The transfer of knowledge and innovations as a contribution to an improvement of the quality of life of small and medium scale farmers in Costa Rica

Lessons Learnt from the Community Development Program of EARTH University

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<td>ASIREA</td>
<td>Association for Sustainable Development of the Atlantic Region</td>
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<td>CDP</td>
<td>Community Development Program</td>
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<tr>
<td>CEDECO</td>
<td>Centre of Development of Costa Rica</td>
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<td>COBODES</td>
<td>Forest Conservation and Sustainable Development in the North Caribbean of Costa Rica</td>
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<tr>
<td>EARTH</td>
<td>University for Agronomy for the Tropic Region</td>
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<tr>
<td>FAO</td>
<td>Food and Agricultural Organization of the United Nations</td>
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<tr>
<td>GIZ</td>
<td>Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH</td>
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<tr>
<td>ICE</td>
<td>Institute of Electricity of Costa Rica</td>
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<tr>
<td>IDA</td>
<td>Institute for Rural Development</td>
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<tr>
<td>IMAS</td>
<td>Mixed Institute for Social Assistance</td>
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<tr>
<td>JAPDEVA</td>
<td>Committee of Harbor Administration and Economic Development of the Atlantic Slope Puerto Limón</td>
</tr>
<tr>
<td>MAG</td>
<td>Ministry for Agriculture and Livestock</td>
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<tr>
<td>MOP</td>
<td>Ministry for Public Constructions</td>
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<tr>
<td>MINAET</td>
<td>Ministry for Environment, Electricity and Telecommunication</td>
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<td>OECD</td>
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1 Introduction

1.1 Background

This work deals with the Community Development Program (CDP) of EARTH University, a university for agronomy in the tropic region, which seeks to promote sustainable development. EARTH University is located in the County of Guácimo in Limón Province in the eastern part of Costa Rica. CDP aims to improve the quality of life of poor farmers, living in the neighboring counties of the University. Students and specialists of sustainable agriculture, rural entrepreneurship and human development/organizational development work together with the communities on solutions and projects, in order to improve their quality of life and promote sustainable agricultural practices.

In the majority of the countries in Central America, situated in the tropical region, the proportion of people with a very low income depending on agriculture is above 50%. Additionally, these farmers face serious problems due to global economical and ecological dynamics. (Murillo, 2008: 4)

Natural disasters such as flooding, droughts and hurricanes are affecting the agricultural sector in Central America and lead to a loss of big parts of harvests. (Murillo, 2008: 5) In Limón Province, where EARTH University is located, farmers face problems of flooding in particular. Due to the lack of financial resources poor farmers do not have technologies like drainage systems to tackle these challenges.

The food crisis is affecting farmers due to rising prices for food products and agro-chemical products. Rising prices for food products heighten the risk of rising poverty levels in Central America. According to the Food and Agriculture Organization (FAO), food prices rose worldwide about 44% between June 2007 and June 2008. (Murillo, 2008: 6)

Additionally, poor farmers face serious problems because prices for fuel increased in Central America on average about 37,8% and in Costa Rica about 25,8% between 2007 and 2008 and continue rising. These increasing prices have a direct impact on the prices for transport and on various public services such as electricity. (Murillo, 2008: 3)

The increasing demand for different agricultural products for the production of bio fuel or for consumption generated pressure on the demand of chemical fertilizers, which contributes to increasing prices for chemical fertilizers. According to different chains of agro-service, the price for chemical fertilizers increased in 2008 about 200% or even 300%. Predictions of the FAO estimate that the worldwide demand for fertilizer will continue rising about a rate of 1,7% between 2007 and 2012. (Murillo, 2008: 5)

1.2 Objective of this study

The objective of this study is to explore, if the transfer of knowledge and the transfer of environmental innovations contribute to an improvement of the quality of life of the beneficiaries and to which extent. The analysis of an improved quality of life includes social, economical and environmental aspects. CDP neither defines indicators for an improvement
of the quality of life nor intended outputs of its activities. Therefore it will be explored how beneficiaries perceive the impact of CDP’s activities on their quality of life.

Furthermore, it shall be analyzed, how CDP’s strategy change of 2007 influences the improvement of the quality of life of the beneficiaries.

Finally, relevant factors shall be worked out, which may hinder and which may favor the transfer of knowledge and the adoption of environmental innovations.

1.3 Structure of this work

Part one discusses the program under study; the Community Development Program of EARTH University, including its organizational framework, strategies and activities. It also introduces the beneficiaries of the program: their backgrounds, the different types of communities and the region Limón Province, where CDP is active.

Part two deals with the methodology used for this research and describes the selection process for the case studies. Information about the interview process and the general research design is presented.

Part three presents the case studies and provides in-depth analysis of the communities, based on informal discussions and interviews with CDP experts, cooperation partners of CPD and beneficiaries at their community.

Part four discusses the success of the program based on the presented research question, whether the transfer of knowledge and environmental innovations improves the beneficiaries’ quality of life.

Part five summarizes the results of this research and recommendations are given for bettering the program in order to improve the quality of life of the beneficiaries.

1.4 The Community Development Program (CDP)

1.4.1 The CDP in the organizational framework of EARTH

The Community Development Program (CDP) belongs to EARTH University, a university for agronomy, located in the County of Guácimo in the east of Costa Rica in Limón Province. To build a two-way bridge between EARTH University and its neighboring communities, the Permanent Education Program (PEP) was founded in 1992 as an independent extension. The idea was to exchange practical knowledge and transfer expertise to the communities in order to contribute to their development. CDP belongs to PEP and is the principal link between PEP and the academic program of the university in order to involve students and professors within its activities in the communities. It started its activities in 1996. (Piedra, 2009)
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1.4.2 What are the objectives of CDP?
CDP has three main objectives: To contribute to improvement in the quality of life of the inhabitants of neighboring rural communities of Guácimo, Siquirres and Pococí; to contribute to the development of social consciousness and awareness in EARTH students and to integrate community experience into the academic program of the university. (Piedra, 2009)

1.4.3 Who are the beneficiaries?
The CDP seeks to improve the quality of life of the very poor of the neighboring counties. In 2007, a change of the coordinator of the CDP led to a significant strategy change. This change also influenced the selection of beneficiaries the CDP is working with. The CDP always sought to work with small farmers in urgent need of support. Until 2007, the CDP worked directly with already existing associations on the community level or micro rural business. The selection process was not in the hands of the CDP, but associations approached the CDP and asked for support. Consequently, the CDP became involved with associations outside of its target group. Before 2007, CDP worked mostly with medium scale farmers, who own 6-20 hectares, or even bigger farmers with a property between 20 and 200 hectares. In 2007 the new coordinator decided to change the selection process. A strategic alliance was built with the ‘Institute of Rural Development’ (IDA). IDA helped to select settlements of small farmers who are in urgent need of support and legitimates officially CDP’s intervention in a settlement. The settlements IDA selects are territories bought by IDA for a low price and donated to poor small farmers from Costa Rica who do not have land for agricultural activities. By buying a huge territory and dividing it into small parcels between 1 and 5 hectares, IDA is able to buy the land for a much lower price compared to what farmers have to pay individually for parcels of similar size. The farmers must pay for this land over the course of 25 years but do not have to pay for it in the first five years. Only after owning this land for at least 15 years these people can decide to sell their land again. (Piedra, 2009)

The CDP is working in the three neighboring counties of EARTH University named Siquirres, Guácimo and Pococí located in the Province of Limón. The focus changed after 2007 from Guácimo towards Pococí and Siquirres. (Piedra, 2009)

1.4.5 What strategy is used?
CDP is working in three strategic areas with one specialist in each area. The areas are the following: Sustainable agriculture, rural entrepreneurship and human development. The last area extended its focus in 2007 from human development to human development and organizational development. Apart from the development of human social capital, the construction of inter-institutional relationships is part of the responsibilities in this area as well.
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Until 2007 CDP followed a project-orientated approach. CDP worked directly with formal or informal community groups that already existed. In 2007 the new coordinator changed the strategy of CDP so that, instead of cooperating with ten or more community groups at the same time in different settlements, CDP would work only in two or three settlements, now in a holistic manner, involving the entire community. Furthermore, CDP decided to limit the period of cooperation to two years. In 2007 CDP started to work with the ‘Open Classroom for Farmers’ training method. (Carazo, 2011c)

1.4.6 What are CDP’s activities?

CDP’s activities are embedded in three main strategic areas: Sustainable agriculture, rural entrepreneurship and human development and organizational development. Activities include entrepreneurial consulting, technical assistance in production systems, consulting in integrated waste management, research in innovative and environmentally sustainable themes and - since the strategy change of 2007 - the training program ‘Open Classroom for Farmers’ with ten modules in sustainable agriculture and four modules in rural entrepreneurship. The training program lasts one year and takes place once a week during a whole day.

Moreover, CDP is charged with overseeing the participation of all second-year students in the community development module of the work experience course. The work experience is a 14-week course where students spend one day per week working in the communities surrounding the campus. While students work in both, the Sustainable Agriculture module and the Organizational and Entrepreneurial Development module, they can select a specific project within each module based on their interests. In the Sustainable Agricultural module, students experience the life of rural families. Working with the farmer and an advisory staff or faculty member, students identify and develop projects to improve farm efficiencies. In the Organizational and Entrepreneurial Development module, students help to build social capacity among grassroots organizations, provide entrepreneurial training and support to small-scale business owners and cooperatives and assist in schools to foster environmental awareness among the teachers and students. (Piedra, 2009)

The idea of the program ‘Open Classroom for Farmers’ is to open a space for discussions for the farmers, where farmers are supposed to learn through the exchange of agricultural practices and knowledge. In this learning environment, the farmers’ practical and traditional knowledge is equally important and considered as academic knowledge. Following the principles of learning by doing, the 14 modules of Open Classroom consist of a theoretical and a practical part. 10 of these modules are dedicated to the area of Sustainable Agriculture; the other 4 concern the concept of Entrepreneurship. Farmers decide autonomously, which modules they want to attend. Likewise, the time setting of each module is flexible and depends on the farmers’ needs and interests. The whole program ‘Open Classroom for Farmers’ including all 14 modules is meant to be conducted during a whole year. Farmers attend one day of class of 5 hours every week. At the end of the program, farmers are supposed to design a vision of their farm and a strategy plan how to achieve this aim step by step. Specific objectives of the program ‘Open Classroom for Farmers’ aim to foster the capacity of the farmer to observe, analyze, plan and investigate.
1 Introduction

The program seeks to facilitate knowledge and theoretical as well as practical abilities to help farmers to take wise decisions. Alternative integrative agricultural practices are meant to be presented to the farmers as well as alternative forms of entrepreneurship and alternative forms of organization. The program ‘Open Classroom for Farmers’ is accompanied by the Working Experience Course. Every Tuesday farmers attend the Open Classroom Course and the next day, students are visiting them on their farms. Together they are supposed to apply and discuss what they learnt in the different modules during the course. (Carazo, 2011d)

1.5 Limón Province

All three counties where CDP is active are located in Limón Province. The principle economic sectors in the Limón Province are agriculture and livestock production. The construction of the railway between Limón and San José in 1881 brought banana plantations to the region, which was for many years the main economic activity. Today Limón Province is dominated by large transnational companies, producing banana and pineapple. These transnational companies are providing the majority of job opportunities in the region, attracting immigrants from within Costa Rica and from other nearby countries, mainly Nicaragua, who are looking for labor to improve their living conditions and escape from poverty. Consequently a large part of the population in the region is influenced culturally by the work on banana or pineapple plantations. Hence people do not necessarily practice agricultural activities if they have a farm.

Limón Province is one of the poorest regions in Costa Rica and the counties where CDP is working are among the poorest regions within Limón Province. The average income of the region is 15% lower than the national average. Moreover the income of women is about 23% lower than the income of men in Limón Province. The rate of unemployment is with 7,2% significantly higher than the national average of 5,7%. (JAPDEVA, 2009: 11)

The counties Guácimo, Siquirres and Pococi are dominated by expansive properties of thousands of hectares like banana and pineapple plantations owned by transnational companies. Between these huge territories, small-scale farmers with a property between 1 and 5 hectares, medium-scale farmers with a property between 6 and 20 and large-scale farmers with a property up to 200 hectares are located. These are the farmers, with whom CDP works.

1.6 Environmental innovations

The objective of this chapter is to give basic information about the environmental innovations, which CDP is promoting and which are expected to be unknown to the reader. Like this, long digressions within the case studies will be avoided.

The following chapter, chapter 3 ‘Case Studies’ then will explore the impacts these innovations have on the beneficiaries and if and how these impacts contribute to an improvement of their quality of life.
1.6.1 Manure Biodigesters

A biodigester is a technology which transforms waste into energy. Animal and human excrements and other organic refuse get heated through solar radiation and convert into methane gas. This methane gas can be used directly, for instance for cooking, or can be used for the generation of electricity.

Excrements and organic waste are collected in a ten-meter long and two-meter wide sleeve of transparent plastic material. The methane gas produced, as well as water, gets absorbed by small tubes. The substance remaining after the extraction of the gas on the bottom of the biodigesters is a convenient byproduct which can be used as organic fertilizer in agricultural production. Likewise the water can be used as irrigation water for agricultural activities. (EARTH University, 2007)

Figure 1: Biodigester on a finca integrada in ‘La Isleta’ (Künemund 2011)

1.6.2 Tilapia Ponds

CDP is promoting the installation of tilapia fish freshwater ponds. The production of tilapia serves as an additional activity for the farmers. Tilapia is an affordable fish and serves not only as an important source of animal protein in human diets, but also of micronutrients such as vitamins and minerals and healthy lipids. (Asian Development Bank, 2005: 1)

Figure 2: Tilapia pond in ‘La Florita’ (Künemund 2011)
1.6.3 Efficient Microorganisms

Efficient Mountain Organisms (EM) consist of various microorganisms that are found in virgin soils or forest decomposing organic matter. EM is used in the preparation of some organic fertilizers in order to speed up the breakdown of organic matter. EM can help to improve soil health, crop productivity and quality of produce. EM stimulates seed germination and root growth and protects crops from being attacked by disease-causing organisms. EM is used in the preparation of the organic fertilizer ‘bokashi’ and bio-ferments. (Kalema and Chacon, 2010: 8)

1.6.4 Organic Fertilizer

By using organic fertilizer farmers can improve their soils because the soil’s physical structure turns softer and looser. Additionally, organic fertilizers help in increasing nutrients and populations of beneficial microorganisms. The higher quality of soil leads to yield improvements and improvements in the quality of production. In addition, organic fertilizer serves as a nutrient source for soil organisms. (Kalema and Chacon, 2010: 6)

CDP promotes several types of organic fertilizers, such as traditional compost and worm compost, and environmental innovations such as ‘bokashi’ and ‘bio-ferments’.

1.6.4.1 Compost and Worm Compost

Compost is organic matter that has been decomposed and recycled as a fertilizer and soil amendment. The process of composting requires simply piling up waste outdoors and waiting a year or more. Modern, methodical composting is a multi-step, closely-monitored process with measured inputs of water, air and carbon- and nitrogen-rich materials. The decomposition process is aided by shredding the plant matter, adding water and ensuring proper aeration by regularly turning the mixture. Worms and fungi further break up the material. In the case of worm compost this process is accelerated by adding extra populations of worms. (University of Illinois Extension, no year)
1.6.4.2 Bokashi

Bokashi is a fermented mixture of solid organic materials acted upon by beneficial microorganisms. Microorganisms release nutrients that are essential for crops. After applying ‘bokashi’ to soil, microorganisms support to restore soil life and minimize incidences of crop diseases. Additionally, bokashi helps to increase the organic matter content in the soil thus improving its water retention capacity. Hence ‘bokashi’ helps produce healthy crops with vigorous growth and high yields thanks to high soil fertility. (Kalema and Chacon, 2010: 14)

1.6.4.3 Bio-ferments

Bio-ferments or ‘bioles’ are fermented, liquid organic fertilizer. They are produced in water tanks from liquid organic material acted upon by EM, such as yeast, fungi and bacteria. During its production process, liquid organic matter is transformed into plant nutrients such as vitamins, organic acids and other substances, which play a crucial role for plant growth.

