in practice that many community forest organizations sold their standing timber to timber companies and other CFO's 'upgraded' in the timber value chain. In the timber value chain these extra activities could involve several stages of harvesting, transporting, sawing and/or processing secondary products. Additionally it was found that upgrading in the timber value chain might provide CFO's with an even more interesting option for increasing income and forests conservation. However, since it is observed only some CFO's upgraded, it is important to know why only some of them upgraded. Therefore, it was investigated which factors played a role in their choice for upgrading or not.

To determine factors that enable or constrain upgrading, two bodies of literature were used. The first was on upgrading in the value chain (Gereffi et al., 2005; Lee et al., 2011; Murphy et al., 2009; Ponte et al., 2009; Riisgaard et al., 2010; Schmitz, 2006). Apart from general insights on factors derived from various sectors, also some case studies on upgrading in CFO's in Mexico (Antinori et al., 2005; Antinori et al., 2001) and Cameroon (Beauchamp et al., 2011) and studies on Bolivia (Benneker, 2008) were used. Since some of the authors, who were oriented to economic, social and environmental issues for producers (Lee et al., 2011; Murphy et al., 2009; Riisgaard et al., 2010) had indicated it would be necessary to involve powerful horizontal actors, also the body of literature on partnering was included (Humphries et al., 2006; Molnar, 2003), (Bitzer et al., 2012; De Pourcq et al., 2009; Ros-Tonen et al.,

2008; Vermeulen et al., 2008; Visseren-Hamakers et al., 2007).

An in-depth case study on upgrading by the CFO of community Puesto Nuevo in TIOC<sup>32</sup> Lomerío, Lowlands Bolivia in the period 1980s until 2013 was conducted to gain further insight and understanding on these factors. To put the aim of the research into practice, factors enabling downgrading to selling standing timber to timber companies were seen as equivalent to factors constraining upgrading.

The research question, that is answered in this conclusion, was: “what were enabling factors for up- and downgrading in the timber value chain by the community forest organization (CFO) of community Puesto Nuevo, TIOC Lomerío in Lowlands Bolivia, in the course of time?”. During the research, both external and internal factors that influenced up- and downgrading by the CFO were taken into account, although the CFO was seen as one decision making unit and differences among individuals who form the CFO were not taken into consideration.

Hereafter, the main conclusions with regard to the research question and its consequences for the research objective are presented, based on an analysis of findings of field research in Bolivia as is described in chapter 5, with the use of the mentioned bodies of literature and conceptual framework as is presented in chapter 2. A more elaborated comparison and references to the various theories can be found in the discussion in chapter 7.

In this section, in order to answer the research question, discussed first are the various stages in the value chain that were reached in the CFO studied, as a result of up- and downgrading in the time (7.1.1). Subsequently, the conclusions on enabling factors for up- and downgrading in the timber value chain for the CFO in the course of time will be presented (7.1.2). And finally, some general conclusions will be drawn (7.1.3).

### **7.1.1 Stages in the value chain reached by up- and downgrading by the CFO**

It was found the CFO of community Puesto Nuevo had up- and downgraded to various stages in the value chain in the time, as described in section 5.2. See figure 9 for the timber value chain of the CFO of Puesto Nuevo, TIOC Lomerío.

Based on this findings the following periods can be distinguished:

- Period T0 (before 1980s): in which was up- and downgraded to various stages of the value chain, before commercial forestry;
- Period T1 (1984-2003): in which was upgraded to the stage of sawing timber with a permanent central sawmill, with an FSC certificate for TIOC Lomerío. The sawn timber was subsequently sold to international and local clients;

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<sup>32</sup> The abbreviation ‘TIOC’ refers to: ‘*Territorio Indígena Originario Campesino*’/Native indigenous peasant’s territory’, before also called ‘TCO’ (*Tierra Comunitario de Origen*’/Indigenous communal land) and is a recognized form of private organization with land- and forest use rights in Bolivian law.

- Period T2 (2003-2005): in which was downgraded to the stage of selling of standing timber to timber companies;
- Period T3 (2009): in which was upgraded to the stage of sawing timber with a portable sawmill in CFO of Puesto Nuevo. This sawn timber was sold to local clients ;
- Period T4 (2012-2013): in which was downgraded to the stage of arranging permission to harvest a specified amount, based on a commercial inventory and annual operational forest plan -after the standing timber had been sold to a timber company.

The periods are not serried, since not in every year commercial harvesting of timber took place.

The distinguished periods T1 and T3 were two periods in which the CFO of community Puesto Nuevo, TIOC Lomerío, upgraded to a stage of sawing timber. The distinguished periods T2 and T4 were two periods in which the CFO downgraded. The second time to a higher stage in the value chain: arranging permission to harvest a specified amount. What was further more remarkable in both periods of downgrading, that although the timber companies were contractual responsible for most activities, community members were still involved in several activities as employees. Those activities for which community members were employed to assist in were: commercial inventory (period T2), felling trees (periods T2 and T4) and cutting trees into logs (periods T2 and T4).

