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How the Community Affects a Community-Based Forest Management

– Based on a Case Study in Tanzania

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Abstract

The community has had a changing role throughout the history of natural resource management. The community has been romanticized, ignored, as well as essential for well working natural resource management. Power and control, of many conservation areas in developing countries, have been transferred from central governments on to local governments and further on to local communities. This power shift has occurred in order to control illegal activities, which results in forest degradation.

A case study in Tanzania focuses on two forest reserves, both with community-based forest management. These two forest reserves will show possible factors that make community-based management projects work well, but also what features within a community can affect community-based forest management. Respondents point out knowledge and good leadership as important factors.

A comparison between arguments made by supporters and critics of community-based forest conservation will highlight today's discourse regarding this subject. These arguments are compared with respondents' opinions, where alternative income-generating activities and continued usage of forest resources are corresponding factors.

Keywords: forest conservation, Tanzania, locality, knowledge, participatory method.

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Abbreviations

CBFM	*Community-based forest management*
CBNRM	*Community-based natural resource management*
ICDP	*Integrated conservation and development project*
JFM	*Joint forest management*
LAMP	*Land Management Programme*
PFM	*Participatory forest management*
VFC	*Village forest committee*

1. Introduction

Each year 7, 3 million hectares of natural forest areas are cleared, according to United Nations Food and Agriculture Organization (FAO) latest report "*State of the World's Forests 2007*." The demand for commercial products creates a demand for large land areas in order to make room for plantations, resulting in natural forest clearing. The need for forest conservation areas is vital, since plantations are expanding as a result of meeting the increasing needs of production.[1] National parks and forest reserve establishments are examples of preventative measures against accelerated natural forest clearing.

However, the establishments of national parks have led to contradictions and conflicts. National park establishments prohibited local park-edge residents from using resources of the forest. As a result of this enclosure, contradicting needs and demands emerged between state-owned national parks and local residents, because of the park-edge residents' need of the forest and its products for their livelihood.[2]

To restrain the ongoing deforestation, partnerships between governments and communities have established where control and management are shared between them both. In community-based forest management (CBFM), the surrounding villages manage and control the forest by themselves. By giving power and control to local residents, they will utilize their natural resources in a more sustainable way. In the 1970s and 1980s, a widening international interest of this community-based management system emerged. This system was based on structures of local knowledge as well as local management structures.[3]

The concept community is seldom precisely described or analyzed, nor how it can affect sustainable resource management. In addition, the variability within communities has often been overlooked.[4] Differences that have been looked on are differences such as size, geographic placement, interactions within a community and shared norms. Common divisions between communities are whether they lie in a rural or urban area, and population size, which effect communities in different ways. This thesis will try to examine if there might be other, sidelined differences in addition to urban/rural differences and different population sizes that are of more value to consider when it comes to establishment of community-based natural resource management (CBNRM). It will further accentuate supporters' and critics' opinions

[1] WWF, 5/5 2007

[2] Timmer and Juma, 2005:25

[3] Robbins, 2004:43

[4] Pimbert and Pretty, 1997:10

regarding this conservation system and compare their arguments with the results of this thesis case study.

1.1. Aim of Study and Research Questions

This thesis will examine what kind of arguments supporters and critics have towards community-based conservation management. In addition, see what factors within a community that supporters and critics believe affect community-based conservation management. Especially factors regarding development, conservation, and sustainable land use, since this is core elements in community-based conservation projects.

A case study in Tanzania, where two forest reserves - Duru-Haitemba Forest and Nou Forest - were studied, will accentuate possible factors that can affect the outcome of a community-based management project. These two forest reserves are of importance to this thesis because both are projects with a management system based on `community´ and `locality´. The first project, Duru-Haitemba Forest, has been an ongoing community-based forest management project for more than ten years (since 1994). The second project, Nou Forest, is in a transitional period, undergoing a decentralization of power where control is given to the local communities instead of to the government.

The aim of this case study is to draw attention to residents' opinions about the community-based management system and compare them with supporters' and critics' arguments for and against community-based management attempts. This case study will also examine if there might be other factors of importance within a community that supporters and critics of community-based conservation management do not reflect on.

This thesis aims to answer these questions:

- *Do opinions from this thesis case study correspond with opinions and arguments made by supporters and critics regarding community-based management?*
- *Are there other factors of importance within a community that supporters and critics do not reflect on?*

2. Method

This section describes the process of the case study and of this thesis theoretical framework.

2.1 Case Study

This thesis' case study has taken place in northern parts of Tanzania, where two forest reserves have been the focus of interest - Duru-Haitemba Forest and Nou Forest Reserve. It is essential for this thesis to study these forest reserves due to their management structures. The forests have been the subject of this research specifically due to their community-based management system: one older project, Duru-Haitemba Forest, and one newer, Nou Forest.

The process of a case study aims to describe and analyze a particular entity, through a qualitative and complex approach in order to get an overall picture.[5] In other words, a case study focuses on a particular event and tries to describe this event by explaining various factors that are supposed to affect the situation. In this case, the event in question is the implementation of the CBFM projects and their impacts.

This case study took place between 28th of February to 15th of March 2007. During this period, interviews - both individually and in groups - and documents are sources of information.

2.1.2. Delimitation of Area

To delimit this case study, two villages - each bordering a forest area - were chosen. Because of the short time span, only two villages were chosen in order to maintain an appropriate depth of focus. The base of this case study was Babati Town, Manyara Region of Tanzania. The two forest reserves, but also the two villages, were chosen because of their close placement to Babati Town. In addition, these forests and villages were chosen because they fulfilled requirements, such as being new and old community-based management projects, respectively.

2.1.3. Delimitation of Respondents

The first requirement of the respondents was to be a resident of Ayasanda Village, Duru-Haitemba Forest, and a resident of Dareda Kati Village, Nou Forest. In order to include

[5] Merriam, 1988:25

residents with different scales of forest dependency, it became relevant to interview respondents from different social classes. The requirements were `rich´ and `poor´ farmers.

In Ayasanda, the interpreter, together with the chairperson of Ayasanda village forest committee (VFC), contacted these farmers. The interpreter could distinguish between `rich´ and `poor´ farmers by looking at their houses and on how the farmers were dressed.

In Dareda Kati Village, Nou Forest, a former District Officer selected the `poor´ and `rich´ farmers and gathered the VFC of Dareda Kati. Another requirement was that `rich´ and `poor´ farmers (the individual interviews) should never have been a member of a VFC. Characteristics like age, gender, and tribe membership were ignored, which resulted in random age, gender, and tribe occurrence. Because of this, only men became interviewed in Dareda Kati Village.

At the first meeting with VFC of Ayasanda Village the chairperson was informed about the criteria the respondents should fulfill (rich and poor) so they could be found to the day after. Later, the chairperson showed the way to respondents' homes but did not remain during the interviews, in order to eliminate risks of affecting answers or disturbance. Present during the interviews were the interviewers, respondent and the interpreter, namely to avoid disturbance and influence from other, non-respondents.