Bio-ferments are sprayed directly on crop so the nutrients can be absorbed immediately by the leaves. They serve as favorable nourishments for plants, resulting in strong, healthy plants. Moreover, bio-ferments have positive effects on the resistance of plants towards plant pests and diseases. The use of bio-ferments permits the re-establishment of microbial equilibrium in the ecosystem. (Kalema and Chacon, 2010: 18)

Figure 4: Bio ferments on a ‘finca integrada in ‘La Argentina’ (Künemund, 2011)

1.6.5 Finca Integrada

A ‘finca integrada’ is a concept of a farming system which functions in harmony with nature. That means that the production activities are based on the production capacities of the farm with the purpose of improving the provision and quality of food products. The use of resources and energies of the production system shall be maximized considering agroecological and social-economical characteristics of a production system and its area of influence.

The use of agro-chemical products is not allowed in this production system. A ‘finca integrada’ integrates all environmental innovations and sustainable agricultural practices explained above.
The concept of the ‘finca integrada’ is based on the principle of integration of crops, animals and forest. Also the family is seen as a part of the farming system. Family members participate actively in all farm labor and contribute with efforts and ideas.

Ecology is interpreted in a ‘finca integrada’ as the force, which maintains the balance of the farming system. Flows of energy and cycles of material, as ecological mechanisms, provide nutrition and balance for all components of the farming system. Recycling is a crucial process for transforming energy and facilitating new materials in order to continue cycles of materials.

Technological components, such as biodigesters, shall reinforce the benefit of energy and help to establish permanent energy cycles. The loss of energy, occurring in conventional and non-integrative farming systems, shall be reduced.

Soil is understood as a living organism, which can be affected by agricultural activities in a positive as well as in a negative way. On a ‘finca integrada’ farmers apply agricultural practices that favor the improvement of the soil, such as crop rotation, soil amendments of organic fertilizer or materials generated as part of the entire farm system such as animal excrements or any organic material of weeds, located next to the crops.

Furthermore, the concept ‘finca integrada’ includes a business component. The farm is seen as a business and the farmer as a business-person, who visualizes the niche of the market that corresponds to his or her production and tries to access this market. This may also mean to add value to a product such as the production of organic fertilizer, cheese or coffee. The idea of a ‘finca integrada’ is to sell the product directly to the clients, in order to skip the intermediary and achieve a better price for the products. (González Picado and Mayorga Marenco, 2006: 26)
2 Methodology

This research is based on the concept of triangulation in order to gain a wide basis of information. Qualitative methods are used such as qualitative expert interviews and participative observation. Qualitative methods are used because they favor the observation of the interview partners’ perceptions regarding an improvement of quality of life through the transfer of knowledge and environmental innovations. Additionally, the exploration of factors which may hinder or favor the transfer of knowledge and environmental innovations demands an explorative qualitative research design in order to avoid the exclusion of aspects.

2.1 Triangulation

Triangulation combines the combination of different methods, different target groups, different settings of time and place and different theoretical approaches in the investigation of a phenomenon. (Flick, 1998: 444)

The methodology of this research followed two principles of the concept of triangulation, developed by Denzin: ‘Triangulation of Data’ and ‘Methodological Triangulation’. ‘Triangulation of Data’ means that different actors who are directly or indirectly related to the activities of CDP will be interviewed at different places, in order to widen the understanding about CDP’s activities in reference to different spatial circumstances. (Flick, 2011)

These actors were divided into three groups. The first group is represented by former and current specialists and coordinators of CDP. The second group consists of all public and private partners CDP is working with. The third group is represented by the beneficiaries of CDP. ‘Methodological Triangulation’ means that the following methods were used in this research: Qualitative expert interviews and participative observation. The triangulation method allowed specifying the interpretation of the data through a multidimensional perspective and leading to a maximization of understanding about the context in which CDP’s activities are embedded. (Lamnek, 1993: 7)

2.2 Research Design

Due to the fact that the researcher was working for CDP and had her working place in the same office as the specialists of CDP, the researcher was able to obtain a lot of information by observing the working process on a daily basis, attending various CDP-activities and holding discussions with the specialists. Hence, the method of participative observation was used during the entire data collection process. After collecting general information and documentation about CDP, classified as gray literature, during the first month, the expert interview guide was compiled and the interviews were planned and conducted by the researcher.

1 Triangulation of ‘Various Researchers’ and ‘Triangulation of Various Theoretical Approaches’ were not applied due to a lack of time and resources
Based on the data, gained through participative observations and qualitative expert interviews, case studies were reconstructed, which allow the discussion of the research questions. All interviews were recorded using technical data. The transcripts were elaborated in the language, used in the interview, Spanish or English. By elaborating transcripts word by word, the information from the interview could be maximized and a loss of information could be avoided. All interviews were conducted between the 2nd of February 2011 and the 31st of April 2011. The interviews were conducted at EARTH University, in the settlements where beneficiaries are living or at the institutions and offices of the partners of CDP. The interviews last between 20 minutes and 73 minutes. During the fieldwork 16 interviews were conducted.

2.3 Qualitative Expert Interviews

Qualitative interviews are used to generate information and to proceed in an explorative way within a specific field of study.

Interview Partners

The following passage shall discuss the question why the selected interview partners are considered as experts. First of all, it has to be considered that the question of who is considered as an expert can only be answered in each specific context of each research. The questions, the researcher seeks to get answered or discussed in her research, help to find the right interview partner or expert. In this research, experts are considered as a part of the sphere of activity which is going to be researched. Therefore all three groups of interview partners are considered as experts because they are directly or indirectly involved in the transfer of knowledge and environmental innovations, initiated by CDP. (Meuser and Nagel, 2005: 443)

In this work there will be three different groups of experts interviewed as explained previously.

Further criteria are qualifying an interviewee to be expert. This shall be explained now for each of the three interview partner groups.

Specialists and coordinators of CDP are considered as experts because they are responsible for the planning, the implementation and the control of problem solving processes. Problem solving in this case represents the improvement of the quality of life in the neighboring counties’ communities of EARTH University. Equally important is the fact that the experts have privileged access to information about the communities and they are part of an institution of education and research. Furthermore, the coordinator of CDP is considered as an expert because he plays a leading role in the decision making processes within the activities of CDP. Also the specialists of CDP are considered as experts since they are working on the second level within CDP’s organizational structure. Staffs, working on the second or third level, are considered as experts because that is where most decisions are discussed and eventually made. The most detailed knowledge concerning internal structures and internal incidences is accumulated on that level. (Meuser and Nagel, 2005: 443)
Interview partners with responsible positions in institutions or organizations such as the ‘Ministry for Agriculture and Livestock’ are considered as experts thanks to their experience and knowledge concerning CDP’s range of activities such as community development and agricultural development. Furthermore, these experts provide a supplementary external perspective on the activities of CDP apart from internal perspectives of experts of CDP and beneficiaries.

Beneficiaries own an expert status for the research view because they are, besides the people working for CDP, responsible for the planning, implementation and control of problem-solving strategies in their own communities. (Meuser and Nagel, 2005: 444) Beneficiaries are experts regarding the question if the transfer of knowledge and environmental innovations is improving their own quality of life. In particular local leaders are selected for interviews, because they are expected to possess knowledge about the communities and they are expected to have a significant influence on the decisions, made in their community.

Additional criteria were set by the researcher to guarantee the quality of information collected through expert interviews. Specialists and coordinators should have worked for CDP for at least five years, to assure that they have accumulated sufficient context knowledge and experience on a long scale. Long-term experience is crucial because the topic of this study, the transfer of knowledge and environmental innovations, is understood as a long-term process. Since CDP works with a community in general for two or three years, the question, if the impact lasts after the end of the cooperation with CDP, can be discussed by CDP staff working there for at least longer than three years.

Unfortunately these criteria had to be adjusted downwards to three years during the fieldwork, due to the fact that a large part of former specialists and coordinators moved to other countries. Scheduled telephone interviews failed because interview partners missed the appointments.

Beneficiaries should have started to work with CDP at least five years ago. This period of time shall help to explore the sustainability of the activities of CDP. However, some interview partners will come from a settlement, CDP with for four years. This example will be included because it is part of CDP’s new 2007 strategy. Therefore, the inclusion of this settlement leads to a wider understanding of the different impact of CDP’s activities on the communities due to the new strategy. On the one hand, interview partners among the beneficiaries are from settlements where the impact was significantly positive, on the other hand, some settlements experienced rather weak or even negative impact. (Reuber and Pfaffenbach, 2005: 152) The quality of an impact, if it was positive or negative, was estimated by specialists of CDP. Specialists of CDP also assisted during the research process in contacting the beneficiaries. It has to be put into consideration that these circumstances might distort the results of this research.

However interview partners come from a settlement, CDP works with for only four years. This example was included because it is part of CDP’s 2007 strategy. Therefore the inclusion of this settlement leads to a wider understanding of how the impact of the activities of CDP on the communities changed due to the new strategy.

A list of the interview partners is attached in appendix A.
Interview Guide

The first step of the qualitative expert interviews was to compile an interview guide which includes the relevant issues under study for this research. This interview guide is not understood as a stable guideline. The guideline can and shall change during the research process. Each interview has to be open and flexible in its nature in order to gain tacit knowledge. The interview guide serves as an explorative instrument enabling to specify the issues under study of this research. The interview guide has an important position within the research design in order to avoid that the interview leads into a direction that might be irrelevant for the research. (Meuser and Nagel, 2005: 449)

The interview guide introduces with an open question to create a convenient atmosphere for the interview partner, to get used to the interview situation by talking freely about a wide topic. The interview guide for each expert group differs slightly depending on the interview partner’s expertise, depending on the group of actors he or she belongs to and the researcher’s interest of information. The interview guides consist of all or a part of the following different thematic areas:

\[a\] Learning and innovation
\[b\] Impact
\[c\] Sustainability
\[d\] Relevance
\[e\] Conflicts

Impact, sustainability and relevance refer to the criteria, defined by the ‘Organization for Economical Cooperation and Development’ (OECD) in order to evaluate development assistance and also used by the ‘German Agency for International Cooperation’ (GIZ). These criteria will be illustrated further below. The subject area learning and innovation includes all information about the activities, conducted by CDP and the transfer of knowledge and innovations. The area conflicts will explore which factors may influence and hinder the learning process. The interview guides are found attached in appendix B.

2.4 Participative Observation

Based on the researcher’s internship during the research process, the author was able to collect a lot of information by observing the issue under study and by participating in activities of CDP. These observations were neither planned nor did they follow a specific structure. They emerged spontaneously in personal interactions. The observed people, students, CDP specialists or beneficiaries are used to the presence of interns. Therefore it is expected that the author’s presence is distorting the observations only to a minimal extent. Moreover, the researcher spent a lot of time with students and specialists, which enabled

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2 As this research forms part of a wider investigation about the regional impact of CDP, interview guides for CDP experts and interview guides for partners of CDP include additional questions concerning the transfer of knowledge in the region.
2 Methodology

her to gain their trust and improve the observation situation. The type of participative observation used in this research refers to the model of unstructured, participative observation. The process of observation is open and the fields of observation are complex and open. (Lamnek, 2008: 632)

2.5 Case Studies

Based on qualitative expert interviews and on observations during participative observation, the social reality of the beneficiaries was reconstructed and presented in three different case studies, discussed in chapter three. The first two case studies present projects, realized by groups of beneficiaries, where CDP provided assistance. These projects are part of the old strategy of CDP before 2007. The last case study presents a community, with which CDP started to work in the framework of its new 2007 strategy. CDP changed its strategy from a project orientated approach towards a community orientated approach.

These case studies illustrate, under what conditions and to what extent the activities of CDP have contributed to improve the beneficiaries’ quality of life or why not. By selecting three case studies which differ significantly in specific criteria, the researcher was able to extract determining factors. One case study was selected as a very positive and one as a rather negative example while the last case study was selected due to the fact that it illustrates the new strategy of CDP. By contrasting these case studies a maximization of knowledge could be achieved.

2.6 Evaluation Criteria

The use of the evaluation criteria impact, relevance and sustainability, defined by OECD in order to evaluate development assistance, helped to understand to which extent the goal to improve the quality of life of the beneficiaries could be achieved.\(^3\) (Gesellschaft für Internationale Zusammenarbeit, 2007)

The case studies focused on the criterion impact of CDP’s activities, to analyze the strategic areas CDP is working in: Sustainable agriculture, rural entrepreneurship, human development and organizational development. For each strategic area, the economic, environmental and social impacts, which result from CDP’s activities, have been analyzed. Thus, the conditions and variables necessary to successfully contribute to transfer knowledge about environmental innovations were explored.

The criterion sustainability was analyzed in each case study in its environmental, financial and social dimension. Exploring these helped to discuss if the impact was still existent after the community’s cooperation with CDP ended.

The criterion relevance comprises the questions, if the activities, provided by CDP, really correspond to the needs of the target group and if the projects, CDP assisted to develop,

\(^3\) The other two criteria, as defined by OECD, efficiency and effectiveness were not applied in this research because they are not relevant for the research questions.
2 Methodology

really contribute to an improvement of the quality of life of the target group. Finally, it was also investigated, if the target group was reached or not.
3 Case Studies

The case studies will be presented according to the following structure. The used evaluation criteria ‘Impact’, ‘Sustainability’ and ‘Relevance’, will be supplemented by a forwarded basic ‘Project Overview’ of the project and a ‘What can be learnt from this experience’ at the end of each case study.

The first part of the case study, ‘Project Overview’, will give basic information about the project, its initiators and goals. It will be presented according to which activities CDP conducted. Furthermore, information about the period of cooperation and the other stakeholder involved will be given.

The second part is the most important part of each case study. Here the ‘Impact’ of the transfer of knowledge and environmental innovations will be explored. Social, economical and environmental dimensions will be considered according to each strategic area: Sustainable agriculture, rural entrepreneurship and human development. Also, negative impacts will be included in this analysis. This part presents the basis on, in order to discuss in the following chapter, how the quality of life could be improved through the transfer of knowledge and environmental innovations.

In the third part, the ‘Sustainability’ of the impact will be analyzed. Environmental, financial and social dimensions will be studied in order to see if the quality of life of the beneficiaries can be improved on the long term.

‘Relevance’ presents the fourth part of the case study. It will be discussed if the activities of CDP really address the urgent needs of the beneficiaries. It will also be discussed if the target group is reached or not.

The last part ‘What can be learnt from this experience’ summarizes these factors, which may hinder or favor the success of the project and a positive impact on the beneficiaries. An overview and categorization of favoring and hindering factors will be presented in chapter 6, ‘Discussion of results’.

3.1 Case Study 1: Agro-ecotourism in ‘La Argentina’

3.1.1 Project Overview

The following project is considered by CDP experts as an outstanding success project of CDP with a high positive impact on the beneficiaries and a significant improvement of their quality of life.

History

After receiving students on their farm a group of nine medium scale farmers from the settlement ‘La Argentina’, located approx. 7 km kilometers from EARTH University, came up with the idea to develop an agro-ecotourism project in order to generate an additional income source. So they authorized CDP as a consultant to support them in the development of the project. Since EARTH University is the institution in the zone attracting most foreigners, a close relation with the Tourism Office of EARTH University was built. The
Tourism Office of EARTH University is bringing foreigners to the farms, who are interested in sustainable agriculture and who want to gain, not only theoretical knowledge, but also practical skills. Still, today the Tourism Office of EARTH University is the partner, who brings the main amount of clients to the project. The project provides services such as tours on their farms, hikes, traditional meals and the opportunity to stay overnight.