Additionally, the CFO was found to supervise activities of the timber companies until transporting, especially loading, because in the past timber had not been loaded and transported. This had caused not only waste of natural resources, but also less income for the CFO -

since they were paid for the amount of timber transported. Period T0 was seen as a reference period, before commercial forestry started, since also during this period –although on a much smaller scale- some up- and downgrading occurred. The differences in up- and downgrading in the value chain were influenced by several factors in each period, as is described hereafter.

### 7.1.2 Enabling factors for up- and downgrading in the timber value chain for the CFO in the course of time

It is found several factors enabled up- and downgrading in the timber value chain in the CFO



**Figure 9 The timber value chain of the CFO of community Puesto Nuevo, TIOC Lomerío, Lowlands Bolivia**

of Puesto Nuevo, TIOC Lomerío in the several periods (T0-T4). The factors distinguished for the periods T1 and T3 enabled upgrading and the factors distinguished for the periods T2 and T4 enabled downgrading. For some factors based on the literature, a more specified description was found in the case study, which often provided more insight in its specific effect on up- or downgrading. These specified descriptions found in the case study were added under each concerning factor based on the literature. See table 14.

<b>Factors that enable upgrading and downgrading based on the literature*</b>	<b>Found in case study</b>	<b>T0</b>	<b>T1</b>	<b>T2</b>	<b>T3</b>	<b>T4</b>
1. Complexity of information (hardly possible to upgrade in captive and hierarchy governance type)	X**					
2. Possibility to standardize information (hardly possible to upgrade in captive and hierarchy governance type)	X**					
3. Capabilities of producers	X	X			X	
4. Aligning with more powerful actors	X		X		X	
5. Demand of markets (effect up- or downgrading depending on market at specific stage)	X					
• Demand sawn timber (local)		X				
• Increase in demand standing timber and logs (national and regional)						X
6. (No) devolution of land and forest use rights	X !					
• No land and forest use rights		X				
• Defense land and forest use rights			X !			
7. (No) availability of large and good quality forest	X					X
8. Availability of financial resources and financial advise (if provided through vertical partnering it enables downgrading)	X					
• Availability of financial resources from NGO			X		X	
• Investment and advance payment from timber company				X		X
9. Violation of forest use rights that are (not) followed up in the juridical process						
10. Historical realities	X					
• Conviction to work with lower quality standards than required on the international market				X		
11. Availability of well working equipment	X					
• Availability of (permanent/portable) sawmill			X		X	
• Availability of special harvesting equipment				X		X
12. Availability of infrastructure						
<b>Factors found in the case study that were not described before in the literature</b>						
13. Personal relations	X				X	
14. Interest in increasing cash income	X				X	
15. Prioritizing other activities by community (enabling downgrading)	X	X !				X !

X = found; X ! = found to be an important factor

\*Factors are formulated in the way that they enable upgrading. Absence of them enables downgrading (except if other influence is indicated)

\*\*Effect of these factors is described in results in section 5.8 and discussion section 6.1.3

**Table 14: Factors enabling up- and downgrading based on the literature compared with factors found in the case study in the various periods**

It can be concluded, based on an analysis of the results as described in chapter 5 and is presented above in table 14, the answer to the research question is as follows.

The enabling factors for upgrading were: capabilities of producers related to activities in the value chain (3), aligning with more powerful actors (4), defense of land and forest use rights (6), availability of financial resources from an NGO (8), availability of a (permanent/portable) sawmill (11), personal relations (13) and interest in increasing cash income (14).

The enabling factors for downgrading were: increase in demand standing timber and logs (5), no availability of large and good quality forest (7), investment and advance payment from timber company (8), availability of special harvesting equipment (11) and prioritizing other activities by the community (15). These enabling factors for downgrading are seen as constraining factors for upgrading.

Additionally it can be concluded during each period a combination of factors played a role. Furthermore, a conclusion is that horizontal partnering with NGOs contributed to upgrading and vertical partnering with timber companies to downgrading. Nevertheless, possibly influenced by high demand in the market for logs and standing timber and based on developed capabilities in the CFO, modest upgrading could be realized during partnering vertically with a timber company in 2012. Subsequently, both horizontal and vertical partners had contributed to the position of the producer with attention to economic, social and environmental issues. Based on a limited qualitative review, as one of the factors distinguished was oriented to this point, it could be concluded horizontal partners were acting more pro-actively in reaching social and environmental objectives than vertical partners. Especially their contribution to devolution of land and forest use rights and design of a new Forest law –based on principles of sustainable forest management in Bolivia were of importance. In economic sense, upgrading to a stage of sawing with a portable sawmill has potential for improving the position of a CFO.

Subsequently it can be concluded, based on the discussion in chapter 6, ten of the twelve factors based on the literature were found to enable up- or downgrading. Factors not found were violation of forest use rights that are (not) followed up in the juridical process (9) and availability of infrastructure (12).

In the case study, three new factors were uncovered. The first new factor referred to personal relations between the CFO and the central organization (13), that led to this CFO joining in the project that involved upgrading (in period T3). Another new factor was interest in increasing cash income because of increasing material needs that enabled upgrading (14, in period T3). The interest in increasing cash income made the CFO interested in looking for new opportunities –in this case upgrading with the use of a portable sawmill. The last new factor was that members of the CFO prioritized other activities, namely agricultural activities for subsistence and social activities (15). The result of this was that they couldn't put their time and work force in activities related to upgrading in the value chain, enabling downgrading and thus constraining upgrading.