In order to select the second and new project, a former District Officer at Land Management Programme (LAMP) office in Babati Town, Manyara region was interviewed. He suggested Nou Forest, which is a project entering a second phase, and therefore looks like a new project. In addition, the project in Nou Forest is similar to the project in Duru-Haitemba Forest. The former District Officer of this project helped to get in contact with farmers and the VFC in the new village, Dareda Kati. Here, just like in Duru-Haitemba, one village out of eighteen was chosen in order to get a good overall picture. The former District Officer prepared the VFC and the farmers so they could be interviewed on decided date in Dareda Kati Village. Once again, there were only interviewers, respondents, and interpreter present during the interviews.

It was important to contact respondents with different forest dependency in order to avoid bias.[6] To verify if respondents represented a variety of forest dependency, the farmers were divided into three categories (I, II and III) based on how much agricultural land they possessed (see Table 1.). This division did correlate with the interpreter's distinguished `poor´

[6] Mikkelsen, 1995:104

and `rich´ farmers, as well as with the former District Officer's selection. There might be other factors of value to get a variety of forest dependency, which are not considered in this thesis.

Table 1. *Categorizing of interviewed farmers, based on land possess*[7]

Farmer categorizing	Total agricultural land (ac) for each farmer	Members in household	Enough agricultural land?	**Acre / member in household**
Category I				
Farmer i	2	11	No	**0,2**
Farmer ii	2	11	No	**0,2**
Farmer iii	2	8	No	**0,3**
Farmer iv	3	7	No	**0,4**
Category I: farmer i-iv				**< 0,4**
Category II				
Farmer v	3	6	No	**0,5**
Farmer vi	6	9	No	**0,7**
Farmer vii	10	11	No	**0,9**
Category II: farmer v-vii				**0,5 – 1,0**
Category III				
Farmer viii	6	3	Yes	**2,0**
Farmer ix	21	10	Yes	**2,1**
Farmer x	25	7	Yes	**3,6**
Category III: farmer viii-x				**> 2,0**

Table 1, represents three categorizations between `poor´, `middle´ and `rich´ farmers, based on their total agricultural land area. The interpreter, former District Officer, and chairperson of Ayasanda VFC, selected farmers based on these class criterions and a correlation were found between their selection and the farmers' total agricultural land area. In this table, the divisions are based on how many acres they have for each household member, where the categories represent:

Category I: < 0, 4 acres / member in household (poor)
Category II: 0, 5 - 1, 0 acres / member in household (middle)
Category III: > 2, 0 acres / member in household (rich)

This division consists of both farmers from Ayasanda Village and Dareda Kati Village. Members of Ayasanda and Dareda Kati VFC are not considered in this table.

[7] Folkesson, 2007

2.1.4. The Interviews

These interviews, which this case study are based on, are qualitative interviews. This means that they do not try to generalize data. Instead, try to go deeper into one case to get an understanding about, in this case, the forests, and the community-based management thereof. A qualitative approach is dependent on the respondents' ability to express themselves, and in combination with the interviewer's ability to register and analyze information.[8] The interviews were semi-structured, which means a few questions were determined in advance while others were resultant.[9]

Group interviews enable an access to more general information about the community.[10] In this case study three group interviews were done and there were four to nine respondents present at each group interview; eight members during the interview with the VFC of Ayasanda, nine members present at the interview with VFC of Dareda Kati and four residents present during the group interview with poor farmers at Dareda Kati.

2.1.5. Criticism of Sources

It is difficult to know if the respondents are a representative selection of the villagers. Since a community is not a homogeneous group, it is a possibility that elites within the community are dominating among the respondents.[11] An example of this could be that only men were interviewed in Dareda Kati Village, Nou Forest.

Features that can have affected respondents' answers negatively can be features like misinterpreting the questions, but also misunderstandings between the interpreter and interviewer. In addition, an answer can be misunderstood: an answer from the respondent, the interpreter, or a misunderstanding of the question itself.

During the group interviews, it is possible that some respondents present were affected by the number of people in these groups, which could have affected their answers. Another possibility is that they did not feel trust for other members present, which might have affected their answers.

Natural conditions vary between communities and countries due to their geographic placement and are therefore important to emphasize that this thesis is based on a case study, and might therefore not point out general factors of importance of a CBNRM project. Both

[8] Johannessen and Tufte, 2003:75
[9] Mikkelsen, 1995:102
[10] Mikkelsen, 1995:104
[11] Mikkelsen, 1995:104

critics' and supporters' opinions regarding community-based natural resource management correspond with factors respondents emphasized to be of importance for a well working conservation management. This indicates that the case study and literature study do reflect the reality (validity), but arguments for and against this conservation management process, made by supporters and critics, also describes situations that cannot be applied to or describe the situation in the studied areas. Hence, it is a case study, where each case is unique.

3. Theory

The literature study that constructs the theoretical framework is based on conservation issues, mostly community-based conservation, but also other types of preventative measures. In addition to collected literature, other sources of information like documents, articles, reports, Internet and management plans have been studied.

This section highlights both positive and negative criticism towards community-based natural resource management (CBNRM), with focus on development, conservation, and sustainable land use. This section will also draw attention to factors within a community which are believed to be of importance to community-based conservation management.

The Definition of Community

A community is a group of people living together in the same area and is subject to the same laws and regulations (Funk and Wagnalls, 1968).

3.1. Positive Criticisms of Community-Based Conservation

During the 1970s, a recognition shift of the community took place.[12] Conflicting demands over resources led to this recognition shift regarding resource management because establishments of national parks led to conflicts between landholders and local residents. Robbins (2004) describes how local park-edge residents were looked upon in their relationship with national parks:[13]

> "…these came to appear as greedy and irrational acts of uneducated locals poaching from the collective good. Efforts to gain access to the park for subsistence did not appear as a return to the integrated human-environment

[12] Timmer and Juma, 2005:25
[13] Robbins, 2004:149

system of the nineteenth century, but instead as an invasion of people into a non-human wilderness."