CDP specialists conducted trainings in the areas of sustainable agriculture, human development and rural entrepreneurship. In the area of sustainable agriculture CDP specialists supported the beneficiaries in how to improve their farms by shifting to sustainable agricultural practices. Students were assisting farmers in this process. Each farm was featured with at least one particular activity so it would be attractive for tourists to visit. Therefore, some beneficiaries were trained in how to add value to their products such as the production of honey, coffee or cheese. Others learnt how to install tilapia ponds, how to design and maintain a medicinal plant garden, or how to install hiking trails and signs in case they had forest as part of their farm. CDP aimed to foster the entrepreneurship mentality of the beneficiaries so they were able to develop their own product, register a brand and look for a market. So, beneficiaries visited various trainings such as trainings in client attendance or accountancy. Further trainings were provided by CDP in topics related to human development such as management of groups and how to work in groups in order to achieve an objective. CDP specialist supported the group in the process of founding a profit making association.

**Period of cooperation**

The active period of CDP cooperation started in 2002 and lasted 4 years. Despite CDP ended supporting this project actively in 2006, they still received support from the Tourism Office of EARTH University in how the facilities, such as sleeping rooms and places to eat, would have to be changed, in order to correspond to the needs and expectations of the tourists. The whole cooperation with EARTH University lasted around 8 years.

**Involved Stakeholders**

Various partners like ‘Camera de Turismo de Guápiles’ (CANATUR), the NGO ‘Association for a Sustainable Development of the Atlantic Region’ (ASIREA), the ‘Ministry for Environment and Telecommunication’ (MINAET), the University CATIE and the ‘Tourism Institute of Costa Rica’ (ICT) were supporting the project of agro-ecotourism. In the agricultural field MAG and the NGO ‘Centre of Development of Costa Rica’ (CEDECO) are mentioned as partners, who provide financial support in funding environmental innovations such as biodigesters and the process of converting a farm into a ‘finca integrada’. The bank ‘Banco Comunale’ provided micro credits for the beneficiaries.

**3.1.2 Impact**

The idea of the project was born through the exchange with students. The fact that this project could be realized is a direct impact of CDP’s activities, sending students to communities as a part of the work experience course.
Sustainable Agriculture

There is a significant learning success and impact noted from interview partners in the field of sustainable agriculture. All beneficiaries of this project shifted to sustainable agriculture to different extents. One individual converted his farm into ‘finca integrada’. In general among the beneficiaries “a lot changed. 80% is now organic”\(^4\) (Interview 14, 2011: 2).

Beneficiaries are minimizing the frequency and quantity of use of herbicides and pesticides. They apply them only in moments when it is really necessary.

Particularly in the area of livestock activities beneficiaries state that they still need to use herbicides to control bad herbs. Bad herbs may lead to diseases of the livestock. Beneficiaries argue that they would have to hire an additional person, who is controlling the grasslands manually, if they would decide to renounce the use of herbicides completely. Due to a “[...] lack of financial resources”\(^5\) (Interview 15, 2011: 2) this is not possible for them.

Due to a minimization of herbicides and pesticides beneficiaries saved costs and contributed to a minimization of contamination of soil and water. A less contaminated, healthier living environment had a positive social impact on the beneficiaries.

Beneficiaries adopted the technology of biodigesters on their farms and learned how to use them. Particular the use of a biodigester entails multiple benefits for the beneficiaries. A CDP experts stated that they benefit of a significant economical impact because they use the methane gas, the biodigester is producing, for cooking and so this “[...] reduces electricity costs in the kitchen [...]”\(^6\) (Interview 9, 2011: 7). Besides this they use the water, the biodigester produces as a side product, for the irrigation of their crop beds. This helps the beneficiaries to save costs for water and contributes to the conservation of water as a natural resource and so has a significant economical and environmental impact. CDP experts perceive a significant improvement of the beneficiaries’ quality of life because they save costs for electricity and water. Additionally, the substance, remaining on the bottom of the biodigester, is used by the beneficiaries as organic fertilizer of high quality. Furthermore the diminishing of waste and contamination is contributing to a healthier living environment of the beneficiaries.

Beneficiaries adopted organic fertilizers, such as bio-ferments and worm compost. They replaced expensive chemical fertilizers by organic fertilizer and so were able to save costs. Furthermore, through the use of organic fertilizers the quality of the soil could be improved and crops became more resistant towards pests. The financial risk of beneficiaries to lose big parts of their harvests because of pests could be minimized. Through a better quality of soil also the quality of food products improved. Hence beneficiaries consume healthier food products which have a positive impact on their health. Yields could be improved thanks to a better quality of soil. The recycling of organic material reduces contamination through organic waste such as waste from cooking. (Carazo, 2011a)

\(^4\) Original quotation: “Se ha cambiado mucho. Como 80% es ahora orgánico.”
\(^5\) Original quotation: “[...] falta de recursos.”
\(^6\) Original quotation: “[...] que disminuye sus gastos de electricidad en la cocina.”
Tilapia ponds were adopted by the beneficiaries. The production of tilapia had a significant positive impact on the beneficiaries’ health because the fish serves as a source of protein, minerals and vitamin. (Asian Development Bank, 2005: 1) The sale of tilapia in the settlement to non-adopters has a positive impact on their health and generates an additional income for the adopters.

There is a generation of new knowledge about sustainable agriculture in general and the concept of ‘finca integrada’ among the beneficiaries. They gained knowledge about the control and regulation of pesticides and herbicides. They learnt about alternative organic practices such as the application of organic fertilizers to control pests. They learnt how to produce organic fertilizer such as worm compost and bio-ferments on their own farm. Additionally, new knowledge about the technology of biodigesters and tilapia ponds was generated.

Rural Entrepreneurship

Concerning the area of rural entrepreneurship interview partners see a generation of new knowledge in the field of tourism management. An expert from the regional NGO ASIREA, which is sending tourists to the project, state that beneficiaries “[…] have learnt about how to manage tourism, they have signs, they have had a lot of help from students” (Interview 6, 2011: 3). Students as multipliers did play an important role in this learning process. They learnt through trainings of CDP specialists how to communicate and interact with other cultures and about client attendance in general. However at the same time there is still a lack of entrepreneurship perceived by the interview partners due to the fact that they “[…] don’t have a background of negotiating” (Interview 6, 2011). ASIREA claims that, due to this lack of negotiating capacity, the beneficiaries are not ready to receive tourists for a lower price than the price, which the Tourism Office of EARTH University is paying. Their price lays much higher than the market price.

In addition further income sources could be generated through the adoption of knowledge about adding value to a product and through the sale of these agro-products such as cheese, coffee and honey on the local market. Even though these products are organic products, they are not sold as such. A beneficiary states that a certification would not make sense to him, because a certification is related to high costs, but there is no market for organic products in Costa Rica. The beneficiary stated as well that he had the opportunity to export his coffee but he did not have the necessary resources and capacities to produce the required quantity of coffee.

The additional income beneficiaries are gaining through agro-ecotourism is considered as a significant economical impact. However, ASIREA claimed that not every member of the association is benefiting in the same way. “Some receive more, some receive less. Partially because of the size of the finca, and partially because of how far the finca is from the highway” (Interview 6, 2011: 3). A beneficiary is receiving a lot of tourists because her farm is located just 10 minutes drive from the highway and so somebody is going there fast. Hence “[…] some of the fincas have more income during the year and others little farmers with more difficult roads have not received as much and still need the income” (Interview 6, 2011).
Human Development

In the area of human development a significant social impact can be observed. Together with specialist of CDP an association was found and until today the group is organizing itself and manages tourism activities. A generation of new knowledge in this field is significant. Beneficiaries turned into local actors. Social capital could be developed.

Even though the overall evaluation of the project is positive, disregarding to which group the interview partner belongs, it has to be mentioned that this positive impact stays at these nine farms, belonging to the project. There is no impact on the settlement perceived.

A CDP specialist questions “[…] how to call a program community development program, if the program is not supporting a community but a single project?” (Interview 7, 2011: 4).

It can be noted that the goal of CDP to improve the quality of life of the beneficiaries could be achieved. Beneficiaries feel a significant improvement of their quality of life thanks to the income, the tourism activities are generating. However CDP’s objective to improve the quality of life in the whole settlement could not be achieved.

3.1.3 Sustainability

Also, after the active period of cooperation with CDP ended in 2007, the project still exists and generates income for the beneficiaries. Several factors, which foster the environmental, financial and social sustainability of the project, can be mentioned.

Environmental Sustainability

The adoption of sustainable agricultural practices and innovations by all beneficiaries contributes to an environmental sustainability. The fact that sustainable agriculture is what makes the farms attractive to tourists may be an additional significant motivation for farmers to continue and even still continue improving in that area.

“These years we have this project of making a more drastic change in order to work more in harmony with nature” (Interview 15, 2011: 3).

Thanks to the fact that the project focuses on a niche market of a particular target group, a negative environmental impact, which can be seen in mass tourism projects, could be avoided. The frequency of tourists visiting the project is limited to a few days per month. So a negative environmental impact such as air pollution through traffic or noise is limited.

Financial Sustainability

Thanks to the Tourism Office of EARTH University as partner, who is sending frequently tourists, a financial sustainability could be achieved through a regular income and a constant demand. The Tourism Office of EARTH University plays another crucial role for the sustainability of the project, because it took over the follow up activities after the
cooperation with CDP ended and supports the project until today in promotion or transport to further trainings.

“When we need support in stationery, they support us with brochures. When we need to go to trainings, they take care of the transport”9 (Interview 15, 2011: 1).

Social Sustainability

The foundation of a profit making association was an important step in order to empower the beneficiaries and strengthen the group of beneficiaries. The association gave the beneficiaries the opportunity to start their own business activities. Until today beneficiaries take responsibility and manage successfully agro-ecotourism activities on their own. Beneficiaries turned into local actors and contribute to a social sustainability of the project. Self responsibility and ownership as main criteria of definition of social sustainability could be strengthened.

3.1.4 Relevance

It can be noted that the activities of CDP contributed to a significant improvement of the quality of life in a small group of nine farmers and their families in the settlement ‘La Argentina’. This improvement could be achieved through the generation of additional income from agro-ecotourism activities and through the change towards sustainable agriculture.

Beneficiaries refer to the following aspects as the most urgent needs of the settlement.

Beneficiaries of ASOAETA consider “[…] the reparation of the roads, which are very ugly roads with difficult access to the farms”10 (Interview 15, 2011: 2) as the main problem of the settlement. As seen above road conditions play a crucial role about who is benefiting to which extend of tourism activities and who does less.

Another beneficiary of the settlement claims that “[…] new job opportunities for women in small rural businesses […]” Interview 14, 2011: 2) are the major need of the settlement, so that “[…] they don’t have to leave their children at home all the time […]” Interview 14, 2011: 2) while they are working on pineapple plantations from 5 am until 9 pm at night.

These problems were not part of nor the main focus of CDP’s activities. A CDP expert stated that CDP “[…] just supported a process of a business idea”13 (Interview 7, 2011: 4). There was no diagnosis of the needs in the settlement before the intervention of CDP. Even though the agro-ecotourism project generated an additional income to the beneficiaries, it did not generate new job opportunities to the community.

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9 Original quotation: “[…] si nosotros necesitamos apoyo en papelería, que nos ayuden con brochures que nos brinden hasta el transporte. Si tenemos que ir a alguna capacitación, ellos lo hacen.”

10 Original quotation: “[…] los arreglos de caminos que son caminos muy feos con difícil acceso a las fincas.”

11 Original quotation: “[…] pequeños empresas donde pueden trabajar mujeres.”

12 Original quotation: “[…] ellos no tienen que salir y dejar sus hijos en la casa todo el tiempo.”

13 Original quotation: “[…] simplemente esta apoyando un proceso de una idea de negocio.”
The same CDP expert claims that the real target group of CDP is not reached in this project, since CDP is dealing in this project with medium scale farmers, not with small scale farmers suffering from real poverty. In addition to that the concept of ASOAETA is based on medium farms and offer much less opportunities to small farmers with less means and more need of support. A CDP expert noted that especially “[...] women who are really depending on the income [...] are leaving”\(^{14}\) (Interview 9, 2011: 3) the project because the income is not sufficient for them.

Also other farmers of the settlement were interested in joining the agro-ecotourism project but were not able to join the project because they did not fulfill the requirements of the Tourism Office of EARTH University. They did not have enough different activities on the farms, which are attractive for tourists.

The project does not meet the needs of the target group CDP claims to reach. The needs of poor people, who face an urgent need of income and support, are not addressed.

### 3.1.5 What can be learnt from this experience?

Several experts assume that the settlement’s **proximity to the University** of approx. 7 km and 15 minutes by car represents one important factor for the success of the tourism project. On the one hand because it is easy and convenient to bring tourists from the University to this settlement and to show them sustainable agriculture in practice, on the other hand it favors the cooperation and communication between CDP and the beneficiaries.

In addition the good accessibility, thanks to the position of ‘La Argentina’ **near to the highway**, is considered by several interview partners as a success factor, because it favors the transport of tourists.

Another factor which makes this project successful on a long term basis is that the **Tourism Office of EARTH University** itself is an important client of the project. Beneficiaries value the Tourism Office of EARTH University as the major partner and estimate that also without the support of the other organizations the agro-ecotourism project would have succeeded in a similar manner. However, the NGO ASIREA sees in the cooperation with the Tourism Office of EARTH University also a problematic issue, because EARTH University is paying more than the market price for the tourists. Therefore people from the project are not ready to receive tourists for a smaller amount of money. ASIREA argues that this fact is linked to a lack of entrepreneurship capacity of the people, who “[...] don’t have a background of negotiating” (Interview 6, 2011: 2). Consequently these observations of experts lead to the assumption that the knowledge in rural entrepreneurship, gained by beneficiaries, does play a much less important role for the sustainable success of the project than the cooperation with the Tourism Office of EARTH University. Additionally, it can be assumed that the project would fail, if the cooperation with the Tourism Office of EARTH University could not be maintained.

\(^{14}\) Original quotation. “Y las mujeres que de verdad dependen de los ingresos [...] se van.”
In the agricultural field MAG and the NGO CEDECO are mentioned as key partners in funding environmental innovations such as biodigesters and the process of converting a farm into a finca integrada.

CDP experts also consider the relatively long period of cooperation of about 8 years with EARTH University as a crucial success factor for the project. This period of time concerns the cooperation with CDP as well as the cooperation with the Tourism Office of EARTH University.

In addition to that CDP experts trace back the success of the project to the fact that beneficiaries were able to invest in the project with their own financial means. Despite the fact that thanks to their own financial means farms could be improved and facilities for tourists installed, beneficiaries self responsibility and ownership is strengthened through their own investment. Also their initiative on the long run is strengthened.

Last but not least, important CDP experts see the fact, that beneficiaries of the project were not facing other social problems, such as “[...] drug addiction, alcoholism, disintegration, aggression in the family, leadership”\(^{15}\)(Interview 7, 2011: 1), as an important determinant factor for the positive development of the project.

This agro-ecotourism project could develop into a sustainable project which improves the beneficiaries’ quality of life significantly thanks to the coincidence of various success factors on different levels. As favorable geographical factors, the proximity to EARTH University as well as the good accessibility of the settlement is mentioned by experts. Key actors in the field of sustainable agriculture present MAG and the NGO CEDECO, who are funding environmental innovations such as biodigesters and the process of converting a farm into a ‘finca integrada’. For the agro-ecotourism project itself the Tourism Office of EARTH University is a key actor, because they are sending most tourists. As a key factor for a beneficiaries’ learning success and a positive development of the project, the long time of cooperation over 8 years is considered. Furthermore, social economical characteristics of the population, CDP is working with, are considered as favorable. Beneficiaries did have financial means to invest in the project. Beneficiaries did not battle with particular difficult social problems.