### 7.1.3 General conclusions

Overall can be concluded, many obstacles needed to be overcome by the CFO to upgrade its activities to a stage of sawing timber. The issue that community members often prioritized other activities –agricultural for subsistence and social activities- than activities related to harvesting and sawing particularly constrained upgrading. The reason being, that in the first place they felt they were farmers and forestry was regarded as an additional economic resource.

To be able to organize harvesting and sawing, financial resources are necessary since the timber only will be paid after it is sawn. Financial resources from a NGO were found to be a basic requirement for enabling upgrading. An advance payment from a timber company constrained upgrading, since timber companies preferred to carry out the diverse activities related to harvesting and sawing themselves.

Additionally, it was necessary to have a large and good quality forest available, to be able to sell a sufficient volume of sawn timber at a certain price to cover all the costs that needed to be made for harvesting and sawing.

Nevertheless, it is found an additional drive is needed to be prepared to put effort and dedication to harvesting and sawing. In the beginning, this was the defense of their land and forest use rights, since many larger companies had entered the area legally and illegally to harvest their trees. More recently, an interest in increasing their cash income had driven the CFO to explore upgrading for a short period of time during a pilot project. It is however the question whether this drive to increase cash income had been strong enough to realize upgrading for a longer period of time, due to the diverse distinguished obstacles.

Their administrative capabilities necessary to organize financial matters were for example weakly developed, in contrary to their technical capabilities related to harvesting and sawing. Also working with the available general equipment to harvest was time consuming in comparison to special harvesting equipment, which the community members did not always have available due to their agricultural and social activities. Additionally, operating a portable sawmill in itself was not a problem, but difficulties in organizing fuel, maintenance and repair and having all workers available in time, caused a lower productivity.

So upgrading to the stage of sawing required time and dedication in order to be a viable option.

In comparison, it was a lot easier to sell their standing timber to timber companies who subsequently organized all further activities -which implied downgrading of the activities of the CFO instead of upgrading. Although in this case they had to accept the price they received might be lower than the income they could generate when selling sawn timber.

Nevertheless, based on their developed technical capabilities and a good market situation, it was possible to upgrade modestly by incorporating some activities related to harvesting, in their cooperation with timber companies.

With regard to the aim of the research can be concluded that various enabling and constraining factors for upgrading might play a role for a CFO, as before is presented in this

conclusion in section 7.1.2, based on the research. It is found to be important that a strong (combination of) enabling factor for upgrading is present for a CFO, in order to reach upgrading in the value chain, after devolution of land and forest use rights. At the same time was also found in the case this devolution of land and forest rights could be actively acquired, based on partnering with horizontal in addition to vertical actors –NGO’s and international timber companies, if this is not the case yet. Such an important factor or combination of factors is necessary to overcome obstacles related to upgrading, since many potential obstacles are found. The decision that a CFO in the end takes, influenced by a combination of factors, may lead to various options for fulfilling their role in exploitation of their forest resources, after devolution of their land and forest use rights. Its decision may lead to selling standing timber to timber companies or upgrade to various stages in the value chain, including sawing for the international market, sawing for the local market and arranging a permission to harvest based on a commercial forest inventory. The most likely of those options is selling standing timber to timber companies, due to the many obstacles. Nevertheless, a decision for one option or the other doesn’t limit future choices. A CFO can always decide, taking into account the diverse influencing factors applicable at that moment in time, to up- or downgrade again. What is interesting in relation to this, is that experiences build up and might lead to better developed capabilities in order to be able to face new situations.

## **7.2 Recommendations for further research**

Since it was found that many factors that enable or constrain upgrading are retrieved from a limited amount of case studies instead of broader based sector-specific upgrading literature or general upgrading literature, the following is recommended. It would be useful to execute a broader review of specific cases in upgrading in the value chain by CFO’s and other small forest enterprises to see whether contextual insights found can be further generalized, in order to extend and deepen theoretical insights and make these insights available via sector-specific upgrading literature. Through an even broader review of sector-specific cases and insights in general upgrading literature, eventually extended by additional sector-specific cases in other sectors, general upgrading literature could be enriched as well.

In such a broader review of specific cases in upgrading in the value chain, by CFO’s, other small forest enterprises and/or other small enterprises from other sectors, it is subsequently recommended to take into account insights based on the body of literature on horizontal and vertical partnering, since partnering was found to contribute to upgrading in various ways to external factors.

Additionally, it is recommended to incorporate a focus on upgrading in the partnering literature to extend the insights on the possible contributions of horizontal and vertical partnering with strategies on upgrading in the value chain.

It was found that insights based on general upgrading literature, which is largely based on upgrading in an international context, could be applied on upgrading in local<sup>33</sup> value chains.

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<sup>33</sup> With local is meant the own area, the larger region and national

Nevertheless also additional local external and internal factors were found to play a role, like availability of well working equipment, personal relations and prioritizing other activities by a community. This information can be provided by carrying out and reviewing additional case studies as mentioned above, but also information based on other bodies of literature can be used. It is especially recommended to review insights based on literature on local or endogenous economic development and cluster development in industrial districts, to combine these with insights in the upgrading literature.