Here, collective commons (e.g. grazing areas) frequently used by locals during long time spans are described, which now have been transformed into national parks. When these areas became national parks a protection designed to keep humans out started - a factor that contributed to conflicts. Yet, when locals tried to re-collect their land, they were seen as intruders.[14] This `enclosure´ of forests had devastating consequences for park edge-residents thus they could no longer use products they were dependent on for their day-to-day living.[15] Hence, they could not graze their cattle, gather firewood, nor collect products for construction purposes in the forest, and this became a daily dilemma. The goals of conservation and the demands of local communities could not coexist. Therefore, supporters argue that a local community is essential for a well-working resource management in developing countries.[16]

3.1.1. Development and Conservation

A community-based conservation approach does not entail specific outcomes or solutions, CBNRM rather aim to bring dissimilar people together to create agreements and solutions through a participatory method.[17] It aims to decentralize power down to local residents. Supporters stress that it creates an involvement of local communities and local institutions in conservation management.[18] CBNRM seeks to combine development (socioeconomic factors) with biodiversity conservation and aims to mix traditional local knowledge and values with modern ecological beliefs and resource management.[19] Another aim is to strengthen and empower women's position in the decision-making process. It is therefore important that everyone in the village is a part of a project like this and that women become involved in this process.[20] To achieve some of these goals and aims CBNRM projects tries to reach them by giving locals social and economic incentives.[21] Moreover, supporters point out that resource degradation is a result of poverty, which makes it difficult to disconnect poverty issues with

[14] Robbins, 2004:149
[15] Van Schaik and Rijksen 2002:15-25
[16] Timmer and Juma, 2005:25
[17] Moseley, 2003:5
[18] Kellert, et al, 2000:706
[19] Kellert et al., 2000:706
[20] SIDA, 2000:1-2
[21] Kellert et al., 2000:706

conservation issues.[22] In other words, standard improvements of locals´ livelihood and forest conservation should therefore be connected and create a "win-win" situation.[23]

An attempt to solve the conflicting utilization needs for local residents, Integrated Conservation and Development Projects (ICDP), have been one approach. ICDPs also aim to reduce pressure on conservation areas by establishing incentives for locals to cooperate with conservation projects. These projects dominated in the early 1990s.[24] By implementing core conservation areas encircled by buffer zones, it enables a resource usage (usage of buffer zones) by local residents, which are living at park boundaries.[25] It became apparent that local residents need an access to products they depend on. In parts of Africa, some of these buffer zones had a successful management approach based on local communities.[26] This approach became more and more popular since it enabled a working protection outside protected areas for the first time, without law enforcement. Supporters argue that an explanation for this successful approach was that it was based on communities' self-interest. The link between conservation and development had been successfully connected.[27]

3.1.2. Sustainable Land Use

This management system enables forest-bordering residents to manage and control their forest by themselves. Previously residents had limited ability to contribute regarding management matters. When forests have been under governmental control, residents have had little say about the forest and on how to restrain the ongoing deforestation. This has led to a lack of responsibility in protecting the forest. Supporters of CBNRM emphasize that a local responsibility is essential for a well-working forest management. By integrating residents in the decision-making process, it creates a responsibility about the forest. Further supporters stress that this will ease the fact that it is difficult for bordering residents to look beyond short-term needs and preside over forests in a sustainable way. To assure sustainable land use, local residents should therefore be given control over the forest.[28]

Further, supporters stress that these projects have improved the living for many rural residents, since they have created standard improvements of the daily living of locals, and

[22] Gezon, 2006:38
[23] Gezon, 2006:40
[24] Gezon, 2006:40
[25] Gezon, 2006:38
[26] Baldus et al., 2001:19
[27] Baldus et al., 2001:19-20
[28] Jones and Murphree, 2004:64

provided alternative sources of forest products (e.g. agro-forestry).[29] When an enclosure of forests and its resources is implemented, the need for an alternative living is essential. Supporters argue that a lack of livelihood alternatives has unfortunately been a factor that has affected other conservation initiatives in wrong direction.[30]

3.2. Negative Criticisms of Community-Based Conservation

Previously, a commonly used statement was that people in developing countries lived in harmony with nature without the disturbance of the capital-oriented Western way of living.[31] Critics argue that this romanticized vision of people in developing countries has resurfaced to a certain extent, but in a modified way; local communities will automatically use their natural resources in a sustainable way, if full control over their resources are being given to them.[32] If they, despite of this, use their natural resources in an unsustainable way it would depend on irrational behavior as a consequence of poverty and limited or no control over their resources.[33]

The two following sections will describe why critics stand questionable to this approach.

3.2.1. Development and Conservation

Critics believe that a misunderstanding of rural peoples' priorities and diverse realities have occurred, by external professionals, ICDPs, and in community-based conservation.[34] These fail to combine satisfactory human needs with conservation in these areas. They have failed because external professionals tend to apply their own priorities onto local residents.[35]

A community-based approach is a process, with imposed needs and community building processes, which might be implemented on groups that do not have an interest of doing this, which can have a negative effect on forest conservation.[36] In addition, the social institutions in community-based resource management, creates rules on what people are allowed to do, what behaviors and goals are desirable (norms) and what kind of environmental outcomes are

[29] Van Schaik and Rijksen, 2002:15-25
[30] Jones and Murphree, 2004:63-64
[31] Van Schaik and Rijksen, 2002:19
[32] Van Schaik and Rijksen, 2002:19
[33] Van Schaik and Rijksen, 2002:18-19
[34] Pimbert and Pretty 1997:10
[35] Pimbert and Pretty, 1997:10
[36] Gezon, 2006:41

preferable.[37] In communities with a long tradition of informal norms against tree clearing on sacred areas, these traditional systems tend to be replaced by rules and regulations that have been state-imposed. These new norms and regulations are not respected by locals and in addition, they are displacing traditional chains that can have a devastating outcome.[38]

A community can consist of differences, which affects for instance local political decision-making processes and norms.[39] Robbins (2000), points out community differences such as variation in local power, use of agricultural technology, resource access and resource donations .[40] Forest management is, according to Robbins (2000), closely linked to the ability of land access and power, and yet also a linkage between corruption and power.

A social differentiation study implies that an individual, as part of a specific group (for instance gender, age, and status) may more or less benefit in the political process. In these political processes, different characteristics have different advantages within each political context.[41] Communities are far from homogenous and elites are present in all societies. Different groups consist within a local community, e.g. age, religion, gender, wealth, economic activities, social status, and power.[42]

Moreover, Robbins (2000) describes divisions inside a community, based on knowledge about the forest. For instance, farmers with livestock have knowledge about fodder and grass and people working with construction know about different tree species.[43] Therefore, different background creates different knowledge with a result that these people will take different positions in the local political economy.[44] Robbins (2000) emphasizes that goals and material interests is not the only factor defining different groups, their common visions play a big role as well.[45] Local residents with common notions of the forest take the form of political alliances when e.g., disputes over proper management are being discussed, and individuals in these groups may not always share identical experience.[46]

[37] Robbins, 2004:150
[38] Robbins, 2004:151
[39] Robbins, 2000:130
[40] Robbins, 2000:130
[41] Gezon, 2006:151
[42] Pimbert and Pretty, 1997:12
[43] Robbins, 2000:133-137
[44] Robbins, 2000:140
[45] Robbins, 2000:141
[46] Robbins, 2000:140

3.2.2. Sustainable Land Use

Supporters of community-based conservation management stress that local communities will use their resources in a sustainable way when they are being given full control over them. If there is not a sustainable use, locals have an irrational behavior, because of poverty. Here, critics agree that poverty may lead to unsustainable utilization but emphasizes that wealth can also lead to environmental degradation as well. Giving local residents control over natural resources are only *one* way of establishing a sustainable use.[47]