### 3.2 Case Study 2: Agro-ecotourism in ‘La Isleta’

#### 3.2.1 Project Overview

In contrast to case study 1 ‘La Argentina’ and case study 3 ‘La Florita’ this project represents a rather failed example of CDP’s activities according to CDP experts.

**History**

The following project is a result of a combination of the activities of CDP and cooperation between MAG and other departments of EARTH University.

\(^{15}\) Original quotation: “[...] drogadicción, alcoholismo, desintegración, agresión familia, liderazgo.”
During the ‘Open Classroom’ activities, held in Guácimo in 2005 and facilitated by MAG, the idea of an agro-ecotourism project was born. A consultant of EARTH University, who later started to work for CDP, led these ‘Open Classroom’ activities. Among various farmers from different settlements of the ‘County of Guácimo’, four farmers of the settlement ‘La Isleta’ were attending the ‘Open Classroom’. During ‘Open Classroom’ activities these farmers started to realize that their community has a rich touristic potential because in their settlement “[…] they have a waterfall, they have mountains, they have agricultural and livestock activities” (Interview 7, 2011: 8). So the same farmers came up with the idea of an agro-ecotourism project. After the first month of Open Classroom activities, CDP started to send students to “La Isleta”. Thanks to the contact with the students the farmer’s “[…] relation to EARTH University became closer and more personal” (Interview 7, 2011: 9) stated a CDP expert. When the ‘Open Classroom’ ended after one year, the relation between the consultant of EARTH University and the beneficiaries still continued and became closer. He “[…] always stayed in touch with them, because they called […]” (Interview 7, 2011: 9) him, when they needed advice concerning agricultural or livestock activities. From time to time he visited them. So after having built trust to EARTH University, the four farmers, together with other four farmers of the settlement, decided to realize the idea of their project and requested support from CDP. Thus specialists of CDP started working with this group in 2006 in its three areas of sustainable agriculture, rural entrepreneurship and human development. However, CDP worked mainly in the following issue. CDP assisted the group in the process of establishing a profit making association in order to be able to generate income through tourism activities. In addition, CDP provided training in the organization of groups and conflict management, “[…] because they had problems of organization” (Interview 9, 2011: 7). In the area of sustainable agriculture CDP provided technical assistance. **Period of cooperation**

After the first three month of Open Classroom in 2005, students were sent to the four beneficiaries. The official cooperation between CDP and the beneficiaries in order to develop the agro-ecotourism project started in 2006 and only lasted a few months, due to the CDP’s strategy change of 2007. The activities of CDP in the County of Guácimo ended completely. However, one of the farmers of the group had cooperation with CDP independent of the agro-ecotourism project since 2000, which means that for him the unofficial cooperation lasted around 7 years. **Involved Stakeholders**

In the beginning, the project was cooperating with the Tourism Office of EARTH University that was sending tourists to the settlement. The contact to the Tourism Office of EARTH University was established through CDP, but the Tourism Office is separated from CDP. After sending twice tourists to the settlement this cooperation did not continue. Since then the project could not establish an alternative market. Beneficiaries tried to link with ‘Camera de Turismo de Guápiles’, but the group did not succeed to build a cooperation. After the cooperation with the Tourism Office of CDP ended, the project did not receive visitors anymore.
3 Case Studies

3.2.2 Impact

The idea for the project started to develop through Open Classroom activities organized by MAG. But the following step, developing the idea and realizing the project of agro-ecotourism, is a direct impact of the contact between students from EARTH University and the beneficiaries.

"The idea [...], we created together with the students" (Interview 16, 2011: 2).

Through face to face contact the relation between the University and the beneficiaries became closer and trust could be built. This led the beneficiaries to the decision to invite CDP in order to support them in realizing the project.

Sustainable Agriculture

The cooperation with CDP lasted only three month and was mainly focused on rural entrepreneurship and human development. In the area of sustainable agriculture CDP did not work in particular like it was the case of ‘La Argentina’ in case study 1, where each farm benefited of consultancy and was modified little by little in a process of several years towards sustainable agriculture. But CDP did provide technical support to the concept of ‘finca integrada’ in order to make the farms attractive for tourism and fulfill the requirements of the Tourism Office of EARTH University. But group members of ‘La Isleta’ did not respond to the activities with the same motivation, observed in case study 1 in ‘La Argentina’. It could be observed that group members who attended the ‘Open Classroom’ and had a cooperation with CDP by receiving students for a longer period of time, did learn more and changed more on their farms than group members who did not.

Hence very different levels of learning and adoption of innovations in the area of sustainable agriculture are perceived among the farmers of the project. Therefore the adoption of environmental innovations and agricultural practices will be explained concerning three different members, who were visited and interviewed or only visited on their farms during the field research.

There is one member whose cooperation with CDP has lasted already ten years. This member shifted his agricultural and livestock activities completely towards organic agriculture and converted his farm into a ‘finca integrada’. He adopted all environmental innovations, CDP is promoting. So to him the cooperation with CDP has a highly significant positive social, environmental and economical impact. Today he is able to base his livelihood strategies on the activities he and his wife are practicing on his farm and his quality of life improved significantly due to a healthier working and living environment and a diversification of his income. He stated that his quality of life improved significantly due to the fact that he does not need to work on a pineapple plantation anymore. He stated that he is doing much better today because he gets more sleep, has more time with his family and is living healthier because he is not in touch with agro-chemical products anymore. (Jimenez, 2011)

Another member, who did not attend the ‘Open Classroom’, did not change any of his agricultural techniques because he does not “believe in organic agriculture” (Interview 16,

16 Original quotation: “La idea relativamente, si la hemos formado juntos con los estudiantes.”
2011: 1). His livelihood strategies are not based on agricultural activities, but he is practicing agriculture as leisure. He used to work in the capital San José and since he is retired he bought land and moved to ‘La Isleta’. He is not a poor farmer in urgent need of support.

Another interviewee of the same group shifted in the majority of her agricultural activities to sustainable agriculture. She adopted environmental innovations such as the use and production of *organic fertilizer* and learnt to use only a *minimum of herbicides*. So she benefited of these changes through a healthier living environment and healthier food products. Simultaneously she is saving money for chemical products such as chemical fertilizer and herbicides. (Chaves, 2011a)

She prepared a spot on her farm for the installation of a *biodigester*, but is still trying to find funding. After the change of personnel in MAG, the ministry is not present anymore in the settlement. Before, MAG was the institution which was funding agricultural innovations, in particular biodigesters. (Chaves, 2011a)

**Rural Entrepreneurship**

In the field of rural entrepreneurship the impact of the adoption of *agro-ecotourism activities* is perceived as well as limited, compared to case study 1 in ‘La Argentina’. CDP experts refer to insufficient conditions on some of the farms in terms of attractive agricultural or livestock activities and also in terms of accommodations. “Not all have the same conditions to host tourists […]. There is one farm of a member of the association, which has no tourism attractions, not even to give a tour” (Interview 9, 2011: 6). Also other farms have deficiencies in the area of accommodation or attractions. So one farm only has minor species and medical plants, which are not considered as sufficient attractions for tourism. Beneficiaries do not refer to a lack of resources as a hindering factor for the modification of their farms and the installation of accommodations but to a lack of interest and motivation of half of the eight group members. Only four out of eight beneficiaries modified their farms. Two changed towards sustainable agriculture, but one of them does not have space for accommodations. The other two members invested in accommodation but do not have enough attractive agricultural activities. The group did not succeed to form a uniform profile for agro-ecotourism which fulfills to the requirements of the Tourism Office of EARTH University. So cooperation could not be maintained.

The cooperation building to other institutions which would send tourists, such as the ‘Camara de Turismo de Guápiles’, failed due to a lack of education. The president of the association claims that the association would need somebody to write a project description for them, because they are not capable to do it on their own.

The beneficiaries’ frustrated reactions towards the failed cooperation show that the relationship between the group and the Tourism Office of EARTH is not perceived as business cooperation. Their perception is rather characterized by a paternalistic nature.

“What we want is that EARTH supports us in this, because the investment made does not worth to get lost” 17 (Interview 13, 2011: 3).

17 Original quotation: “Que nosotros queremos es que la EARTH nos apoye en eso, porque la inversión que se hizo no vale la pena a que se pierda.”
This perception is also reflected in the fact that beneficiaries do not distinguish between their relationship to CDP and to the Tourism Office of EARTH University. They refer always to EARTH, meaning both.

Part of the activities in the area of rural entrepreneurship was the installation of signs at the farms as explanations for the tourists. But the group did not come to a common agreement in this issue. So some beneficiaries were working on the signs, others did not. Beneficiaries had difficulties in decision making and planning and group management.

"The idea was to make all the signs in the same color. But no, I don’t know. Me myself I painted my signs with my color and I have it here. That was a disagreement"18 (Interview 16, 2011: 1).

Figure 5: Footpath for tourists on a farm of a member of ‘Las Delicias’ (Künemund, 2011)

Human Development

In the area of human development CDP worked with the group in how to deal with group conflicts, because group conflicts were hindering common decisions and therefore were slowing down the development of the project.

However, the successful creation of the profit making association for the agro-ecotourism project is a direct positive impact of CDP’s activities. People who are still active in the association turned into local actors, taking initiative and responsibility.

Moreover some beneficiaries also turned into political actors and confronted the municipality with their protest against a planned dam project which would affect their agro-ecotourism project. (Chaves, 2011b) This behavior also shows a development of self confidence of the beneficiaries and a changed perception of themselves as active citizens, who are able to fight for their rights and believe in a change through their own affords.

Yet negative impacts of the project are perceived by the beneficiaries as well. Since the Tourism Office of EARTH University is not sending tourists anymore, no income is generated anymore. A lot of the beneficiaries feel a negative economical impact because some of them invested a lot of financial capital, work and time in the project.

“Federico has also a nice place. But now he is in trouble, because he made a big investment and now he does not earn any money”19 (Interview 13, 2011: 3).

18 Original quotation: “Se pensaba hacer todas las fincas de los socios de la asociación de un solo color. Pero no, no sé, yo lo pinté con mi color y allí lo tengo. Eso ha sido un desacuerdo.”
Besides the negative economical impact the failure of the cooperation also lead to a negative social impact. Negative feelings such as frustration and incomprehension about the failure of cooperation with the Tourism Office of EARTH University are observed among the beneficiaries. The failure of cooperation and the loss of investments may affect the self-confidence of farmers and may lead to psychological and social problems.

In addition to this, CDP experts view the cooperation with CDP over only a very short period of a few months as a main reason for the weak impact of the tourism project. Follow up activities are considered by CDP experts as a crucial success factor and necessary for a learning success of the beneficiaries.

The objective to improve the beneficiaries’ quality of life through an agro-ecotourism project could not be achieved. The impact of CDP’s activities in the areas of sustainable agriculture differed significantly within the group of beneficiaries raging from a significantly high impact through the adoption of ‘finca integrada’ over a medium impact until no impact at all. In the area of human development a significant development of social capital was observed. People’s organizations could be strengthened through the creation of a profit making association and beneficiaries turned into political actors, who started to claim their rights.

3.2.3 Sustainability

After the Tourism Office of EARTH University stopped sending tourists, due to insufficient conditions in terms of agricultural attractions and accommodation, agro-ecotourism activities came to a halt. However, some of the beneficiaries continued improving their farms mainly in terms of accommodation but also in agricultural activities with the hope to rebuilt cooperation with the Tourism Office of EARTH University.

Environmental Sustainability

There is no indication for a uniform change towards sustainable agriculture of the whole group. The fact that some group members did not change to sustainable agriculture at all and still practice conventional agriculture limits the contribution of the project to an environmental sustainability. A beneficiary stated that “nothing was done in the environmental part” (Interview 16, 2011).

Financial Sustainability

Since the Tourism Office of EARTH University stopped sending tourists, the project came to a halt because EARTH University is the main market of tourism in the region and cooperation with institutions or NGOs who would send tourists could not be built. The project cannot be considered as financially sustainable, because the project does not have an established market for tourism and so no regular income is generated.

Original quotation: “Federico tiene muy bonito también, pero el está inclinado porque el hizo una inversión muy grande y no está ganando nada.”
Social Sustainability

Even though a development of social capital can be observed, because a group of farmers could be strengthened through the creation of a profit making association and members turned into local and even political actors, internal group conflicts, due to a lack of motivation of some of the group members, are still hindering the development of the agro-ecotourism project. A lack of ownership is perceived by beneficiaries regarding some of the group members.

“But what happens when one person does not want to? The person is part of the project, but does not work”

Interview 13, 2011: 2)

It can be assumed that people hesitate to invest, because they see the problems one of the group members, who invested a lot of capital and lost it, because the Tourism Office of EARTH University stopped sending tourists, is facing today. So his experience is discouraging some of the other group members to invest.

Sustainability could not be achieved due to missing follow up activities of CDP. The cooperation with CDP ended suddenly because of CDP’s strategy change. In all three strategic project areas the time of cooperation was not sufficient in order to lead the project to a point from where beneficiaries could walk alone. However some of the members of the association were still active and continued investing in accommodations for tourists and were taking action in protest against a dam project.

3.2.4 Relevance

The target group of CDP is not reached in this project. The group of farmers consists of medium scale farmers.

Like in the case of the agro-ecotourism project in ‘La Argentina’ one may ask whether this concept of agro-ecotourism is the right concept to support poor small scale farmers and improve their quality of life. CDP experts state that the concept of the project bases on farms with a specific size and a specific number of attractions. The poor population does not fulfill these requirements. Therefore the project idea does not correspond to the limited capacities and resources of the poor population.

Furthermore it has to be questioned, if it makes sense to support a second tourism project. It would have been investigated, if the number of tourists, EARTH University is attracting, is big enough for two agro-ecotourism projects or if maybe the two projects need to offer different activities in order to avoid competition.

Additionally, it has to questioned, if it is a good idea of CDP to support the development of a tourism project in a settlement with such bad accessibility. Maybe it has to be worked on strategies, how to improve the road infrastructure, before starting with the support of a tourism project. But maybe the distance between the EARTH University and the settlement

20 Original quotation: “Pero que pasa si una persona no quiere, está metido en el proyecto pero no trabaja.”
is too big anyway and so the settlement is not able to compete with the agro-ecotourism in ‘La Argentina’.

There is a general lack of diagnosis regarding the conditions in the settlement, before starting the cooperation with the group of farmers from CDP’s side.

### 3.2.5 What can be learnt from this experience?

As mentioned in the case study of ASOAETA in ‘La Argentina’, the Tourism Office of EARTH University is the main institution bringing foreigners to the region and so represents the main key actor in the sector of agro-ecotourism in the region. There is a very small market for agro-ecotourism in general in Costa Rica. An expert of the regional NGO ASIREA, promoting sustainable regional development and agro-ecotourism in ‘La Argentina’, is claiming that national public institutions, dealing with tourism, are not fostering agro-ecotourism activities.

"But it is a very small market in Costa Rica because basically the ICT which is the main institute of tourism, [...] are not promoting rural tourism [...]. So people in other countries do not see Costa Rica as a country where they can visit rural people, rural farms [...]. So it is very hard to have a market of rural tourism this way" (Interview 6, 2011).

Therefore, the project is dependent on the Tourism Office of EARTH University as a business partner who is sending mainly students but sometimes also private donors of EARTH University, who are interested in the community work, EARTH University is conducting in the region, as tourists. But this project did not succeed to maintain cooperation with the Tourism Office of EARTH University. Several factors are contributing to failed cooperation between beneficiaries and the Tourism Office of EARTH University.