Finally, it is recommended to combine insights based on implementation of other strategies, like upgrading in a value chain for specified non-timber forest products, agro forestry, tourism, reforestation and conservation via new instruments like payment for environmental services (PES) and Reducing Emissions from Deforestation and forest Degradation (REDD<sup>+</sup>) with insights on implementation of upgrading in the timber value chain. Not only to be capable to make a good comparison among the diverse strategies in order to implement one, but in order to apply them in various combinations.

### **7.3 Practical application**

#### **For community forest organizations**

For the community forest organization (CFO) of community Puesto Nuevo, the other CFO's of communities in TIOC Lomerío, and other communities world-wide who have the opportunity to get involved in community forestry after devolution of land and forest use rights, the results have various implications. The results of the thesis provide information about what kind of factors to consciously take into account in the decision to upgrade in the value chain, by for example carrying the responsibility for harvesting and sawing with a portable sawmill, or sell standing timber to timber companies. These factors could be gone through in three steps, in order to consider whether upgrading in a useful opportunity, although it has to be taken into account that factors may vary in different locations at different times.

First the important factors can be considered, whether land and forest use rights are available or whether other priorities demand a lot of time and manpower during the period that upgrading might take place.

Secondly, basic factors need to be arranged. If financial resources from independent partners, like NGO's or governmental organizations, are available or a CFO can finance upgrading, through savings or credit, it is possible to upgrade. If finances are available from a timber company, it implies downgrading. Nevertheless, through a contribution of well developed organizational capabilities and a better negotiation position, for example based on a higher demand in the market, modest upgrading can be achieved. Availability of large and good quality forest supports upgrading, while a smaller and low quality forest constrains upgrading, unless costs are shared. In addition to the possibility to extend the forest area with forest in other regions, it is also useful to look for combinations of upgrading in the timber value chain with alternative commercial opportunities. These alternative commercial opportunities are for example upgrading in value chains in non-timber forest products, agro forestry, tourism,

reforestation, conservation and opportunities related to commercialization of logs that are usually left behind in the forest for example for furniture.

Thirdly, other factors can be considered, especially changes in the market for sawn timber and logs that influences price and willingness of timber companies and other clients to make a change in their offers. Based on this, it is necessary to make an estimation of income, both in the situation of upgrading and selling standing timber to timber companies. It is possible to reduce costs, by sharing costs for -for example- harvesting equipment and a portable sawmill by more CFO's, as was mentioned before. It can be that historic realities play a role in upgrading or selling standing timber, so this needs to be evaluated. Finally, availability of equipment by an NGO, especially a sawmill, enables upgrading; and availability of (special harvesting) equipment by a timber company that is not available otherwise, constrains downgrading. See annex 2 for a more elaborated 3-step model for CFO's that can assist in making a decision to upgrade or not, based on the conclusions of this thesis.

### **For donors and other external partners**

In development of opportunities for CFO's and considerations of upgrading in the timber value a framework has been developed with several factors to take into account with a decision of a CFO to upgrade in the timber value chain or continue with selling trees to timber companies, as can be read above in the part for CFO's. For donors and other external partners it is especially interesting to note that training in capabilities related to activities in the value chain not only contributed to continuous development of capabilities in the CFO, but also to upgrading in a later period of time. Financial resources were also necessary as a basic resource for upgrading. In the longer term, based on investments in upgrading and building of capacities in the beginning, financial resources can also be provided by other partners. In the case study it was found timber companies provided an advance payment for upgrading some stages in the timber value chain, namely the commercial inventory and arranging permission to harvest with the authorities, based on their developed capacities. Selling sawn timber with a portable or permanent sawmill to other clients are other options.

Apart from capabilities and financial resources, important factors were distinguished namely the availability of land and forest use rights -or the preparedness to defend these land and forest use rights- and other priorities of a community. These other priorities were in the case study agricultural activities for subsistence and social activities. This last factor also determined whether a CFO has sufficient time and manpower available for investing in possible improvements like upgrading in the timber value chain.

Finally, other factors were found to be variable over time, so for every case it has to be determined for that specific period what relevant factors are, although the factors found in the CFO of community Puesto Nuevo, TIOC Lomerío, in Lowlands Bolivia can be used as a reference.