Poor, marginalized people are often associated with environmental degradation. This might make it logical to associate conservation of environmental structures and resources, with community sustainability and protection of source of revenue with each other. According to critics this is far from true, even in such cases where communities are deeply involved in resource management.[48] In addition, sustainable community-based conservation (economically, socially, and ecologically) can only be achieved if locals find this management scheme attractive and adopt it as a long-term livelihood.[49]

Further, critics' stress that local residents have incentives to preserve their local environment (and are interested in doing so) is a mistaken belief. This would mean that communities self-policing would lead to good conservation and a law establishment made by officials unnecessary.[50]

The way the community-based conservation scheme is today will lead to an inhabitation of the decentralization of power to local residents, because of the external institutions and conservation bureaucracies' organizational structure.[51]

Local residents can best manage over local resources, is stressed by supporters of CBNRM. Critics agree, but only when the management is performed by locals with a history of a sustainable resource use.[52] However, even if this history of preservation exists in a management group it can lead to a social breakdown of the mechanisms controlling their resource use. This social breakdown can be a consequence of an increased market value of the local resources, or due to an increase in population size.[53] Ecosystem variability is yet another

[47] Gezon, 2006:151
[48] Robbins, 2004:147
[49] Pimbert and Pretty, 1997:4-5
[50] Van Schaik and Rijksen, 2002:18
[51] Pimbert and Pretty, 1997:3
[52] Gezon, 2006:40
[53] Gezon, 2006:40

factor that has been disregarded. Different areas are better suited to the current community-based conservation scheme, than others are.[54]

According to sustainable use theory, the main threat to protected environmental areas is not an overuse, but the pressure on forests and the locals' need for agriculture and grazing land.[55] This indicates that biodiversity conservation does not depend on scientific and technical intervention to achieve use-limitations or prohibition, and is therefore an economic, social, and political issue. To implement sustainable land use activities that do not result in environmental degradation, right incentives for landholders, will instead be provided.[56] Some critics argue that an economic and institutional framework is the solutions to conservation problems, because locals will use their resources best because they want to ensure their future resources.[57]

3.3. Supporters Response to the Criticism

Criticism towards CBNRM has developed from critics misunderstanding and does not base on practical experience or fieldwork experience.[58] Critics argue that CBNRM tends to replace law enforcement. This is not true, since there is no evidence where this is true. Instead, it has enforced it. Supporters stress that law enforcement already is one important part of CBNRM and critics have failed to recognize this.[59]

Another criticism towards CBNRM is that it has a top-down approach and that initiatives are not developed from communities themselves.[60] Here supporters agree that this CBNRM scheme is not developed from African traditions. However, social change goes along with development and new concepts do not have to fail just because it is not developed from a domestic origin. New concepts fail when they contradict existing cultures, beliefs, and social structures.[61]

[54] Pimbert and Pretty 1997:11
[55] Jones and Murphree, 2004:63-64
[56] Jones and Murphree, 2004:64
[57] Jones and Murphree, 2004:64
[58] Baldus et al., 2001:19
[59] Baldus et al., 2001:19
[60] Baldus et al., 2001:19
[61] Baldus et al., 2001:20

3.4. Theoretical Summary

Locals have been seen as people living in harmony with nature, as intruders to conservation areas and as essential for well working natural resource management.

By giving communities control and power, it will enable a well working and sustainable forest management. Partly because local residents want to ensure their local resources, which they depend on and partly because it forms a management built upon local structures and traditions, which creates community-building processes, according to supporters of CBNRM.

Critics, to this management system, oppose the fact that locals automatically will use their local resources in a sustainable way, based on pure interest and stands questionably to a community's self policing-making ability.

Differences in a community are differences in local power, use of agricultural technology, resource use and different knowledge creates different groups in a society. Differences between communities can be those such as norms, traditions, and differences in political decision-making processes.

4. The CBFM Projects in Tanzania

Tanzania is located in Eastern Africa.[62] The forest degradation in Tanzania is mainly a consequence of forest clearing for agricultural purposes. Increasing population growth is further increasing the pressure for new land.[63] In addition to deforestation, Tanzania have numerous other environmental issues such as soil degradation, marginal agriculture, desertification and threatened wildlife caused by illegal hunting.[64] The majority of Tanzanians lives in rural areas and is mostly dependent on agricultural activities for their livelihood.[65]

In 1973 and 1974, the rural settlement pattern changed after the so-called Villagesation Programme, which was launched by Tanzania's former government.[66] This Programme moved the scattered rural population to concentrated places. Consequently, most parts of the country now suffer from deforestation and semi-arid conditions. At these concentrated places, access to resources was not easy and because of this the house structures in Tanzania is poor and building prices high.[67]

[62] Geology, 2007
[63] European Commission, year unknown:2
[64] Geology, 2007
[65] European Commission, year unknown:2
[66] International, 2007
[67] Geology, 2007

Efforts to restrain the ongoing deforestation and to make governments and local communities work together in partnerships has been done through Participatory Forest Management (PFM). There are two parts of PFM: joint forest management (JFM) and community-based forest management (CBFM). A national or local authority owns a joint forest. Joint forests are managed by both the government and local communities and together they form part of a management agreement, regarding use and responsibilities. In CBFM, surrounding villages manage the community-based forest by themselves. [68]

4.1. The Case Study in Tanzania

This case study focuses on two forest reserves Duru-Haitemba Forest and Nou Forest. The study area of Duru-Haitemba Forest lies in Babati District of Manyara Region in northern part of Tanzania. This forest has been a community-based forest management project since 1994.[69]

Duru-Haitemba Forest consists of 9045 hectares Miombo woodland.[70] Eight villages surround Duru-Haitemba Forest, where Ayasanda Village is one of them. The usages of the forest are mostly for domestic reasons like firewood, fruit and mushroom gathering, stones for construction reasons, water from springs, wood for beehives, grass (to build roofs) and fodder collecting for domestic animals.

The study area of Nou Forest Reserve lies in both Babati and Mbulu District in Manyara Region of Tanzania. The forest covers an area of 32 107 hectares.[71] This project is changing from a JFM to a CBFM project.

The majority of people living close to this forest are poor and dependent on forest products e.g. cattle grazing and firewood. People here are only willing to conserve the forest if they have a continued right to these resources.[72] Residents use forest products such as firewood, herbs, grass, fishponds, and wood to make beehives. Eighteen villages surround Nou Forest and Dareda Kati is one of them. Dareda Kati Village lies between two forests; one owned and controlled by the government, and one changing from a JFM to CBFM.[73]

[68] The Nou Joint Forest Management Project
[69] VFC, 2007
[70] Kavishe, 2004
[71] European Commission, year unknown:2
[72] The Nou Joint Forest Management Project
[73] Member VFC, 2007

4.2. The Organizational Structure of These CBFM Projects

A village consists of several sub-villages. Every village has a Village Forest Committee (VFC) with representatives from each sub-village, and together they manage forest matters and guard over the forest area belonging to the village. The VFC consists of two members from each sub-village, which becomes members after a democratic election. They have election every third year and it is possible to become re-elected. The VFC is working under the supervision of the Village Government.[74] The forest conservation area belongs to the District Council and one of its responsibilities is to approve the villages' by-laws.[75]

Each village has made its own regulations and by-laws on how to use and not to use the forest. Activities that are prohibited are those who have major destructive effects on the forest and can for instance be charcoal burning and cutting down trees for commercial purposes.[76]

Each village has elected two formal guards (usually two young men) and they are responsible for the supervision of the forest, like for instance to make sure everyone follows the rules and regulations. The guards are compensated, not with money; instead, they become excused from collective activities like school and road building. It is important to emphasize that everyone in the village guard the forest and not only the two formal guards.