CDP experts refer to a general disadvantage of the project due to the geographical position, far away from the university in a remote area. From EARTH University to the settlement the drive lasts around 40 minutes. This is in comparison to the agro-ecotourism project in ‘La Argentina’, where a drive lasts 15 minutes, rather long. In addition, the roads are in deficient conditions and some of the farms are very difficult to access.

"[...] they are more far away from the university. [...]Therefore EARTH is not sending that many tourists. The roads are more inaccessible"[21](Interview 9, 2011: 7).

Both factors make the transport of tourists to the project difficult. Therefore, big distances as well as bad road conditions are considered as highly relevant factors hindering the success of the project.

A detailed diagnosis of the conditions in the settlement by CDP before the start of the cooperation could have already identified these factors. Investigations by CDP could have helped to judge whether these factors may hinder cooperation with the Tourism Office of EARTH University or not. So the failed cooperation may also be related to a lack of diagnosis within CDP’s working structure.

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Despite these factors CDP experts referred to the **short period of cooperation** between EARTH University and the project as one of the main factors why the learning success of the beneficiaries in general is much lower than the learning success of the beneficiaries of the settlement of ‘La Argentina’. For instance, in the area of sustainable agriculture changes on the farms were not sufficient in order to fulfill the requirements of the Tourism Office of EARTH University.

“[…] because one thing is to teach something, but later how do you know if you applied correctly or if you didn’t? And when persons have doubts, how to do it, and when they don’t receive a follow up, they don’t care about it anymore and give up […]”\(^{22}\) (Interview 9, 2011: 4).

The improvement of the farms towards sustainable agriculture and specializations in particular activities are crucial factors for the success of the project, since that is what attracts visitors of EARTH University. In the area of human development **internal group conflicts** could not be resolved. In the area of rural entrepreneurship the learning success is likewise rather low. Beneficiaries did not manage to establish equal conditions in terms of accommodation. But it should be mentioned that the beneficiaries **did not receive trainings of the Tourism Office of EARTH University** in this area like it was in the case in ‘La Argentina’. So it was more difficult for the beneficiaries in ‘La Isleta’ to fulfill the requirements of the Tourism Office. They failed and therefore could not maintain cooperation with them.

Beneficiaries feel a general lack of **communication** between the association and EARTH University, which lead to frustration on the side of the beneficiaries.

“There was no communication, between them and the association there was no clear communication”\(^{23}\) (Interview 16, 2011: 1).

Beneficiaries do not distinguish between CDP and the Tourism Office of EARTH University. Therefore, beneficiaries do not see the Tourism Office as a business partner. Also it is not clear if CDP closed the project officially. Beneficiaries feel left alone by EARTH.

“And later we had a distance between EARTH and us and nobody knows for which reason, tiny or big. There was no explanation”\(^{24}\) (Interview 16, 2011: 1).

Another lesson, which can be learnt from this experience, is the fact that even though beneficiaries had **start-up capital** and invested, partly in accommodations partly in their farms, they did not change farms and accommodations in the manner, the Tourism Office of EARTH University is requiring. In contrast to the agro-ecotourism project in ‘La Argentina’ the beneficiaries did not receive a **follow up** of the Tourism Office of EARTH University. So they did not get trained in how to change the conditions of accommodations as the group of ‘La Argentina’ got trained. This experience shows the high relevance of follow up activities.

\(^{22}\) Original quotation: “Una cosa es ir y enseñar hacer algo pero luego como sabe usted si lo aplicó bien o no lo aplicó bien o si las personas tienen dudas de cómo hacerlo y si no les da seguimiento pues ya no les importa, lo dejan porque les cuesta.”

\(^{23}\) Original quotation: “No había comunicación, entre ellos y la asociación no había una comunicación clara.”

\(^{24}\) Original quotation: “Y después hemos tenido un alejamiento, una distancia entre la EARTH y nosotros que no se sabe por qué razón grande, chiquita no había una explicación.”
The case study illustrates that the adoption of environmental innovations such as biodigesters or the process of converting a farm into a ‘finca integrada’ by beneficiaries is depending on funding of other institutions or NGOs. Since a staff turn-over in MAG, the settlement is not supported anymore by the institution. The cooperation between the ministry and the settlement was based on the personal commitment of this specific person. Without the presence of public institutions or NGOs, who provide funding in sustainable agriculture, no biodigesters were adopted and no farms were converted into finca integradas.

It could be observed that besides formal relations, mainly informal relations between CDP and beneficiaries play a crucial role for the development of mutual trust, which is the basis for the realization of a project.

Even though the reasons why the agro-ecotourism project did not develop into a sustainable project are multiple and embedded in a complex context, several concluding key factors can be named: Accordingly, geographical factors such as the distance to EARTH University and the bad accessibility are mentioned as key factors impeding the success of the project. In addition, the very short time of cooperation is considered as a hindering key factor. The absence of public institutions or NGOs hinders the adoption of environmental innovations and the development of sustainable agriculture. Furthermore, the case study shows which high relevance informal relations play in mutual trust building.

3.3 Case Study 3: The settlement ‘La Florita’

Like the first case study also the following case study is considered by CDP experts as an outstanding success project of CDP with a high positive impact on the beneficiaries and a significant improvement of their quality of life.

3.3.1 Project Overview

History

CDP started to work in the settlement ‘La Florita’ after the strategy change of 2007. Instead of developing a project of a group of beneficiaries like they did before, CDP is working from 2007 with the whole community. Projects shall be developed, which generate an improvement of the quality of life for the whole community.

CDP started working in ‘La Florita’ due to a reference of IDA, that ‘La Florita’ is one of the most vulnerable settlements of the region and “people are in bad need” (Interview 5, 2011: 4). The Institute for Rural Development did not have the capacities to work in this settlement. The settlement was created by the Institute, which bought the land, split it into parcels of 1-3 hectares and gave it to poor landless farmers, coming from different regions of Costa Rica.

CDP has been working with this population since 2007 in order to support them in its three strategic areas, sustainable agriculture, rural entrepreneurship and human development.
The cooperation with the settlement started with ‘Open Classroom for Farmers’, where beneficiaries were learning theoretical knowledge in the three areas. Simultaneously beneficiaries received students on their farms. Together with the students, beneficiaries applied theoretical knowledge, which they gained in ‘Open Classroom for Farmers’. After ‘Open Classroom for Farmers’ ended CDP provided and is still providing follow up activities such as technical assistance from specialists or speeches from professors in particular topics corresponding to the beneficiaries’ needs. Recently beneficiaries were receiving training about the production of papaya. Beneficiaries got the chance to discuss with a professor, other farmers and students problems they met in the field and received information such as sustainable agricultural methods of pest control and others. Until today beneficiaries receive students on their farms.

Figure 6: Training of a professor about the production of papaya (Künemund, 2011)

In addition a further training about the use of hydroponics was provided in the settlement by the NGO ‘4-S’ particularly for women. The Institute for Rural Development arranged the contact to 4-S. CDP provided support in the organization of the training.

Period of cooperation

CDP has been working with ‘La Florita’ for four years. ‘Open Classroom for Farmers’ took place in the first year in 2007. CDP is working now in the third year of providing follow up activities.

Involved Stakeholders

The settlement is supported by a couple of different public and private actors. MAG funds the biodigesters, which are installed in the settlement. The contact to the ministry was established by CDP. Furthermore IDA is present in the settlement, providing packages, which contain corn- and rice seeds as well herbicides and chemical products. The NGO ‘4-S’ supported the women of the settlement in training and funded greenhouses. Furthermore the regional public stakeholder ‘Japeva’ funded the installation of tilapia ponds. The transnational company Hewlett-Packard, who has a location in the region, donated the installation of public infrastructure. With this aid a playground for children and a meeting salon could be constructed in the settlement.

25 a type of agriculture without the use of soil
3.3.2 Impact

Sustainable Agriculture

In the settlement a wide adoption of environmental innovations and sustainable agricultural practices by beneficiaries can be noted.

“The majority of the small landholders have a biodigester”\(^{26}\) (Interview 9, 2011: 4) in ‘La Florita’, stated a CDP expert. In this case study, due to the different social economical level of the population and different habits, the adoption of biodigesters has similar but also different positive impacts on the beneficiaries in comparison to the previous case studies before. These slight differences concerning the impact shall be presented below. The use of biodigesters is provoking a significant positive economical impact on the beneficiaries. Instead of using firewood or propane gas for cooking, like they did before, today they use methane gas, the biodigesters are producing. This helps the beneficiaries to save on the high costs, which they would pay for propane gas or carbon. Furthermore, the replacement of firewood by methane gas contributes to the conservation of trees and limits the illegal felling of trees. Beneficiaries also benefit from a positive impact on their health, because the use of carbon for cooking causes diseases for human beings. Furthermore, CO\(^2\) emissions from the use of fire wood are avoided and air pollution is reduced. Hence the use of biodigesters contributes to a mitigation of climate change. Additionally, beneficiaries save water by using the water of the biodigesters for agricultural activities such as irrigation for crop beds. (EARTH University, 2007)

Various farmers in ‘La Florita’ installed tilapia ponds, which serve as an additional income source for the adopters and as a source of nutrients, vitamins and mineral for adopters and not-adopters who are buying the fish from their neighbors. However beneficiaries do not feel a significant economical impact through the sale of the fish. Additionally, beneficiaries save costs by replacing meat by tilapia fish. The consumption and production of tilapia has a positive impact on the health of the beneficiaries and a significant positive economical impact due to the fact that tilapia is much cheaper than meat. A beneficiary stated that the installation of tilapia ponds takes place in spots on the farm that are not favorable for agriculture and were not used at all before, such as troughs where rain water is accumulating. CDP taught beneficiaries how to use this space on the farm more efficiently.

Farmers adopted organic fertilizer such as traditional compost, which helped them to increase the productivity and increased the quantity of food goods they are selling. Thus their income could be increased. However farmers still continue to use chemical fertilizer, which IDA is providing, because they say it would be too much labor to produce organic fertilizer for two hectares. Beneficiaries even buy additional chemical fertilizer from the income, which they are generating through the sale of their food products.

The adoption of organic fertilizers such as bio-ferments and ‘bokashi’ was partly hindered due to a lack of financial resources, because beneficiaries could not afford to buy the necessary material such as water tanks.

\(^{26}\) Original quotation: “La mayoría de los parceleros ya cuenta con un biodigester.”
Beneficiaries adopted sustainable agricultural practices such as the controlled use of pesticides and herbicides and partly the replacement of chemical fertilizer by organic fertilizer. So beneficiaries are benefiting from a positive social, economical and environmental impact. However a beneficiary states that she would like to shift completely towards organic agriculture but is not able to do it without financial support.

The idea of ‘agro-forestry’ was widely adopted in the settlement; beneficiaries started to plant trees. This has a positive environmental impact on biodiversity and minimizes CO2 emissions. Beneficiaries contribute through their behavior to the mitigation of climate change. The practice of agro-forestry has also a positive social impact on the beneficiaries because they live in a healthier living environment and especially benefit from the better air quality.

Further practices learnt and adopted by beneficiaries are the diversification and rotation of crops. Beneficiaries feel a significant improvement of their economic situation; a better income could be "generated because it was taught [...] to diversify the farm or to sow in stages, [...] though if one has a bad price, at least the other can be sold for a good price" (Interview 10, 2011: 4). Additionally, the diversification and rotation of crops contributes to a better soil quality and better yields. Before beneficiaries were working with monocultures, which leached out the soil.

One beneficiary stated themselves to be very interested in adopting the technology of organic hydroponics but is in need of “[...] support with seeds, with beds [...]” (Interview 10, 2011: 3).

Some of the beneficiaries did not practice agricultural activities at all before CDP entered the settlement. CDP supported these beneficiaries in the development of agricultural and livestock activities. These people, “[...] who before did not produce at all, now have a farm. Even if the farm is small, [...] they have pigs; minor species” (Interview 9, 2011: 7). Their situation improved significantly due to what they are producing. Part of their food products are used for self-consumption and the other part for sale. So an additional income could be generated for these people through the development of agricultural and livestock activities. The production of food products on their own farms contributes to food security of the beneficiaries and has a positive social on their health. At the same time beneficiaries save high costs required to buy food. However there is still a big need of additional income perceived by the beneficiaries in order to maintain the infrastructure on their farms.

“What we need most is financial support, because sometimes it is not easy to maintain the parcel, it is difficult” (Interview 10, 2011: 2).

Beneficiaries received particular trainings in “how to improve the production of papaya. So this is improving their quality of life” (Interview 9, 2011: 7). Beneficiaries adopted

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27 See details in chapter 3.1 ‘Case Study 1’
28 Original quotation: “[...] han creado porque se ha enseñado a uno [...] diversificar la finca o sembrar por etapas [...] para que si uno no tiene buen precio el otro si gana buen precio.
29 Original quotation: “[...] apoyo con semillas, con camas[...]”
30 Original quotation: “Que necesitamos más es el apoyo económico, porque a veces para mantener la parcela no es fácil, es difícil.”
31 Original quotation: “[...] Luis les enseña cómo mejorar la producción de la papaya. Entonces eso va mejorando su cualidad de vida.”
techniques how to improve the production of papaya in an environmental friendly way so that the yields could be increased. Besides this, beneficiaries also learned how to improve the quality of the harvest. Intermediaries pay a higher price for a papaya which has an oval shape than for a papaya which is shaped rather round. So beneficiaries adopted techniques how to determine the shape of papaya through particular cutting. Consequently beneficiaries benefit from a bigger quantity of papaya due to increased yields as well as from a better quality of their harvest, because they can sell the papaya for higher prices. The income of the beneficiaries through the sale of papaya could be improved.

However the income, the production of agro products in general is generating, is considered as insufficient by beneficiaries due to a dependency on the intermediary.

“[…] intermediary is paying very cheap prices. Sometimes the price is high, sometimes it is not. [...]And suddenly the price rises and suddenly it falls and there are people, even if the price is high, they pay them bad. So that is what worries us more than anything else”\(^{32}\)

(Interview 10, 2011: 4).

The instability of prices leads to a constantly changing income, which makes it difficult for farmers to calculate and plan with their income. The fact that the intermediary is taking advantage of some farmers and pays them always a low price keeps their income on a very low level. Beneficiaries are dependent on the intermediary, because they do not have other opportunities to sell their products. They do not have the necessary infrastructure to stock their food products or means of transport nor a legal organization such as a cooperative through which food products can be traded. They state that the volume they are producing is not sufficient in order to sell directly to a packing company or a supermarket.

Besides economical impacts of CDP’s activities in the area of sustainable agriculture also positive psychological effects are perceived by CDP experts. CDP experts feel a strong personal development of the farmers thanks to their learning success in sustainable agricultural practices. By seeing a direct visible impact on their own farms, they see what they already achieved and what they are able to change and therefore feel more self-confident.

“People, who before did not produce at all, now have a farm. Even if the farm is small, [...] they have pigs; minor species. That [...] helps [...] in the part of personal development”\(^{33}\)

(Interview 9, 2011: 7).

The personal development contributes to a creation of social capital, which will be explained later.

Beneficiaries learnt about the process of recycling as a crucial element of a sustainable management of their farms. They were “taught to separate tins and bottles [...] in order to keep the farm clean”\(^{34}\) (Interview 10, 2011: 4) and adopted this behavior. They learnt about the meaning and the procedure of recycling in general. But the possible environmental impact concerning recycling and rubbish collection is limited “[...] because no truck is

\(^{32}\) Original quotation: “[...] intermediario paga baratísimo. De vez en cuando esta alto el precio a veces no. [...]Y pronto sube y pronto baja y hay gente aunque esta alta, siempre la paga mal. Entonces es eso que aquí le más preocupa que todo.”

\(^{33}\) Original quotation: “Gente que antes no producía nada ahora tiene una finca. Aunque sea pequeña, tiene cerdos; sus especies menores. Eso [...] ayuda [...] en la parte del desarrollo personal [...]”