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## ANNEXES

## Annex 1

### INTERVIEWEES, KEY INFORMANTS, OBSERVATIONS, PARTICIPATION AND PRESENTATIONS

INTERVIEWEES (INT)					
No.	Date(s) and place	Interviewee	Position	Organization	Type of organization
1	20-11-2013  Santa Cruz de la Sierra	Asarrunz, Nataly	Director	IBIF ( <i>Instituto Boliviano de Investigación Forestal</i> /Bolivian Institute for Forestry Research)	NGO
2	21-11-2013  Santa Cruz de la Sierra	Vargas, Rolando	Coordinator	AFIN ( <i>Asociación Forestal Indígena Nacional</i> /National Association Indigenous Forests)	NGO
3	22-11-2013, 19-12-2013  Santa Cruz de la Sierra	Melgarejo, Orlando	Independent consultant (before: project coördinator WWF (T3))	Serviforest	Consultancy firm
4	25-11-2013  San Lorenzo (Lomerío)	Masay, Elmar	Cacique economics and production	CICOL ( <i>Central Indígena de Comunidades Originarios de Lomerío</i> / Central indigenous organization of communities of Lomerío)	Legal body TIOC Lomerío
5	25-11-2013, 28-11-2013, 16-12-2013 San Lorenzo (Lomerío)	Quiviquivi, Esteban ( <i>Don/Mr.</i> )	Promoter (before: president of CICOL (in period T1))	AFIL ( <i>Asociación Forestal Indígena de Lomerío</i> / Association Indigenous Forests of Lomerío)	Representing body of villages that execute forestry, part of CICOL
6	26-11-2013 El Puquio Christo Rey (Lomerío)	Cesari, Nicolas	Carpenter	<i>Asociación de Carpenterías comunitarias de la TCO Lomerío</i> /Community Carpentry association of TCO Lomerío	Carpentry association
7	26-11-2013 El Puquio Christo Rey (Lomerío)	Parapeña, Benjamin	President (and Cacique alto of CICOL)	<i>Asociación de Carpenterías comunitarias de la TCO Lomerío</i> /Community Carpentry association of TCO Lomerío (client of Puesto Nuevo in 2009)	Carpentry association
8	26-11-2013 El Puquio Christo Rey (Lomerío)	García, Agustín	Employee	UFM ( <i>Unidad Forestal Municipal</i> /Municipal Forestry Unit), Municipality San Antonio de Lomerío	Municipality
9	27-11-2013 El Puquio	Chuviru, Pedro	Cacique land and territory	CICOL	Legal body TIOC

	Christo Rey (Lomerío)				Lomerío
10	27-11-2013, 16-12-2013 El Puquio Christo Rey (Lomerío) and Santa Cruz de la Sierra	Ipi, José	Secretary (before: operator of permanent sawmill (in period T1))	AFIL	Representing body of villages that execute forestry, part of CICOL
11	27-11-2013 San Lorenzo (Lomerío)	Parapeña, Nasario	Operator portable sawmill El Puquio Christo Rey	<i>Asociación de Carpenterías comunitarias de la TCO Lomerío/Community Carpentry association of TCO Lomerío</i> (client of Puesto Nuevo in 2009)	Carpentry association
12	29-11-2013, 2-12-2013, 10-12-2013, 19-12-2013 Puesto Nuevo (Lomerío)	Estrada, Wilber	Supervisor	Arboleda SRL (current partner of Puesto Nuevo (in 2011-2013))	Timber company
13	29-11-2013, 9-12-2013 Puesto Nuevo (Lomerío)	Arias, Wilber	Truck driver	Independent worker for <i>Transporte Velis/ Transport Velis</i>	Transport company
14	29-11-2013 Puesto Nuevo (Lomerío)	Faldin, Santiago (Don/Mr.)	Inhabitant	Community Puesto Nuevo	Community
15	30-11-2013, 2-12-2013, 4-12-2013, 10-12-2013 Puesto Nuevo (Lomerío)	Faldin, Hugo	Legal representative (Before: President of AFIL (T3))	Forestry committee Puesto Nuevo	Community
16	1-12-2013 Las Trancas (Lomerío)	Aguilar, Marcelino	Cacique mayor (promoter of AFIL (T3))	Community Las Trancas	Community
17	1-12-2013, 3-12-2013, 5-12-2013 Puesto Nuevo (Lomerío)	Surubí, Ignacio	Secretary and treasurer	Forestry committee Puesto Nuevo	Community
18	3-12-2013, 5-12-2013, 10-12-2013 Puesto Nuevo	Faldin, Pedro	Working in forestry, a.o. coördinator tree nursery (Before:	Community Puesto Nuevo	Community

	(Lomerío)		Operator portable sawmill Puesto Nuevo (T3)		
19	3-12-2013, 12-12-2013 Puesto Nuevo (Lomerío)	Faldin, Venancio	Cacique natural resources, president	Forestry committee Puesto Nuevo	Community
20	5-12-2013 San Lorenzo (Lomerío)	Peña, Anacleto (Don/Mr.)	President	CICOL	Legal body TIOC Lomerío
21	5-12-2013 Las Trancas (Lomerío)	Guasace, Juan	President	AFIL	Representing body of villages that execute forestry, part of CICOL
22	6-12-2013 Concepción	Romero, Erwin	Employee	APCOB ( <i>Apoyo para el Campesino Indígena del Oriente Boliviano</i> / Assistance for indigenous peasants of East Bolivia)	NGO
23	6-12-2013 Concepción	Zuares, Rafael	Forestry engineer	<i>Carpentería Carlos</i> / Carpentry Carlos	Carpentry company
24	9-12-2013 Concepción	Flores, Epifania	Forest engineer	ABT Concepción <i>Autoridad de Fiscalización y Control Social de Bosques y Tierra</i> /Authority for monitoring and social control of Forest and Land	Government
25	10-12-2013 Puesto Nuevo (Lomerío)	Faldin, Carmelo	Inhabitant of Puesto Nuevo (Before: Operator portable sawmill Puesto Nuevo (T3))	Community Puesto Nuevo	Community
26	11-12-2013 San Antonio de Lomerío	Padre José	Priest	Catholic church Lomerío	Church
27	11-12-2013 San Antonio de Lomerío	Chuviru, Freddy	Forest engineer	Independent	Consultancy firm
28	11-12-2013 San Antonio de Lomerío	Parapaino, Anacleto	Manager	<i>Carpentería San Antonio</i> /Carpentry San Antonio	Carpentry, part of the catholic church
29	12-12-2013	Velis,	Owner	<i>Transporte Velis</i> /Transport	Transport