The Village Council governs the village, and committees manage specific duties on behalf of the Village Council. The District Committee has regular meetings with villagers about the importance of forest conservation.[77] The District Committee helps the villagers by providing them with knowledge on how to run the project and by providing them with guardian tools.[78]

A *Village Forest Committee* (VFC) is approved by the village assemblies and formed by Village Council in order to enable security of the government forest and of the forest conservation.[79]

The responsibilities of the VFC are:

- Make sure that the demarcation of forest is well secured
- Implement security and good development
- Keep record and notes from all meetings
- Together with guards, establish a well working security and usage of the forest
- Give information to villagers.[80]

[74] Kavishe, 2004
[75] Maanga, 2007
[76] Kavishe, 2004, member VFC, 2007
[77] VFC, 2007
[78] VFC, 2007
[79] The Five Year Management Plan, year unknown:7, Member VFC, 2007
[80] VFC, 2007

4.3. The History of Duru-Haitemba Forest

A population increase in the 1960s[81] resulted in a declining of Duru-Haitemba Forest and between the years 1987-1992, the situation got worse.[82] The population growth led to a larger demand of agricultural land and forest products. Duru-Haitemba Forest was during this period under governmental control. The ongoing deforestation concerned the managers and as an attempt to control the situation, they sought to announce Duru-Haitemba Forest as national or local government forest reserve.[83] An announcement of Duru-Haitemba Forest as a forest reserve would, for the people, results in limited access to the forest and its products. Before the government announced the forest reserve, people dependent of forest products started to take as much as possible out of the forest.[84] The managers realized that transforming Duru-Haitemba to a forest reserve would lead to an unsustainable situation for both the forest and for the people living close to it. It was believed that sustainable forest management could only be achieved through a change of management and this conclusion gave the villages of around Duru-Haitemba Forest the control and power they needed to manage the forest. In 1994, eight villages had been given full responsibility of the management.[85] Each village became educated and assisted through a Land Management Programme (LAMP), and the villagers made their own management plans, and designed new rules.[86]

4.4. The History of Nou Forest

In 1973 and 1974[87], a mass movement of the scattered and mobile rural population of Tanzania occurred during the Villagesation Campaign and moved these people into permanent village-settlements. This mass movement of the rural population had a negative impact on the surrounding environment and the placements of these new villages were not always in areas close to potential cultivation land, which led to self-supporting difficulties.[88] This Villagesation Campaign in 1973 and 1974, led to increased timber harvesting in order to build new villages.[89] In the late 1970s, the exploitation of Nou Forest accelerated due to issued timber extraction licenses for timber sawing groups. In the 1980s, this timber

[81] VFC, 2007
[82] Kavishe, 2007
[83] Kavishe, 2007
[84] Kavishe, 2007
[85] Village Forest Management Plan Ayasanda Village, 1994.
[86] Kavishe, 2004
[87] International, 2007
[88] International, 2007
[89] The Five Year Management Plan, year unknown:3

extraction by sawing groups annoyed the local people who began to cut timber as well. The situation started to become uncontrollable and 1989 this resulted in an enclosure of the forest. Despite this people continued to extract timber.[90]

Nou Forest Reserve is a JFM project and started in 2001. A dialogue between the government and the communities involved played a key role in making this joint system work. Unfortunately, the dialogue between the government and residents in Dareda Kati Village has not been fulfilling.[91] A stakeholder meeting has recently taken place (2007) in order to improve the situation and Nou Forest is now in a transitional period. The JFM is now changing to a CBFM project.[92]

5. Results

This section is based on respondents' (farmers and VFCs) answers from Ayasanda Village, Duru-Haitemba Forest and Dareda Kati Village, Nou Forest. This section will draw attention to the bordering residents' opinions about these CBFM projects.

5.1. Positive Criticisms to the CBFM Project in Ayasanda Village, Duru-Haitemba Forest

When the forest was under governmental control, guards `from town´ occasionally visited the village in order to guard the forest. When these guards visited Ayasanda Village, everyone stopped with the illegal activities in the forest and continued again after they had left.[93] When Duru-Haitemba became controlled under CBFM, the guards were chosen in their own village and, as the secretary of the VFC explained: "the evils in the forest could now be controlled."

The main reason why they conserve the forest is that they are allowed to use products, such as local medicine, firewood, and wood to build bee houses.[94] The participatory method (the CBFM project), have made it possible for people to contribute their own ideas and "this makes people conserve more."[95] Today, residents of Ayasanda Village feel that there is no problem with being heard about the project because of the participatory method.[96]

[90] The Five Year Management Plan, year unknown:3
[91] Kirway, 2007
[92] Maaanga, 2007
[93] Member VFC, 2007
[94] Category I, 2007
[95] Category II, 2007
[96] Category I, 2007

When the trees in the forest started to increase, due to the implementation of the project, water sources started to increase as well and soil erosion became less of a problem because of the growing trees. Now, more than ten years after the implementation of the project, they realize how beautiful the forest is and how much they can benefit from it.[97]

5.1.1. Development and Conservation

Since implementing the rule against cutting down trees, people now plant exotic trees in their own plots instead. A farmer explained why they now plant these exotic trees; "External officers came to Ayasanda, explained to us the importance of forest conservation, and taught us how to plant the exotic trees." Because of this, they can make their own timber from their own trees and this is one of the biggest changes since the project started.[98] As Duru-Haitemba forest grows larger, it will lead to an increase of wild animals. For some farmers, these have an aesthetic value.

At the beginning of this project, only old men were involved in the protection of the forest because of their wisdom and knowledge about the trees. Later on, they implemented a requirement that fifty per cent of the members in the VFC must consist of women.[99] The forest conservation project has "improved women," and one farmer puts it: "Before, women were mainly responsible for domestic activities. Now women can easily get firewood. They are now relaxing."[100]

5.1.2. Sustainable Land Use

One farmer and a member in the VFC explained that a population increase in Ayasanda would neither affect the forest nor land availability, because the elderly encourage their children to move to other places and to get an education.[101]

Since this project started, they have begun building better houses, with bricks instead of wood, and they have learned the importance of having an existing forest. In addition, like the secretary of the VFC said: "People now know they have to get more money to build better

[97] Member VFC, 2007
[98] Category II, 2007
[99] Member VFC, 2007
[100] Category II, 2007
[101] Member VFC, 2007

houses." There will be no negative effects on the forest in the future because "we will no longer use trees for construction purposes."[102]

The villagers of Ayasanda are preserving Duru-Haitemba for future generations, so they also can benefit from the forest. Later on, when the forest becomes older, they want to use the trees for timber making for commercial purposes. However, this would require a special permission.