\(^{34}\) Original quotation: “[...] a separar latas y botellas [...] para que uno tiene la finca limpia.”
entering to collect the garbage. There exists no responsible entity. People are still burning paper. There is no place to put chemical products”\(^{35}\) (Interview 10, 2011: 5). Still, the wide increased awareness about the importance of recycling and the adoption of recycling to a certain extend contributes to a minimization of contamination of water and soil through garbage in the settlement ‘La Florita’. CDP is supporting the beneficiaries for instance in providing transport and disposing chemicals in the next city.

A significant positive environmental impact of CDP’s activities in the area of sustainable agriculture is noticeable in this case study. Beneficiaries, CDP experts and public partners value the environmental impact of CDP’s activities in this settlement as strong. Beneficiaries started to practice agro-forestry and minimized the contamination of soil and water and air pollution in the settlement.

“[...] it is a significant change. [...] We plant more trees; we contaminate less [...]”\(^ {36}\) (Interview 10, 2011: 5).

IDA perceives even an outstanding environmental impact of CDP’s activities in the area of sustainable agriculture because “[...] the intervention of EARTH can be seen [...] in the agro-forestry, in the adequate use of soil, in applying agro-chemicals when it is necessary and in its necessary quantity”\(^ {37}\) (Interview 4, 2011: 4). The contamination of soil and water could be reduced through less use of chemicals. Tree planting has a positive impact on biodiversity and the minimization of CO\(^2\) emissions and so plays crucial role in mitigating climate change. Furthermore, also the adoption of biodigesters leads to a minimization of CO\(^2\) emissions, because firewood is replaced by methane gas, which the biodigester is producing. So a minimization of cutting trees for firewood could be achieved.

Beneficiaries are contributing through their shift toward sustainable agriculture to the protection of natural resources.

“EARTH released a turn concerning the fact that agricultural projects integrate the environmental part”\(^ {38}\) (Interview 4, 2011: 2).

Other external factors such as the pineapple plantation, located around the settlement, have a strong negative environmental impact on the settlement. Due to the intensive use of pesticides and herbicides serious problems concerning the contamination of potable water are emerging. Another serious negative impact is the emergence of the plague of the ‘Stomoxys Calcitrans’, a fly which can transfer live-threatening diseases to the livestock of the surrounding farmers. Beneficiaries in ‘La Florita’ do not particularly refer to problems of water contamination, but to problems of the fly plague. These external factors and its impacts are not integrated in CDP’s sphere of activities.

\(^{35}\) Original quotation: “[...] no entra un camión de basura no entra de recogerla. No existe una entidad responsable. Y lo que es papel la gente está quemando [...] No hay un lugar para poner los quemantes.”

\(^{36}\) Original quotation: “[...] es un cambio fuerte. [...] Sembremos más arboles, [...] contaminemos menos [...]”

\(^{37}\) Original quotation: “[...] la intervención de la EARTH se nota con mucha frecuencia. En la agro forestaría, en el buen uso de suelo, a aplicar los agroquímicos cuando son necesarios y en la cantidad necesaria.”

\(^{38}\) Original quotation: “La EARTH ha venido a un giro enorme en cuanto a que los proyectos productivos incorporan la parte ambiental.”
In ‘La Florita’ a high level of generation of new knowledge concerning sustainable agriculture is observed especially in the fields of technology of biodigesters, production of bio-ferments, installation of tilapia ponds, the production of ‘bokashi’ and the concepts of ‘finca integrada’ and agro-forestry. Beneficiaries learnt in particular about the sustainable production of papaya. Besides this, beneficiaries gained new knowledge about recycling.

In ‘La Florita’ CDP started to work with the method of ‘Open Classroom for Farmers’, which was integrated in CDP’s working methodology after the strategy change of 2007. While before 2007 multipliers of knowledge and environmental innovations were students, specialists of CDP and professors of EARTH University, ‘Open Classroom for Farmers’ integrated as an essential component the exchange of experience between farmers.

Professors and specialists are mainly transferring theoretical knowledge in ‘Open Classroom for Farmers’. The day after ‘Open Classroom for Farmers’, the beneficiaries received students and practice together with them what they have learnt. Students were facilitating the necessary information for instance about the production of EM. As part of ‘Open Classroom for Farmers’, once a month, beneficiaries made excursions to farmers, who already shifted to organic agriculture. These farmers shared their experience with the beneficiaries and provided important practical information. In the second year CDP’s specialist for sustainable agriculture started to provide technical assistance in the installation of biodigesters. Until today specialists are providing technical assistance if needed. Sometimes professors get invited for speeches concerning particular problems of the beneficiaries. Beneficiaries consider all actors which are involved in the learning process as important multipliers. The combination of theory and practice is considered by beneficiaries as highly relevant for their own learning success.

"We learnt a lot [...]. Everything is important; the information, sharing, because by sharing you learn, the liaison with the students is important. To me everything has priority [...] because if they are explaining to you and they are explaining to you and you don’t have anything written on paper, it gets lost. But if you see the theory and if you practice, knowledge is made” (Interview 10, 2011: 1).

Rural Entrepreneurship

In the area of rural entrepreneurship the impact of CDP’s activities is rather low compared to the area of sustainable agriculture or the area of human development. Until today no significant visible impact could be observed. No projects were realized. A beneficiary states to have the idea to start business with organic hydroponics and sell it to people at the hospital, who are interested in buying healthy food products. But due to a missing start-up capital she is hindered in realizing the business idea.

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39 Original quotation: “Aprendimos un montón […]. Todo es importante. La información, el compartir porque aprende uno, y el enlace con los estudiantes es importante. Para mí todo está en primer lugar […] porque si a uno le dicen se le dicen y no se tiene nada escrito, se pierde. Pero usted ve la teoría y usted práctica se hace conocimiento.”
Due to a lack of financial resources and the absence of institutions, which are providing funding or micro credits no business ideas could be realized in the settlement.

Moreover beneficiaries in the settlement have the “[...] idea to create a cooperative in order to regulate the prices and to look for a fix market for their agro-products” (Interview 10, 2011: 4). By creating a cooperative beneficiaries hope to establish a better selling market for their food products and become more independent from the intermediary. Currently a group of male beneficiaries of the settlement are working towards the process of founding this cooperative. A fourth year student is supporting the group by carrying out a market research for the farmers. He is writing his graduation project in cooperation with CDP.

It can be noted that awareness for entrepreneurship is growing among the beneficiaries. However it is still not foreseeable, what impact this growing awareness will have on the settlement and if beneficiaries and how this will achieve an improvement of their quality of life, through the development of business ideas or through the creation of the planned cooperative.

A generation of new knowledge in the area of rural entrepreneurship is not yet visible in ‘La Florita’.

**Human Development**

In ‘La Florita’, there is a strong and outstanding development of social capital felt by all interview partners. By an improvement of social capital also an indirect social impact in terms of infrastructure improvement could be observed. Today people, living in ‘La Florita’, have access to electricity and roads were built. They managed to communicate with the ‘Institute for Electricity in Costa Rica’ (ICE) and convinced them to install electricity in the settlement. They were organizing the construction of the roads on their own without the support of public stakeholders. Students of EARTH University supported them in terms of labor.

Another direct social impact is felt by the beneficiaries in terms of a more united settlement, thanks to ‘Open Classroom for Farmers’. In ‘Open Classroom for Farmers’ people of ‘La Florita’ started to interact and communicate more between each other and personal relations were built. Simultaneously a feeling of belonging was generating and people started to organize themselves in committees and juntas. Beneficiaries talk about “[...] a big change” (Interview 10, 2011: 5).

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40 Original quotation: “En teoría yo me podria aragar al hospital. Yo siembro este hidroponía orgánica y yo sé que si van a venir las señoras aquí a Guápiles […] pero yo necesito apoyo con semilla, con camas.”

41 Original quotation: “[...] idea […] es hacer una cooperativa […] que regula más los precios […] y ya buscar un mercado fijo.”

42 Informal community organization

43 Original quotation: “[...] un cambio bastante grande.”
“When we started with ‘Open Classroom’, we started to interact more and we started to get to know the others and suddenly there was a wider relation. There are few who are not integrated” 44 (Interview 10, 2011: 5).

The emergence of self organized groups such as committees and juntas in ‘La Florita’ has a significant social impact of CDP’s activities in the settlement. Men and women are organizing themselves in different juntas and committees. Beneficiaries learnt through ‘Open Classroom for Farmers’ to organize themselves in groups, in order to achieve common goals and improve the quality of life in the settlement. Beneficiaries started to claim their rights and confronted governmental institutions with their demands. So beneficiaries achieved a development of their settlement in terms of access to electricity. Through CDP’s activities beneficiaries turned into political actors and people’s organizations could be strengthened. However a beneficiary stated that women are organizing themselves more than men, since men often have to work in other jobs in order to earn money for their families and do not spend a lot of time in the settlement.

“Now the community is more united, there are ‘juntas’, committees [...], particularly because of the women groups. There are more women groups which are organizing themselves” 45 (Interview 10, 2011: 5).

Beneficiaries as well as IDA observed that CDP entered in the settlement conflicts between beneficiaries were decreasing significantly.

“[...] these are communities with a lot of conflicts. When EARTH is entering [...] conflicts can be avoided” 46 (Interview 4, 2011: 2).

However CDP experts value the potential of conflicts particularly between the women groups and the community groups, mostly lead by men, still as considerable high. Beneficiaries experience serious problems of machismo. “Men do not allow that their wives are working or that the women groups have more success than the men” 47 (Interview 9, 2011: 5). Men are fighting with women because they feel that women are receiving much more support than they do.

As a consequence of the emergence of groups mainly separated by gender, conflicts between men and women groups emerged.

The social capital of beneficiaries increased significantly regarding the new capacity of communicating and linking with NGOs and public institutions, which are able to support them. Two female beneficiaries started to link with the NGO ‘4-S’. Today they are active members of that NGO. They benefited from the cooperation in terms of training in hydroponics and the funding of a greenhouse. Beneficiaries show a high motivation and initiative in communicating with governmental institutions such as IDA in order to reclaim support. Beneficiaries organized a meeting of all committees and juntas in order to see how they can approach them.

44 Original quotation: “Cuando empezamos con Aula Abierta, empezamos a relacionarnos más y empezamos a conocer las personas y ya hay una relación más amplia. Hay poquitos que están fuera.”
45 Original quotation: “Ahora la comunidad está más unida, hay juntas, comités, más organización sobre todo por los grupos de mujeres. Siempre hay más grupos de mujeres que se organizan.”
46 Original quotation: “[...] son comunidades conflictivas. A la hora entra la EARTH más bien [...] se evita más bien los conflictos.”
47 Original quotation: “Los hombres no permiten o que sus mujeres trabajen o que los grupos de las mujeres sean más exitosos que las de los hombres.”
Moreover CDP linked with the transnational company Hewlett-Packard and arranged a donation for the installation of a playground and a public salon for ‘La Florita’. The public salon is used for instance for CDP activities such as speeches of professors. The creation of new public space, where people of the settlement come together and meet, may strengthen communication and interaction and may contribute to a more unified community. The quality of life of the beneficiaries of ‘La Florita’ was improved through the creation of new public infrastructure.

In the area of human development a significant generation of new knowledge can be observed. Beneficiaries did not only learn how to organize themselves into groups, they also learnt how to communicate with public institutions and how to reclaim their rights.

In general all interview partner groups value the impact of CDP’s activities in the entire settlement as very positive and significant. A social and environmental impact is perceived as much stronger than an economical impact. A clear positive change in agricultural production and infrastructure improvement is felt by interview partners in contrast to a rather weak development in the field of rural entrepreneurship.

A clear improvement of beneficiaries’ quality of life is perceived by all interview partners. Improvements in infrastructure such as access to electricity and constructed roads, improvements in agricultural production and a settlement with plenty of committees and other groups which are organizing themselves are visible signs for a better quality of life in ‘La Florita’. A beneficiary states:

“Yes of course. There is an improvement, an improvement of 100%” (Interview 10, 2011: 4).

3.3.3 Sustainability

At the time of the field research it could not be explored to which extend CDP’s activities have a long lasting impact because CDP is still working with this community.

Environmental Sustainability

It the settlement ‘La Florita’ a significant change towards an environmental sustainable development can be observed due to changes of practices in sustainable agriculture and recycling. Agro-forestry has a positive impact on biodiversity and the minimization of CO₂ emissions and so plays crucial role in mitigating climate change. The reduction of use of pesticides and herbicides contributes to a minimization of soil and water contamination. Additionally, the adoption of biodigesters leads to a minimization of CO₂ emissions, because firewood is replaced by methane gas, which the biodigester is producing. In addition a minimization of cutting trees for firewood could be achieved. A wide growing environmental awareness among the beneficiaries can be observed in the settlement.

48 Original quotation: “Incluso tuvimos la reunión de juntas y comités porque la comunidad está pensando por qué no hacen nada para nosotros?”

49 Original quotation: “Si claro, se ha mejorado, el 100% se ha mejorada.”
Beneficiaries in ‘La Florita’ contribute significantly to a minimization of contamination and the protection of natural resources.

On the other side negative environmental impact caused through external factors, such as pineapple plantations, constrain the environmental sustainable development of the settlement significantly.

Financial Sustainability

A more problematic picture is drawn by beneficiaries concerning financial sustainability of agricultural activities in the settlement. Beneficiaries state that it is very difficult to maintain the parcels and therefore claim about an urgent need of financial resources. The adoption of environmental innovations such as bio ferments, ‘bokashi’ and hydroponics for instance is hindered, because there is no funding for these activities and beneficiaries do not have the financial means to invest in these environmental innovations, even though the investment would only mean to buy a water tank for the production of bio ferments.

“For instance my husband and I, we want to make bio ferments [...], as fertilizer. We need support in this [...]. Because when you go buying a water tank you need money”(Interview 10, 2011: 2).

Until today no additional relevant income sources could be generated in the settlement. Consequently it is doubtful whether and for how long beneficiaries will continue practicing agriculture. Already today a lot of men are working outside the agricultural sector because the income, they are earning through agricultural activities, is not enough to pay their living costs.

Social Sustainability

The fact that beneficiaries turned into political actors and that they learnt how to communicate with public institutions contributes significantly to a social sustainability. Simultaneously a growing self confidence and a changing self perception of the beneficiaries are strengthening social capital. In addition a significant development of ownership and leadership is perceived by CDP experts in ‘La Florita’.

“Despite the difficulties the community has integrated a lot of the projects which were initiated by EARTH. They adopted them like their own projects and the leaders of the community knew how to do that”(Interview 8, 2011: 2).

The case study shows that CDP’s activities contribute to a sustainable development in the settlement is significant in social and environmental dimensions. In contrast, CDP’s contribution to a financial sustainability is rather weak. Due to a lack of financial resources beneficiaries did not develop projects, neither in the area of sustainable agriculture nor in the area of rural entrepreneurship. So no significant additional income could be generated.

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50 Original quotation: “Por ejemplo mi esposo y yo queremos hacer bioles [...], un abono. [...] Nosotros necesitamos apoyo en eso [...]. Porque si usted va para comprar un estañon uno necesita plata.”

51 Original quotation: “Y a pesar de las dificultades la comunidad ha sumido, ha incorporado muchos de los proyectos que se plantearon desde la EARTH, los han sumido como propios y que los líderes de la comunidad han sabido [...] como apropiárselos.”
3.3.4 Relevance

Beneficiaries feel a strong improvement on their quality of life, since EARTH started to work with them. Changes in social, environmental and economic contexts are significantly visible. Today they have access to electricity and they have accessible roads, where cars can drive. They improved the productivity of their agricultural activities in an environmental friendly way and they learnt how to save costs and how to minimize contamination by using less chemical products. Their quality of life improved significantly in a social, environmental and economic dimension.