		Carlos		Velis	company
30	13-12-2013 Concepción	Ardaya, Catharina	Sociologist	APCOB	NGO
31	13-12-2013 Concepción	Pereira, Reinaldo	Manager	Arboleda SRL (current partner of Puesto Nuevo (in 2011- 2013))	Timber company
32	13-12-2013 Concepción	Hernandez, Ronald	Forest engineer, responsible for purchasing	<i>Petunos Industria Maderera</i> /Petunos wood industry (former partner of Puesto Nuevo (in 2005 ?))	Timber company
33	14-12-2013  Santa Cruz de la Sierra	Montero, Ysaías	Sociologist, responsible for projects productivity and environment	APCOB	NGO
34	17-12-2013	Goita, Jorge	Employee	SICIREC	Service provider of seeds, plant material and forest management assistance
35	17-12-2013 Santa Cruz de la Sierra	Hurtado, Maida ( <i>Sra./Mrs.</i> )	Owner and director	Arboleda SRL (current partner of Puesto Nuevo (in 2011- 2013))	Timber company
36	18-12-2013, 31-1-2014, 7-2-2014 Santa Cruz de la Sierra & via telephone & mail	Alarcon, Alfredo	Forest engineer	IBIF	NGO
37	18-12-2013 Santa Cruz de la Sierra	Barrancos, Mercedes	Employee	ABT Santa Cruz	Government
38	19-12-2013 Santa Cruz de la Sierra	Bejarano, Javier	Consultant (Before: consultant APCOB (in period T1))	Independent consultant for SNV	Consultancy firm
39	19-12-2013 Santa Cruz de la Sierra	Riester, Jorge	Director	APCOB	NGO
40	19-12-2013 Santa Cruz de la Sierra	Magariños, Edwin	Manager forestry support department	CADEX <i>Cámara de exportadores de Santa Cruz</i> /Export chamber Santa Cruz	Institute
41	31-1-2014 Via Telephone	Paiva, Carmen	Consultant	Independent	Consultancy firm

**KEY INFORMANTS**

1	24-11-2013 until 27-11-2013	María (Doña/Mrs.)	Community member, my cook in San Lorenzo	Community San Lorenzo	Community
2	28-11-2013 until 12-12-2013	Faldin, Carmen	Community member, my cook in Puesto Nuevo	Community Puesto Nuevo	Community
3	29-11-2013 until 12-12-2013	Fausto	Employee	Arboleda SRL	Timber company
<b>OBSERVATIONS (OBS)</b>					
		<b>Event</b>	<b>Location</b>	<b>Organized by</b>	<b>Other info</b>
1	26-11-2013		<i>Asociación de Carpenterías comunitarias de la TCO Lomerío/Community Carpentry association of TCO Lomerío, El Puquio Christo Rey</i>	Myself, guide: Cesari, Nicolas, Carpenter	
2	28-11-2013	Community assembly Puesto Nuevo	Elementry school Puesto Nuevo	Surubí, Franciso, Casique mayor Puesto Nuevo	
3	29-11-2013		Camping area Arboleda, Puesto Nuevo	Timber company Arboleda	
4	29-11-2013		Log landings forest management area Community Puesto Nuevo	Timber company Arboleda	
5	29-11-2013	Loading of a truck on log landing in the forest	Forest management area Community Puesto Nuevo	Timber company Arboleda and Community Puesto Nuevo	
6	30-11-2013	<i>Minga</i> (festivity after collective effort to clear	House of mother of Carmen, Julia and Hugo Faldin	Faldin, <i>Sra./Mrs.</i> , mother of Carmen, Julia and Hugo Faldin	