5.2. Negative Criticisms of the CBFM Project in Ayasanda Village, Duru-Haitemba Forest

Initially, people of Ayasanda were against this project, because it meant that they could not use resources in the forest as freely as before.[103] Suddenly, activities became restricted and required permission and some activities became completely prohibited.

At the beginning of this project, people continued with the illegal activities despite of new knowledge and new regulations. A member of the VFC puts it: "There was a slow response from the villagers to follow the new rules and as an attempt to control the situation we implemented fines." After a while, people got tired of getting these fines and started to accept the new rules and regulations.

No farmer or member of VFC said they dislike the project today; rather they seem to be in favor of it. However, some respondents said that "other people" dislike the project. People against the project will burn land and this creates a risk of fire in the future. Why these people are against the project is because people have different morals.[104]

5.2.1. Development and Conservation

Bad management and leadership will affect the forest in a destructive way. "If the management is very poor, people will not be careful to protect the forest and then they will lose the forest."[105] Bad security is another factor that can contribute to negative outcomes. It would probably increase illegal activities, such as charcoal burning, fire and illegal timber harvesting.[106] The security of the forest could work better.[107]

[102] Category I-III, 2007
[103] Member VFC, 2007
[104] Category I, 2007
[105] Category I, 2007
[106] Category I, 2007

The up growing of the forest has also a negative consequence because wild animals, such as hippos and leopards destroy crops and are dangerous for the people living near the forest.[108] Some farmers explained that this could result in an increase of fire in the future. People will burn land in order to keep wild animals away. Others, who like the increased wild life, also mentioned a greater risk of fire in the future and that this would harm the wild life.[109] Moreover, hunting purposes is another reason for burning land areas.[110]

5.2.2. Sustainable Land Use

The interviewed farmers in Ayasanda Village in Category I and II did all explain that they do not have enough agricultural land to fulfill their family's needs. While, respondents in Category III did all have enough land to fulfill their needs. In the future, when the population increases, lack of agricultural land will create problems for the young people.[111] A population increase would also increase the demand for forest products, such as firewood.[112]

If they would suffer from bad harvests, because of bad climatic conditions, it would result in "hunger in society." People would then go into the forest by night to cut down trees and later, sell it to get money.[113] This would affect the forest management negatively.

Respondents explained that some farmers have a `bad will´, because it is not equal in the world and this creates different morals and views;[114] "Not everyone has a good will, and then they will burn grass."[115] While a member of the VFC pointed out that, "there are no enemies among the village."[116]

5.3. Positive Criticisms of the CBFM Project in Dareda Kati Village, Nou Forest

When the JFM became a CBFM project, it reduced the number of offenders and illegal tree cutting.[117] "There is no threat to the forest today, because people have knowledge now."[118]

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[107] Category I, 2007
[108] Category I, 2007
[109] Category II, 2007
[110] Category III, 2007
[111] Category I, 2007
[112] Category III, 2007
[113] Category II, 2007
[114] Category II, 2007
[115] Category II, 2007
[116] Category II, 2007
[117] Member VFC, 2007
[118] Category III, 2007

A farmer describes the situation like this: “The forest has been here since the beginning of the world, but before we did not know what to do with the forest, so tree cutting and grazing activities were done randomly. The government forbids us to do illegal activities in the [governmental] forest. The [governmental] forest has no use for the people today, because people can get firewood from the community-based forest.”[119]

This management method (CBFM) was implemented because people needed to use forest resources, such as firewood, water, and grass.[120] The benefit villagers have gained from this project is that they can obtain trees for construction purposes, get firewood, and build houses. In addition, they have a lot of water for domestic use and irrigation systems.

5.3.1. Development and Conservation

The project managers educated residents in Dareda Kati Village on how to improve their living standards, by giving advice regarding small economic activities, such as beekeeping, fishpond making and promoted the creation of vegetable gardens.[121]

People in Dareda Kati Village have, as a result of the project, reduced the number of free grazing cattle and learned the importance of zero-grazing*[122]. “We are taught how to use the forest, reduce grazing, and learn zero-grazing.[123] Further, the project has educated people on how to keep bees and how to plant exotic trees.[124]„

Before the project started, they did not have many wild animals in the forest, as they have now, but “people are happy to see them.”[125]

One farmer describes the situation in Dareda Kati Village today like this: “Traditionally, people were respecting the forest, even before 1961 (when Tanganika and Zanzibar became Tanzania), and they still have the same traditions.” Hence, minor changes before and after the project.”[126]

[119] Category III, 2007
[120] Category II, 2007
[121] Member VFC, 2007
[122] http://www.iirr.org/saem/page204-207.htm, 3/3-2008
* Animals are kept in a stall, where food is brought to them instead of allowing animals to graze outside.
[123] Category I, 2007
[124] Category III, 2007
[125] Member VFC, 2007
[126] Category III, 2007

5.3.2. Sustainable Land Use

A population increase "does not effects me or the forest, but when we are too many people, the easiest thing to do is to move to other places."[127]

The CBFM project has introduced the villagers to zero-grazing activities and they have been advised to sell the milk in order to earn their daily needs.[128] The forest can bring benefits to future generations.[129] They realize now that there is a loss to future generations if they cut down trees today. In the future, they are expecting an existing forest. When the trees are thick and big, knowledge from experts will help them to decide when the trees can be harvested. A special permission to cut them down and to make timber will be required.[130] If government approves it, there will be no problem to harvest trees in the future. Because people realize that forest conservation is important for human life.[131]

Today, tree cutting is forbidden, and because of this, they have a lot of firewood and grass in the forest.[132] A farmer talks about the changes the forest has given them: "Big climatic changes, because the forest has now a large cloud cover, which results in much rain."[133] Before the forest grew up they had lack of water, but the water amount have now increased.[134]

A member of the VFC explains the forest like this: "It is beautiful. We expect to have a lot of wild animals, safe water resources, and good climate conditions in the future."[135]

Other farmers said: "The forest is the main source of the formation of the rain and now we have a lot of rain."[136] "No trees in the forest will create much wind and then the clouds will blow away."[137]

5.4. Negative Criticisms of the CBFM Project in Dareda Kati Village, Nou Forest

When the project started, people continued to cut trees.[138] A farmer puts it: "We were angry at the beginning, because we were not allowed to graze in the forest anymore."[139] Although expertise and knowledge have been spread in the village still, not everyone understands the