However beneficiaries still feel a very urgent need of income. According to a CDP expert, on the one side they are in bad need of financial resources in order to satisfy basic needs such as food, housing and education.

“[…] it is very easy to arrive there and say ‘okay, in order to have better yields you can use this and this and this. […] But if […] they say ‘Ah nice, but first I have to buy food for my children, then I have to send them to school’ […]. I have to see how I buy me a shelter and how I manage to buy a shelter” (Interview 7, 2011: 1).

These unsatisfied needs in a few very bad cases hindered the learning process, which CDP is trying to initiate. There is no interest at all in agricultural activities regarding these cases. However this is not a common phenomenon in ‘La Florita’. “In the community there is a low percentage of population, who is working in other areas which are not agricultural activities” (Interview 8, 2011: 6).

On the other side beneficiaries also need capital in order to adopt environmental innovations such as the production of bio ferments and ‘bokashi’ and other environmental innovations such as hydroponics. Furthermore, business ideas cannot be realized due to a lack of financial resources.

“[…] they have shown us theory and practice, but we don’t have what we need to apply what we learnt” (Interview 10, 2011: 3).

CDP experts see an urgent need in the generation of new income sources or a significant better income and claim that this could not be achieved through CDP’s activities.

“And what is missing in this moment is the step to how they will achieve to generate an additional income or other income sources or a better income” (Interview 8, 2011: 7).

This case study shows that projects in order to generate new income sources cannot be realized without start-up capital. Also a shift to sustainable agriculture is constrained due to a lack of financial resources. Most environmental innovations can only be adopted when funding is provided. Consequently CDP’s activities do not contribute to the development of

52 Original quotation: “[…] es muy fácil de llegar allí y decir bueno para que ustedes tengan rendimiento de producción puede usar esto y esto y esto. Porque esta parte es fácil pero si realmente no es la necesidad pronta, entonces ellos dicen “ah no perfecto pero primero tengo que comprar la comida a mis hijos, segundo tengo que mandarlo a la escuela […]. Tengo que ver cómo me compro una casa o como yo hago para comprar una casa.”

53 Original quotation: “En la comunidad hay porcentaje bastante bajo de población que se dedica a […] áreas que no sean la actividad agrícola.”

54 Original quotation: “[…] nos han dado la teoría y la práctica pero no tenemos como hacerlo.”

55 Original quotation: “Y lo que está faltando en este momento es el salto […] como van a lograr realmente generar a ingresos extras o otros ingresos o mejorar sus ingreso.”
sustainable projects if no financial resources are available in the settlement and if no institution is present which is providing funding or micro credits.

### 3.3.5 What can be learnt from this experience?

CDP experts refer to a variety of factors favoring and hindering the learning process and argue on different levels.

Several CDP experts see the geographical **position of the settlement at the highway and near to other cities** as a significant advantage compared to other more isolated settlements where CDP was working. The good accessibility is considered by experts as a favorable factor for the development of projects.

"[...] it is a question of accessibility. La Florita has a very good location, so it is relatively easy to access the settlement [...]. This favored that the process in ‘La Florita’ is different than maybe in other settlements [...]. In these cases a lot of the suggestions were accepted and integrated by the community but they could not even be developed"\(^56\) (Interview 8, 2011: 2).

Some CDP experts are referring in this context and additionally to the fact that since the settlement is visible due to its location at a main road, more public and private stakeholders have an interest in supporting the settlement and provoking a positive visible change (Chavez, 2011).

In addition CDP experts consider that the presence of EARTH University in the settlement “opens certain doors to other institutions, because they know that the University is there [...]"\(^57\) (Interview 8, 2011: 6). The presence of EARTH in ‘La Florita’ is motivating other institutions such as MAG or the ‘Institute of Electricity of Costa Rica’ (ICE) to support the settlement, because EARTH is respected as a reliable partner, who may lead and supervise the actions of other institutions.

The support of various public and private stakeholders reinforced CDP’s impact in ‘La Florita’ considerably through funding. IDA, MAG and the Committee of Harbor Administration and Economic Development of the Atlantic Slope Puerto Limón (JAPDEVA) are providing support in agricultural activities. IDA is providing packages with maize and rice seeds and chemical products while MAG is funding biodigesters and JAPDEVA is funding tilapia ponds. *Hewlett-Packard* supported the settlement in funding and installation of a playground and a meeting salon.

Not less important for the relatively strong impact in the field of sustainable agriculture is considered by CDP experts to be the fact that a lot of the people living in the settlement

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\(^56\) Original quotation: “[...] hay una cuestión física de accesibilidad. La Florita está muy bien ubicada, entonces hay un acceso relativamente fácil [...]. Que ese ha favorecido que el proceso de la Florita haya sido diferente que tal vez en otras comunidades [...]. En este caso muchas de las propuestas [...] eran bienvenidas por la comunidad y aceptadas y incorporadas y se podía ni desarrollando.”

\(^57\) Original quotation: “[...] abre ciertas puertas a otras instituciones, porque saben que la universidad es allí. [...]”
“[...] see their farm as a business”\textsuperscript{58} (Interview 9, 2011: 4) and an important part of their livelihood strategies. So there is a large interest in agricultural activities.

Also seen as a favorable factor by CDP experts is the fact that beneficiaries in ‘La Florita’ “already were good farmers”\textsuperscript{59} (Interview 8, 2011: 6) with knowledge in agriculture, before CDP entered in the settlement. Another advantage was the fact that the bigger part of the population bases its livelihood strategies on agricultural activities. “It was an advantage that their priority was agricultural activities”\textsuperscript{60} (Interview 8, 2011: 6).

Another relevant success factor, considered by CDP experts, presents the Social Capital of the settlement. Interview partners are referring in the case of ‘La Florita’ to a high potential of leadership and ownership. A CDP expert considers the fact that these leaders appropriated the projects initiated by CDP as their own projects as another crucial element in the development process in ‘La Florita’.

“...I think that one of the central elements has to do with the potential of leadership in the community. Despite the difficulties, the community integrated a lot of the projects, initiated by EARTH; they adopted them like their own projects and the leaders of the community knew how to appropriate them”\textsuperscript{61} (Interview 8, 2011: 2).

As another success factor for the relatively strong impact of CDP’s activities in ‘La Florita’ presents the relatively long time of cooperation and the follow up. CDP has been working in ‘La Florita’ for the last four years. Follow up activities are always provided. Technical assistance is constantly available for the beneficiaries. A beneficiary stated that “[...] if one is asking them for something, they are there”\textsuperscript{62} (Interview 10, 2011: 2). CDP experts see follow up activities as indispensable for the learning success of the beneficiaries.

After summarizing the favorable factors in this case study and also the unfavorable factors, that hinder the learning process, the adoption of environmental innovations and the realization of ideas shall be presented.

Beneficiaries as well as CDP experts consider the lack of financial resources as the main factor, hindering the adoption of environmental innovations, in cases where no funding is provided. A beneficiary argues that she would like to convert her farm into a finca integrada and that she had the plan to produce bio ferments, but could not realize either one of both ideas because she did not have the necessary financial resources.

Another important issue is mentioned by CDP experts related to the working structure of CDP and its internal dynamic. CDP experts think that CDP should determine more precisely what results and impacts are to be achieved in each settlement. CDP experts are claiming that they do not know what the impact should be or what they want to achieve and when the moment is for CDP to back away. CDP employees feel insecure and miss a perspective or an objective towards which they are working.

\textsuperscript{58} Original quotation: “[...] ven [...] su finca como un negocio.”

\textsuperscript{59} Original quotation: “[...] ya eran buenos agricultores.”

\textsuperscript{60} Original quotation: “Era una ventaja que tenían como principal objetivo en la producción agrícola.”

\textsuperscript{61} Original quotation: “Lo creo que uno de los elementos centrales tiene que ver con el liderazgo que existe en la comunidad. A pesar de las dificultades, la comunidad [...] ha incorporado muchos de los proyectos que se plantearon desde la EARTH; los han sumido como propios y [...] los líderes de la comunidad han sabido [...] como apropiárselos.”

\textsuperscript{62} Original quotation: “[...] en lo que uno les pida allí están [...]”
“I think there should be established goals [...]. People are not working like that. They are working like that, ‘let’s foster them’. But everybody sees that there is no horizon”\textsuperscript{63}(Interview 9, 2011: 10).

The definition of goals requires a diagnosis of a settlement, which has to be conducted before any intervention. An EARTH professor claims that CDP’s activities might have a stronger impact and meet the real needs of the beneficiaries, if diagnostics were conducted with participatory methods and a development plan would be elaborated with concretely defined goals.

“[...] initially I think that there are factors, which have to do with CDP, specifically which have to do with a diagnosis of the settlement”\textsuperscript{64}(Interview 8, 2011: 1)

\textsuperscript{63} Original quotation: “Creo que sí, se deben tener metas establecidas [...]. No se trabaja así. Se trabaja así, vamos a fortalecerlo. Pero cada uno vea que no hay un horizonte”.

\textsuperscript{64} Original quotation: “[...] inicialmente creo que hay factores, que tienen que ver con el PDC específicamente que tienen que ver con el diagnóstico de las comunidades.”


4 Discussion of Results

This chapter is composed out of three different subchapters, which aim to answer the research questions, formulated in the introduction.

The first subchapter discusses if the transfer of knowledge and environmental innovations contributes to an improvement of the beneficiaries’ quality of life and how this better quality of life turns visible regarding each of CDP’s strategic areas: sustainable agriculture, rural entrepreneurship and human development.

The second chapter presents the factors hindering and favoring the improvement of the beneficiaries’ quality of life through the transfer of knowledge and innovations.

Finally the last subchapter focuses on the strategy change of 2007 and how this strategy change influences the transfer of knowledge and environmental innovations and the improvement of the beneficiaries’ quality of life.

4.1 Improvement of quality of life

This chapter summarizes the results of the case studies and shows to which extent the transfer of knowledge in each specific area and the transfer of environmental innovations contribute to an improvement of the quality of life of the beneficiaries. The criterion impact in its social, economical and environmental dimension is used to explore the improvement of the quality of life.

4.1.1 Sustainable Agriculture

In the area of sustainable agriculture, an especially strong improvement of the quality of live is perceived through the adoption of the farming concept ‘finca integrada’.

Manure Biodigesters

Case studies show that the transfer of the technology of biodigesters contributes to a better quality of life due to different benefits that biodigesters are providing farmers. Besides the production of methane gas, a biodigester produces water and organic fertilizer. The use of a biodigester helps to diminish organic waste, mainly animal and human excrements.

Methane gas is used by beneficiaries for cooking; farmers save costs for propane gas, coal or electricity, depending on the settlement’s conditions. Costs for electricity rose dramatically between 2007 and 2008 in whole Central America due to rising prices for fuel. In Costa Rica the price for fuel rose about 25,8 %. (Murillo, 2008: 3) Hence the use of methane gas for cooking has a strong impact on the beneficiaries because they are saving high costs for electricity.

For those beneficiaries previously using coal or firewood for cooking, like for instance in ‘La Florita’, the adoption of biodigesters has an additional environmental and social impact; a minimization of CO² emissions, and significant improvement of the quality of air. The
minimization of CO² contributes to a mitigation of climate change and may have a strong environmental impact if a large number of farmers adopt the technology of biodigesters. Moreover, diseases related to the use of firewood may be avoided.

Beneficiaries use the water, a byproduct from the biodigester, for the irrigation of their crop beds. As such, in the case that farmers pay for water, they are able to save a part of their costs. In general, by using the water of the biodigester for irrigation, beneficiaries save water and contribute to the protection of water as a natural resource.

The amount of money, beneficiaries are saving, can be used for other needs.

A biodigester helps the beneficiaries to diminish organic waste and contamination, so farmers benefit of a healthier living environment. Populations of flies and mosquitoes on the farm are reduced. Hence beneficiaries perceive a higher quality of life.

Furthermore, beneficiaries are using the organic fertilizer, from the biodigester, for their crops. The specific impacts and how the use of organic fertilizer may improve the quality of life of the farmers are explored below.

**Tilapia Ponds**

Research shows that the quality of life of farmers can also be improved through installations of tilapia ponds. Farmers benefit mainly of tilapia, as a source of nutrients, minerals and vitamins. The consumption of tilapia has a very positive impact on the health of the adopters and their families. (Asian Development Bank, 2005: 1) The quantity, farmers are producing, goes beyond the needs of the family and therefore farmers are able to sell fish in the settlement. Hence non-adopters, living in the settlement, benefit as well of the production of tilapia, as seen in ‘La Florita’. Tilapia production does not have high maintenance costs, and therefore can be sold for an affordable price. The generation of income through the sale of tilapia is considered as a small additional income source, but does not play a crucial role for the beneficiaries. However, the own production of tilapia also helps farmers save costs for food products.

Further investigations have to be done in order to explore the real economical impact on the beneficiaries of saving costs for meat. What did they eat before? Did they have to buy meat or did they consume for instance chicken from their own production? How relevant are the costs, they are saving, if they are saving costs, to the farmer?

**Organic Fertilizer**

The adoption of production and use of organic fertilizer contributes to a better quality of life due to a significant ecological, social and economical impact.

The use of organic fertilizer leads to a better quality of soil and strengthens the ecological balance of soil. Hence, better yields are achieved in terms of quality and quantity of harvests and the resistance towards pests is strengthened.

The adoption of organic fertilizer leads to lower dependence on chemical fertilizer, which enables farmers to reduce the need to purchase chemical fertilizer. Through the replacement of chemical fertilizer completely or partly the contamination through chemical fertilizers is reduced. Organic fertilizers present an alternative for farmers, who do not have
the financial means to buy regularly chemical fertilizer and enables them to generate a better income through better and bigger yields. However, this improvement of income is not perceived as sufficient by the farmers, because the intermediary is paying very low prices. Farmers who regularly use chemical fertilizers can save a lot of costs for chemical fertilizers. According to different chains of agro service in the region, the costs for fertilizer increased dramatically about 200% or even about 300% between 2007 and 2008. (Murillo 2008 #50: 2) Consequently the replacement of chemical fertilizer by organic fertilizer plays a crucial role for the livelihood strategies of the farmers, because there is room to save on costs. Organic fertilizers strengthen the ecological balance of soils, which in turn reduces the risk of pests (a healthy soil has a greater immunity to fight pests). As such, there is a double economical benefit for farmers. The risk of losing harvest to pests is lowered, while less chemical pesticides increases the margin of profit. Simultaneously, less use of pesticides minimizes contamination of soil and water.

The use of organic fertilizer has a strong impact on the health of the beneficiaries. They benefit through the consumption of healthier products and benefit of a cleaner and healthier environment thanks to less contamination through chemical fertilizer and pesticides. Less contact of the farmers with chemical products such as pesticides and herbicides has a positive impact on the farmers’ health.

The diminishing of organic waste, such as organic waste from cooking, through the production of compost reduces contamination on the farm and contributes to a cleaner and healthier living environment.

The minimization of costs for chemical fertilizer and herbicides improves the income of the farmers.

Additionally, farmers may be able to sell the organic fertilizers, if they produce a bigger quantity than they need. This is the case concerning medium scale farmers, who converted their farms into a ‘finca integrada’. Hence a new income source can be generated.

Further studies have to be conducted, in order to understand which factors may hinder the other farmers to sell organic fertilizers. What role plays farm size, expenditure of time or means of transport?

In order to differentiate between the degree of impact of the different types of organic fertilizer such as bokashi, bio-ferments, traditional and worm compost further investigations would be necessary.

**Diversification and rotation of crops**

The adoption of diversification and rotation of crops entails a highly relevant economical impact on the farmers. Due to the shift from one main crop to three different crops, farmers, who are depending on the intermediary, increased their income significantly. Through the diversification of selling products farmers become more resilient towards price fluctuations and improve their income.