		a piece of land)			
7	4-12-2013	Working on the 'chaco' (land)	Land of family of Franciso and Rosenda Surubí	Myself, guide: Surubí, Rosenda, community member and 2nd coordinator of tree nursery of Puesto Nuevo (wife of Casique mayor)	
8	6-12-2013	Sawing and carpentry work	<i>Carpentería Carlos/</i> Carpentry Carlos, Concepción	Myself, guide: coordinator sawmill	
9	10-12-2013		Tree Nursery Puesto Nuevo	Myself, guide: Faldin, Pedro, coordinator tree nursery	
10	10-12-2013	Community assembly Puesto Nuevo	Elementry school Puesto Nuevo	Surubí, Francisco, Casique mayor Puesto Nuevo	
11	11-12-2013	Carpentry work	<i>Carpentería San Antonio/</i> Carpentry San Antonio	Myself, spoken with: Parapaino, Anacleto, manager	
12	12-12-2013	Voyage with Transporte Velis	Between Puesto Nuevo and Concepción	Myself, truck driver and owner of company Velis, Carlos	
13	13-12-2013	Sawing and carpentry work	Arboleda SRL Concepción	Myself, guide: Pereira, Reinaldo, manager	
14	13-12-2013	Sawing and carpentry work	<i>Petunos Industria Maderera/</i> Petunos wood industry, Concepción	Myself, guide: Hernandez, Ronald, Forest engineer, responsible for purchasing	
15	17-12-2013	Meeting strategic plan AFIN with the board of AFIN and potential strategic partners	Conference building, Santa Cruz de la Sierra	Vargas, Rolando, Coordinator AFIN	
16	17-12-2013	Carpentry work	Office Arboleda SRL, Santa Cruz de la Sierra	Myself, guide: Hurtado, Maida (Sra./Mrs.), Owner and director Arboleda SRL	
<b>PARTICIPATION (PART)</b>					
1	22-11-2013	Workshop about the development	Conference building Santa Cruz	CFV ( <i>Consejo Boliviano para la Certificación Forestal Voluntaria</i> )/Bolivian Council	in Spanish: Taller sobre el desarrollo de

		of forestry certification FSC in Communities of Bolivia	de la Sierra	for voluntary forestry certification )	<i>la certificación forestal FSC en comunidades en Bolivia</i>
<b>PRESENTATIONS (with feedback) (PRES)</b>					
1	28-11-2013	Presentation of research proposal	Elementry school Puesto Nuevo	Surubí, Franciso, Casique mayor Puesto Nuevo	During: Community assembly Puesto Nuevo
2	10-12-2013	Presentation of preliminary results	Elementry school Puesto Nuevo	Myself, in coordination with Surubí, Franciso, Casique mayor Puesto Nuevo	During: Community assembly Puesto Nuevo
3	18-12-2013	Presentation of preliminary results	Office IBIF, Santa Cruz de la Sierra	Myself, in coordination with Toledo, Marisol, Coordinator research of IBIF	

## Annex 2 Commercial species planned to harvest in 2008-2018, in the Northern part of Lomerío

Nº	Common name	Scientific name	Minimum diameter	Type of species
<b>Very valuable species</b>				
1	Cedro	<i>Cedrela fissilis</i>	60	
2	Morado	<i>Machaerium scleroxylon</i>	40	LD
3	Roble	<i>Amburana cearensis</i>	50	LD
<b>Valuable species</b>				
4	Cuchi <sup>34</sup>	<i>Astronium urundeuva</i>	30 40	LD
5	Curupaú	<i>Anadenathera colubrina</i>	45	ST
6	Cuta	<i>Phyllostylom rhamnoides</i>	40	ST
7	Jichituriqui	<i>Aspidosperma cylindrocarpon</i>	40	ST
8	Momoqui	<i>Caesalpinia pluviosa</i>	40	ST
9	Sirari	<i>Guibourtia chodatiana</i>	40	ST
10	Soto	<i>Schinopsis brasiliensis</i>	40	LD
11	Tajibo	<i>Tabebuia impetiginosa</i>	40	LD
12	Tarara amarilla	<i>Centrolobium microchaete</i>	40	LD
13	Tarara colorada	<i>Platymiscium ulei</i>	40	LD
14	Yesquero blanco	<i>Cariniana ianeirensis</i>	40	ST
<b>Not very valuable species</b>				
15	Tasaá	<i>Acosmiun cardenasii</i>	40	ST

Source: (CICOL, 2008)(LD = light demanding species and SD=shade tolerant species)

<sup>34</sup> Minimum diameter of 30cm if the final products are poles and 40cm for other products.

## Annex 3

### **PRACTICAL APPLICATION FOR CFO's: a 3-step model for deciding for upgrading in the timber value chain or selling standing timber to timber companies**

The results of the thesis provide information about what kind of factors consciously to take into account in the decision to upgrade in the value chain, by for example carrying the responsibility for harvesting and sawing with a portable sawmill, or sell standing timber to timber companies. These factors could be gone through in three steps, in order to consider whether upgrading in a useful opportunity, although it has to be taken into account that factors may vary in different locations at different times.

#### ***Step 1: Consider important factors***

##### *Land and forest use rights*

First it is useful to consider whether land and forest use rights are present and completely implemented. It was found in this thesis that land and forest use rights were important to have, although it was shown that these right also could be gained through putting dedication and patience by several means, including upgrading.

##### *Other priorities*

Another important factor to consider is whether the CFO has sufficient time and manpower available for upgrading apart from -for example- obligations related to agricultural activities and social obligations. Furthermore it is important the CFO really want to put their efforts in upgrading, since it costs time, enthusiasm and requires commitment.

#### ***Step 2: Arrange basic resources***

##### **Financial resources**

##### *From independent partners, like NGO's or governmental organizations*

For upgrading, financial resources preferably are to be provided by independent partners, like NGO's or governmental organizations, since clients who like to invest generally don't allow upgrading in the value chain. It might be possible to interest independent partners, based on personal relations. It proved to be useful in this research to put these financial resources in capacity building in technical capabilities related to activities that are needed for upgrading. Also capacity building in organizational capabilities is necessary to be able to operate independently in upgrading in future. Additionally, also issues that need to be paid for are: equipment, hiring a forest engineer, an annual operation forest plan -and possibly still starting-up costs like basic infrastructure and general forest management plans.