[127] Category I, 2007
[128] Category I, 2007
[129] Category III, 2007
[130] Category II, 2007
[131] Category III, 2007
[132] Member VFC, 2007
[133] Category III, 2007
[134] Category III, 2007
[135] Member VFC, 2007
[136] Category I, 2007
[137] Category III, 2007
[138] Category I, 2007
[139] Category I, 2007

importance of the forest conservation project. It is hard to educate people about the project [140] and they have trouble getting everyone to understand the importance of the forest.[141]

They have bad security in the forest. However, regular offence is sometimes hard to avoid.[142]

5.4.1. Development and Conservation

Little agricultural land in the future will affect young men who dislike to work. They will "raise evils in the society and become thieves and robbers."[143] Some residents pointed out that they need improvements of their exotic tree planting activities: "Sell exotic trees in gardens and I want people to come and by them, so we can get an income."[144] It is important to create different methods of income. Another farmer emphasizes the need of improved infrastructure to ease transports from cultivation areas, to areas where demand is, for instance, bridges should be better maintained.[145]

As the forest grows larger, it will bring an incoming of wild animals. They are a threat, especially for those who live near the forest, because they eat crops and domestic animals.[146]

5.4.2. Sustainable Land Use

Everyone in Category I and II felt that their agricultural land was not enough to fulfill their needs. A population growth will lead to difficulties in getting land, which will affect the village negatively. People here are dependent on significant rainfall and; "At droughts, we get a shortage of products and the financial situation gets very bad that year."[147] In addition, "We do not get much production from harvests because the land is not fertile."[148]

[140] Category I, 2007
[141] Category II, 2007
[142] Category III, 2007
[143] Category I, 2007
[144] Category I, 2007
[145] Category I, 2007
[146] Category I and III, 2007
[147] Category II, 2007
[148] Category I, 2007

6. Analysis and Discussion

- *Do opinions from this thesis case study correspond with opinions and arguments made by supporters and critics regarding community-based management?*

Supporters of CBNRM projects believes that local residents should be given control because it is then based on communities' self interest and also on their interest to ensure future resources and will therefore best manage over local resources. This, according to critics, can be true but only when locals have a history of conservation. Further, critics argue that they will not conserve forests based on pure interest.

When Duru-Haitemba Forest was under governmental control, they sought to gazette the forest. Hence, the bordering residents' utilization accelerated. In the same way, when Nou Forest was under governmental control, the situation became unsustainable. Local residents were excluded from the forest, affecting those who were dependent on forest products. Both residents in Ayasanda and Dareda Kati Village had negative experience at the CBFM projects implementation stage. They explained that everyone in the village was angry because the project resulted in a usage limitation (before they used forest products freely but illegally). Residents in these villages stressed that the main reason why people are willing to conserve the forest is that it enables a continued usage of forest products. This demonstrates that local residents are willing to biodiversity conservation in a system that allows them to use the forest. However, this does not indicate that it has to be the only reason. Critics to CBNRM stresses that locals can manage over local resources, but only when they have a tradition of tree saving on sacred areas. Duru-Haitemba Forest and Nou Forest lies in an area where local residents do have a tradition of conserving sacred trees. One farmer in Dareda Kati Village explains that they have these traditions and that there is not a big difference before and after the project because of this tradition. Norms seems to have played a contributing role in establishing these projects in both Duru-Haitemba Forest and in Nou Forest, and this might have enabled these projects.

It is difficult to know if supporters' or critics' arguments are the ones describing why the CBFM project in e.g. Duru-Haitemba has worked well. However, if this project is successful because of its history or because of their self-interest is in this case irrelevant. Instead, since residents in both villages pointed out that they became angry at the implementation stage of these projects because of use limitations, this indicates that the CBFM projects have created a

responsibility within the community. Hence, many residents felt that it was wrong not to follow the new regulations, but did not follow them when the forest was under governmental control. This responsibility did not exist before the project because earlier restrictions (governmental) evidently did not make them stop with illegal activities. To create a well working CBNRM is it therefore essential to create a feeling of responsibility within the community. The fact that they have a history of saving sacred trees can instead be one reason explaining why the CBFM in Duru-Haitemba has been successfully maintained.

The respondents' opinions regarding why and when communities can best manage over local resources best correspond with supporters' arguments, because the project created a *responsibility* within the community that made it successful.

In Dareda Kati Village, evidently forest conservation did not work well when the government owned and managed the forest. Not even JFM implementations stopped the illegal activities. This participatory method (CBFM) has decreased illegal activities, because it gave access to products they are dependent on for their livelihood. Another positive contributing factor is the fact that villagers got involved in the conservation process, both by giving information and by the ability to contribute. Once again, respondents' opinions can be linked to supporters' arguments, since they pointed out the necessity to make every resident a part of a project like this.

Supporters, critics, and respondents have agreed on that *resource access* has made the CBFM project possible to implement and maintain. However, it is not enough to give access to forest resources and then assume local residents will utilize the forest in a sustainable way. As the critics argue, it is hard to combine conservation with socioeconomic factors. ICDPs combine development issues with biodiversity conservation. By standard improvements of locals' livelihood, and by providing alternative sources of income, a working conservation action can be achieved. Critics argue that supporters of ICDPs have underestimated the difficulties in combining socioeconomic demands with biodiversity conservation.

Respondents expressed that because of this project, they have improved activities that have a negative impact on the forest. Today, they know how to build better houses and they have been introduced to exotic tree planting in their plots, which they, in time, will use for construction purposes. However, the case study also showed that there are difficulties within the community, which affects a CBFM project. They talked about differences in the world to be a contributing factor, and that this inequality in the society is the reason why some residents do not follow rules. A resident in Dareda Kati Village explained that they need improved infrastructure so transportation from cultivation areas to areas with demand can be

eased. Therefore, respondents do agree with critics; that socioeconomic factors and conservation is hard to combine and that inequality in the world (poverty) leads to actions that are bad for the conservation project. In addition, respondents expressed that a population increase will affect land availability. A population increase will enhance the need for more agricultural land and younger generations will in the future therefore have difficulties in possessing land for agricultural purposes. Respondents' solution to this problem is to move to other places. However, the problem remains. To solve this problem alternative income-generating activities are essential to ensure a sustainable usage. This is one of CBNRM projects most challenging components. The challenge is to provide an alternative income, which does not just work as a complement to existing income-generating activities, but exchange them to more sustainable alternatives - substitutes. If alternative incomes not can be provided or achieved then an unsustainable utilization of the forest will occur, e.g. "during drought, illegal activities will occur in the forest," or that landless people will "raise evils in the society and become thieves and robbers." In those cases where conservation does not lay in the local resident's interest is when they are completely dependent on forest resources for their survival. In other words, conservation then becomes a requirement, which they cannot afford. This indicates that if a population increase creates many landless people they will perhaps have no other choice then to rely on forest products for their survival.

Residents in Ayasanda Village pointed out that the CBFM project has empowered women, because now they are not only involved in domestic activities. As a result, they are involved in the conservation process and are integrated in the decision-making process. An important factor that makes this project work is because of its *participatory structure*. Residents feel that they can be a part of the process and their opinions are being heard. In Nou Forest, all respondents were men and it seems like the integration of women in the decision-making process is not as developed as the one in Duru-Haitemba. This could indicate that these projects do empower women, because Duru-Haitemba Forest have been a project ongoing for more then ten years and Nou Forest is in its implementation stage. Development and conservation can be linked, but it takes time.

§ *Are there other factors of importance within a community that supporters and critics do not reflect on?*

Attitudes towards this project and these forests seem to be divided. In Ayasanda Village, some explained that there were no enemies amongst them, while others said that inequality in the world has lead to people's dislike of the project. These inequalities result in different morals and views. In Dareda Kati Village, the same situation seems to be noticeable. One farmer expressed that no harmful threat exists towards the forest, because today all have required knowledge about the forest. Other farmers explained that it is hard to educate people and the reason why people harm the forest is that they do not have enough knowledge. Respondents emphasized that: "not everyone had the knowledge" or "people didn't understand the importance of the forest", "now we have learned…" and so forth. People that did not have required knowledge about the forest were the ones not protecting or conserving the forest, according to respondents. One respondent in Ayasanda Village expressed that even more knowledge would improve the situation further. In both cases, *knowledge* seems to be essential for the conservation project.

Critics also talk about knowledge and that knowledge divides people into different groups. People with lots of knowledge tend to have the biggest influence (status) and this creates a hierarchal structure. Here, it is a connection between diversity and inequality and bad community-based conservation management is questionable. A community does have different power structures and because of this people will form different groups in order to deal or discuss their shared needs. Inequality inside a community does affect a CBFM, since it makes people more or less receptive to conservation. These attitudes can, according to respondents, supporters and critics correlate with forest dependency. However, this strengthens the fact that it is important that knowledge reach as many residents as possible and not only to the VFC for instance. It is important that everyone have knowledge in combination with a participatory method.

When reading about community-based conservation, not much energy is put on defining knowledge as an important factor, at least not in the same way the respondents explained it. Critics do explain that knowledge creates different groups in a society, which leads to different status and inequality in the decision-making process, but little about how important knowledge, in form of information about the project and local ecosystems, is to these projects. Supporters do also stress the importance of knowledge but does then talk about the

importance of mixing traditional knowledge with modern conservation beliefs. Instead, respondents explained knowledge as knowledge about their environment and what long-term consequences their actions will have. They also talked about knowledge in form of knowledge about why this project is of importance. Respondents explained this knowledge as a positive and important factor and that those with little knowledge are those who do not follow the rules.

Respondents also stressed the fact that *good leadership* and well-working *security* are essential. A community-based forest management project will be unsuccessful if one of these (knowledge, security, or leadership) is insufficient. It will make people disrespectful towards the project and will create a non-working community-based conservation management. Residents in Dareda Kati Village, Nou Forest stressed that bad security was the reason why this project did not work as well as it could. Even residents in Ayasanda Village, Duru-Haitemba Forest explained that bad leadership and security would affect the CBFM project in a negative way. Therefore, knowledge, good leadership, and well-working security are essential.

7. Summarizing Conclusions

Supporters, critics, and respondents pointed out resource access as a factor that has made it possible to implement and maintain a CBFM project. However, giving access to these resources does not alone lead to well-working management. When it comes to the establishment of CBNRM projects, it is therefore essential to create a local responsibility for the forest and to make local residents involved in the decision-making process. This responsibility made these community-based conservation management projects possible to implement and maintain. Establishing a responsibility within a community is one important factor when trying to overcome short-term needs and views, and is a fundamental component to enable a sustainable land use and well working CBNRM. Through a participatory method, it is possible to empower women, since it creates an involvement in the decision-making process. This is important because women are the ones using forest products for domestic activities.

Knowledge is another component that plays a big part of a CBNRM. It is important that everyone in the forest-bordering villages learns and becomes educated about a project like this, since this creates an understanding of why this conservation project is important and

what consequences their actions will have. However, knowledge cannot work as a single factor that will lead to sustainable land use and well working CBFM.

Another important factor that supporters and critics do not mention is that the security in the forest creates a good community-based conservation project. Good leadership will create good management, and this is closely linked to responsibility. Without a well-working leadership, the responsibility within the community will not be fulfilling either, which will have a negative effect on a CBNRM project.

A population growth will increase the pressure for agricultural land in the future and will therefore make it difficult for younger generations to possess land for agricultural purposes. The case study showed that agricultural land possession correlated with poverty (see Table 1.) and respondents, supporters and critics linked poverty with forest degradation. This might indicate that more people in the future will not follow rules and regulations regarding these community-based projects, if it becomes more and more difficult to possess agricultural land in the future. Land availability is therefore connected to alternative income-generating activities, and this is therefore essential for a sustainable land use. Without providing alternative income-generating activities, the forest will be utilized in an unsustainable way due to a population increase.

All these factors: local responsibility, resource access, empowerment of women, knowledge, good leadership, well-working security, and alternative income-generating activities, are closely linked to each other. They play an important part for this type of biodiversity conservation. Further studies are needed, especially regarding alternative income-generating activities as a *substitute* for forest utilization and on how to handle a population increase in areas where forest dependency is high.

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Interviews

Village Forest Committee, Ayasanda Village, Duru-Haitemba Forest, 6/3-07

Daniel Cosmas, chairman of the VFC

Onesmo Bombo Basoro, general secretary of VFC

Sarah Hunte, member of VFC

Emanuel Hewas Senge, member of VFC

Hadija Funay Lalu, member of VFC
Agnes Joseph Salaho, member of VFC
Christina John Senge, member of VFC

Village Forest Committee, Dareda Kati Village, Nou Forest, 15/3-07
Christofer, Village executive officer
John, chairman of VFC
Philip, general secretary
Emanuel, member of VFC
Johan, member of VFC
Akadi, member of VFC
Laurent, member of VFC
Agostino, member of VFC
Martin, member of VFC
Farmers
Regina Sendeu, 9/3-07
Isaya Mayunga, 9/3-07
Juma Goti, 9/3-07
Ernesta Humurai, 12/3-07
Goti Soya, 12/3-07
Nada Dahaie, 15/3-07
Petro Deng, 15/3-07
Augustino Joseph, 15/3-07
Safari Qwari, 15/3-07
Mattias Baso, 15/3-07

Mr Kavishe, Technical Advisor for Land Management Programme, 7/3-07
Mr Maanga, LAMP office, 12/3-07
Mr Kirway, former District Officer, 13/3-07

9. Appendix

Common questions during interviews
What kind of changes have you seen since the project started?
How have the forest conservation project affected you, and your family?
How do you benefit from the forest?
Do you have enough farming land? How much do you have?
How many are there in your family?
What would improve your financial situation?
What kind of risks do you think the future could bring?
How do you think population growth can affect you and the forest?
What do you think would make this project work better?