##### *From clients, like timber companies*

Nevertheless, if independent partners are not available, it is useful for a short period to work with clients as well, for example timber companies, who like to invest in starting-up costs like basic infrastructure and general forest management plans and via whom experience in (sustainable) exploitation of a forest can be gained.

Later on in the process, when starting-up investments are made, independent partners are not available and investments in upgrading can't be made by the CFO itself, it is also possible to work with clients like timber companies. A timber companies might be prepared to invest in

costs related to exploitation of the forest and –in the Bolivian case- to pledge an advance payment without interest (*adelanto* or *habilito*). But in this case it has to be accepted that generally upgrading only can be reached for some stages or not at all. It is possible to upgrade for some stages, for example by being responsible for the commercial inventory and arranging a permission to harvest, if capabilities related to these activities are available among members of the CFO and if timber companies allow the CFO to carry this responsibility. For the CFO in this research it for example helped during the last period that the demand for timber was high and the timber company was more prepared to meet the negotiation points of the CFO.

#### *From CFO*

It is also possible, after the start-up investments are made, the pay the costs related to upgrading as CFO.<sup>35</sup> It is important though, that members of the CFO have sufficient organizational capabilities, including administrative capabilities, for arranging matters like financial matters, transport, food and shelter for laborers during their work in the forest, fuel for equipment and transport means to retrieve this fuels. These cost could be paid based on own savings or credit, if available.

#### **Availability of large and good quality forest**

For upgrading it is necessary to have sufficient forest available, with sufficient trees of the right specie and quality<sup>36</sup>, otherwise return on investment might take a long time. Therefore, if no large and good quality forest is available, it could be interesting to consider sharing costs with other CFO's. It is however, based on former experiences in the region of the research, important to take into account a good management structure, provision of fuel, maintenance and repair of equipment, including availability of transport for retrieving fuel and arranging maintenance and repair. Finally, with regard to a smaller size of the forest area, in addition to the possibility to extend the forest area with forest in other regions, it is also useful to look for combinations of upgrading in the timber value chain with alternative commercial opportunities. These alternative commercial opportunities are for example upgrading in value chains in non-timber forest products, agro forestry, tourism, reforestation, conservation and opportunities related to commercialization of logs that are usually left behind in the forest for example for furniture.

#### ***Step 3: Consider other factors and changes in factors***

In relation to other factors, the demand of markets, the interest in increasing cash income, historic realities and availability of equipment can be considered the following:

- Changes in the demand in the market for sawn timber and logs, which influence price and willingness of timber companies and other clients to make other offers (like described above where timber companies allowed upgrading in some activities).

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<sup>35</sup> This form has not been found in the CFO in the research, but the related recommendations are based on the literature and interviews with the CFO, clients and independent partners.

<sup>36</sup> Which can be determined based on a harvesting cycle for the specific area and maximum sustainable harvest per year based on a forest inventory, taken into account further requirements in the law regarding for example biodiversity.

- The interest in extra cash income is useful to consider in addition to the demand and price development in the market. In comparing potential income based on the market for sawn timber (the market after upgrading to sawing timber) and the market for logs the following has to be taken into account. In calculations on potential income based on sawn timber, in addition to the potential price, also the potential volume that can be harvested need to be included and all costs related to harvesting, sawing, transporting and commercializing timber need to be deducted from the total potential turnover. It is possible to reduce costs, by sharing costs for -for example- harvesting equipment and a portable sawing by more CFO's, as was mentioned before. In case the estimation of the potential income after upgrading doesn't provide extra cash income in relation to selling standing timber, a CFO might not be willing to make the investment in sense of time, workforce and eventually financial means. It is also useful to consider if one likes to invest in upgrading in relation to a potential increase in cash income, or that members of a CFO feel a certain cash income is sufficient.
- It can be historic realities play a role. In the case of the CFO of the research this was the experience with the international market with high requirements on quality and a lot of timber being refused, what made this CFO not willing to upgrade for selling to the international market again.
- Availability of equipment: this might be scarcely available on the market. In Bolivia it was found special harvesting equipment was only available through partnering with timber companies. Since these timber companies were responsible for all the work, which implied downgrading. A track dozer was especially appreciated by the CFO in the study in relation to saving time and workforce in comparison to executing these activities with equipment like a chain saw and machete. This might count for other CFO's as well.

Finally, it has to be taken into account capabilities of members of the CFO, technical and organizational capabilities to execute activities related to the value chain can be developed over time. Both experience in up- and downgrading can support developing these capabilities. Where only downgrading is possible one can learn through being employed by a timber company and where upgrading already has taken place before, it may be considered again based on developed capabilities.

Based on this three steps, the CFO can determine whether for them it is interesting to upgrade or not at that moment in time, although other factors might play a role as well in each particular situation in time. A choice for up- or downgrading doesn't mean this can't be changed in future.