Besides this the diversification of crops has a positive environmental impact on soil conditions and on biodiversity.
The diversification of crops also contributes to a diversification of food products, the farmer and his family can consume of its own production, which reduces the need for farmers to purchase foods from the local market. Moreover, diversification contributes to a balanced diet, which has a positive impact on the health of the farmer and his family.

**Minimization of herbicides and pesticides**

The transfer of knowledge about a regulated use of pesticides and herbicides helped the farmers to save costs. Farmers learn to minimize the use of pesticides and herbicides. They learn to decide when it is really necessary to use pesticides or herbicides and when it is not, and alternative methodologies to control pests.

The minimization of pesticides and herbicides reduces the dangerous contamination of water and soil through these products. Farmers benefit of a healthier living environment. Additionally, farmers are in less contact with these chemicals, which improves their health significantly.

**Recycling**

The transfer of knowledge about recycling raises awareness among the farmers and helps them to keep their farms clean and so to improve their direct living environment. Contamination is reduced and a positive impact on the farmer’s health is achieved.

But a significant improvement of the environment, in terms of contamination through garbage, can only be achieved through the integration of responsible entities for the collection of garbage.

**Finca Integrada**

The ‘finca integrada’ is an outstanding innovative farming model, which has a highly strong impact towards a better quality of life of the farmers in an economical, social and environmental dimension. Farmers, who convert their farm to a ‘finca integrada’, are able to base their livelihood strategies on farm income. In comparison with farmers who are working on pineapple or banana plantations, a significant improvement of the farmers’ quality of life is perceived by the farmers themselves because they get more sleep and they are not anymore in touch with chemical products. This leads to a positive impact on the farmers’ health. Moreover the family and the farmer benefit from the adoption of a finca integrada because the farmer spends more time on the farm with his family.

The farmer and his family consume mainly home-grown food products, which reduces the need to purchase food products externally. This has a strong economical impact on the beneficiaries seen that the 20% most poor part of the population of Central America have to buy 58% of their food products. Due to the food crisis the costs for food products rose dramatically. (Murillo, 2008: 3) Beneficiaries, who are living and working on a ‘finca integrada’, save high costs and become more resilient towards rising food product prices.

The quantity of production is sufficient to feed the family and sell a small part of the products on the local market. Through the direct supply of food products on the local market, farmers skip the intermediary and achieve better prices for their products.
Through a diversification of agricultural and livestock activities, farmers generate various new income sources such as the production of organic fertilizer, the production of cheese, coffee or honey. By adding value to a product, farmers improve their income.

The adoption of a finca integrada contributes to a better quality of life due to a healthier living environment, a healthier working environment, a better food security and a satisfying economical situation due to a diversification of income.

The case studies showed that only medium scale farmers converted their farms into a finca integrada. Further investigations would have to be conducted in order to gain knowledge about the necessary preconditions for the concept ‘finca integrada’. Answers to the following questions may be helpful to judge if this concept is a realistic option for poor small scale farmers. How many people can live of the income, generated through a finca integrada? Which role plays the size of the farm in this context? Furthermore, investigations would have to be conducted in order to develop alternatives concepts, based on the model of a ‘finca integrada’, which correspond to the needs and resources of single women. Ideas could be farms, where several women can live together, manage the farm together and support each other also in other issues such as child care.

Results show that the transfer of knowledge and environmental innovations in the area of sustainable agriculture contributes to an improvement of the quality of life of small and medium scale farmers. Data shows that the improvement of the quality of life is mainly noticeable in the following areas:

- Healthier living and working environment
- Food security
- Improved income through sale of agricultural products (better quality, quantity, diversification of products)
- Saving costs (for food, electricity, propane gas, coal, agro chemical products)

Improved income and the possibility to save costs gives farmers the opportunity to use their financial means for better food, health insurance, transport in general, transport for their children to go to school, school material or improve their shelters, as identified by beneficiaries as urgent needs, and therefore contributes to an improvement of their quality of life. Knowledge concerning the purpose, beneficiaries use their savings for at the end, and whether this contributes to a better quality of life requires further investigations.

4.1.2 Rural Entrepreneurship

Agro-ecotourism activities

Results show that the adoption of agro-ecotourism activities improves the quality of life of mainly medium scale farmers significantly; principally through the generation of new income sources and a healthier living environment.

Income is generated through agro-ecotourism activities, such as tours on the farms, hikes in the forest, serving meals, overnight stays and the sale of souvenirs such as handmade soap.
or jewelry. This additional income is considered by the beneficiaries as highly relevant for their livelihood strategies. However it is never the only income source of the farmers. Family members are still working in agriculture, livestock activities or in the third sector.

Through the shift to sustainable agriculture farmers benefit of a healthier living environment and healthier food products.

However, results suggest that the success of agro-ecotourism activities depends on several preconditions. Further investigations into these conditions are necessary to judge agro-ecotourism activities as a possibility to improve the quality of life of small and medium scale farmers.

Further investigations should be conducted in order to answer the following questions: To which extent does the accessibility of the settlement play a crucial role for the access to the tourism market? How big is the market for agro-ecotourism and which institutions may help to access this market? How can a competition between agro-ecotourism projects be avoided? Maybe each agro-ecotourism project should define a profile and specialize on particular activities or services? Moreover, investigations should be conducted, which help to develop concepts of agro-ecotourism, which also integrate small scale farmers with smaller parcels and fewer attractions on their farms. In addition, it has to be investigated how single women can be integrated in these concepts.

Product development

The product development was adopted by medium scale farmers, who converted their farms into a finca integrada. They sell the products directly to clients in order to achieve better prices. For them the sale of these products such as coffee, cheese, organic fertilizers or honey represents an additional income source within their livelihood strategies.

Further investigations about the marketing and commercialization of these products should have to be made, according to the capacities and resources of small and medium farmers, in order to judge if the development of products present an option of generating relevant new income for small and medium farmers, who did not convert their farm into a ‘finca integrada’. Solutions have to be developed, to organize the transport to the clients in order to supply the products directly to the client for farmers who do not own an own vehicle.

An improvement of the beneficiaries’ quality of life is visible through a generation of new income in the activities, listed below. The income through agro-ecotourism activities is valued as much more relevant for the beneficiaries than the income, they are generating through the sale of products.

1. Adding value to a product (coffee, honey, organic fertilizers, cheese)

2. Offering services in Agro-ecotourism (tours on the farms, hikes, serving meals, overnight stays)

3. Sale of handmade souvenirs to tourists (jewelry out of recycling material or seeds)
4.1.3 Human Development

Activities conducted by CDP in the area of human development improved the quality of life of the beneficiaries through a significant development of social capital. Case studies showed that thanks to CDP’s activities in the area of human development, beneficiaries may start to organize themselves in groups in order to achieve together defined goals. Informal groups such as committees and juntas may emerge and associations may be found. People’s organizations may be strengthened. Leadership and ownership within the groups or the community, CDP is working with, may be strengthened. People may start to interact more with each other and solidarity may grow. People may turn into local actors organizing and coordinating projects such as the improvement of road infrastructure or the foundation of a cooperative in order to become independent of the intermediary and achieve better prices for their products.

Moreover people may start to approach local and national authorities to claim their rights such as access to electricity. People may turn into political actors, who are taking action in order to achieve an improvement of their own quality of life. People may learn how and may begin to communicate with public authorities and may start to perceive themselves as actors, who are able to change their living conditions through their own efforts. Self confidence may grow, and as a result, social capital can be developed.

The development of social capital contributes to an improvement of the quality of life of the beneficiaries, noticeable in the following areas:

- Self-organization of groups
- Coordination of projects
- Interaction with public authorities
- Growing solidarity within the community

4.2 Hindering and favoring factors

Results presented seem extremely successful and it must be remembered that case study 1 ‘La Argentina’ and case study 3 ‘La Florita’, represent outstanding positive examples. Therefore it is important to focus on the factors that favor the improvement of quality of life through the transfer of knowledge and environmental innovations, and more importantly, which factors may hinder this process. Knowledge about these factors may help to develop new methods of resolution and define suggestions for improvements.

After exploring already within the case studies favoring and hindering factors, the next pages shall present these factors again but classified in thematic categories. The set of relevant factors will be supplemented through additional factors, emerging from interviews independent of the presented case studies. In order to avoid repetition, the factors won’t be explored for each strategic area. If one factor is referring in particular to one strategic area, this will be emphasized in the text. Also factors won’t be split up again in negative and positive factors in order to avoid repetition.
Factors mentioned by interview partners can be classified in the following six categories: ‘Accessibility’, ‘Integration of Stakeholders’, ‘Characteristics of Population’, ‘CDP’s Organizational Structure’, ‘Market Access’ and ‘Political Framework’. The first four categories comprise factors which determine directly the transfer of knowledge and environmental innovation through CDP’s activities. The last two categories present indirect factors or rather the political and economical framework of communities, which indirectly influence an improvement of the quality of life through the transfer of knowledge and environmental innovations.

4.2.1 Accessibility

Results show that the accessibility of the settlement is one of the most relevant factors, determining the improvement of the beneficiaries’ quality of life through the transfer of knowledge and environmental innovation. Road conditions and the distance of a settlement to the next highway determine accessibility. Interviews show that a lot of projects could not be realized due to poor accessibility of the settlement.

Additionally, in particular the distance (or time traveled) of a settlement to EARTH University plays a crucial role for the successful transfer of knowledge and environmental innovations. The time it takes for CDP specialists to reach a settlement determines the frequency of possible visits and influences directly and significantly the quality of monitoring of the beneficiaries by CDP specialists. Results show that communication and interaction between CDP specialists and beneficiaries is favored through an easy accessibility, as highlighted by case study 1 ‘La Argentina’, and enables personal relations and trust to build and flourish more easily. Likewise the transport of students, absolving their work experience course, is easier to facilitate, if the settlement is located close to the University, and therefore the support of beneficiaries through students over a longer period of time is more likely.

Case Studies show that accessibility and distance to EARTH University are crucial factors, especially for the success of agro-ecotourism projects. Case studies show that a long distance to EARTH University is one of the hindering factors for the success of an agro-ecotourism project. The Tourism Office of EARTH University is sending less tourists if the project is more far away than other agro-ecotourism projects.

4.2.2 Integration of stakeholders

The integration of public and private stakeholders and the construction of strategic alliances play a crucial role in the successful intervention of CDP in a settlement particularly in terms of funding because CDP itself does not have a budget for financial or material support.

MAG, the national NGO CEDECO, the regional NGO ASIREA, JAPDEVA and the ‘Mixed Institute for Social Assistance’ (IMAS) present important partners for CDP in the area of sustainable agriculture because they are providing funding. MAG funds biodigesters and
also provides financial support of the process of converting a farm into a finca integrada. Furthermore, CEDECO and IMAS support farmers in converting their farms into finca integradas. ASIREA promotes agro-forestry and pays farmers $1 for each new planted tree on their farm. JAPDEVA funds the construction of tilapia ponds.

Another important partner, in the region of Limón Province, in funding sustainable and organic agriculture presents the project COBODES, initiated through a cooperation of the European Union and the ‘Ministry for Environment and Energy of Costa Rica’ (MINAE). However CDP does not work with them.

Business ideas often cannot be developed due to a lack of start-up capital. There is no micro finance institute integrated in the work of CDP.

Poor accessibility is considered as one of the factors hindering the commercialization of products. Therefore, the ‘Ministry for Public Constructions and Transport of Costa Rica’ (MOP) is a key actor in the improvement of infrastructure. However, there is no cooperation between MOP and CDP.

The integration of private companies, located in the region, also present important partners in funding of particular infrastructure projects. CDP could win Hewlett Packard as a partner, funding and constructing a playground and a community salon in ‘La Florita’.

### 4.2.3 Characteristics of the population

The successful transfer of knowledge to the beneficiaries and the development of successful projects have a lot to do with the characteristics of the population.

The social economic structure may hinder or favor the transfer of knowledge and environmental innovations. CDP specialists state that it is very difficult to work with a population living under very low poverty conditions, where there is a very urgent need of income on a short term in order to buy food or other goods to satisfy basic needs. The very poor focus on looking for new short term income sources, and are unable invest (time and money) in longer term agricultural activities or for developing and realizing a business idea and meet frequently in groups. Social problems such as drug addiction or aggression in the family may hinder the learning success of the beneficiaries.

The lack of startup-capital is named by CDP experts and beneficiaries as one of the most relevant hindering factors concerning the shift towards sustainable agriculture and the development of business ideas. Beneficiaries need support in materials, in order to shift towards sustainable agriculture. The transformation into a ‘finca integrada’ requires financial means in order to buy the necessary materials. In particular, financial means are necessary, because beneficiaries face a high risk of losing harvests during the learning process of how to control pests without the use of pesticides.

Experts feel that there is a tendency of a higher chance of a successful transfer of knowledge and environmental innovations with younger beneficiaries than with older beneficiaries. Experts feel that younger beneficiaries are more open and flexible and so also more willing to change their agricultural practices while older beneficiaries are not ready to change their habits and to work harder in their age.
In the area of sustainable agriculture, one of the main factors of success is the beneficiaries’ interest in agricultural activities and a relevant role of agricultural activities within their livelihood strategies. A general trend of off farm income is observed in the region. CDP experts perceive this trend as hindering factor regarding the transfer of knowledge and environmental innovations in the area of sustainable agriculture.

Experts refer to culture and traditions of the population as an important factor influencing the transfer of knowledge and environmental innovations. Results show that an already existing traditional knowledge in agriculture is favoring the transfer of knowledge and environmental innovations in the area of sustainable agriculture.

In terms of rural entrepreneurship, experts argue that the transfer of knowledge and environmental innovations may be hindered due to a regional culture of employees, who are used to work on banana plantations.

“If you compare the ‘zona central’ of Costa Rica, it’s a very productive zone, very rich, but people there also had this culture of being micro entrepreneurs, here if we trace back, there was a banana culture, banana culture means that I go and work on the banana plantation and that’s it”\(^{65}\) (Interview 11, 2011: 4).

Experts perceive a lack of entrepreneurship culture in the region. They conclude that due to this regional culture of employees, people do not invest into business ideas and that people have difficulties in joining together in groups in order to commercialize products.

“Hence I feel that here it is not the same than in San José or in other places where women go and look for, and ask for credits at the bank and go and buy their machines”\(^{66}\) (Interview 9, 2011: 3).

The potential of social capital within a community is perceived as another crucial factor, where a strong leadership and ownership together with the capacity of self organization in groups is favoring the development and realization of ideas and the learning success of the beneficiaries.

Experts consider a feeling of belonging to a community and social cohesion as another important factor, favoring the development of social capital. On the other hand, internal group conflicts are considered as highly relevant factors, hindering the development of projects

### 4.2.4 CDP’s organizational structure

The next category of factors focuses on CDP’s organizational structure. Experts perceive some deficiencies in the working structure of CDP. For example, CDP does not conduct a diagnosis/preliminary study of the initial conditions and characteristics of a community,

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\(^{65}\) Original quotation: “Si usted compara la zona central o la zona central de costa rica, es una zona muy productiva, muy rica, pero es que la gente también ha tenido esta cultura de ser microempresarios, aquí [...] si echamos atrás [...] hay una cultura bananera, la cultura bananera es que voy trabajo en la bananera nada mas.”

\(^{66}\) Original quotation: “Entonces yo veo que aquí no es igual como en San José o en otros lugares donde las mujeres van y buscan, piden créditos al banco y van a comprar sus maquinas.”
before project commencement. Nor are intended outcomes formulated. Such lack of methodology leads to an insecurity of the CDP specialists, working directly with community members. They claim that they do not know until which point they are supposed to work with the communities and what the intended impact is.

“The question, that I always ask, what is the impact, which are the indicators?”\(^{67}\) (Interview 7, 2011: 4)

This insecurity may have a negative effect on the communication and the interaction between the beneficiaries and CDP specialist, how case studies showed.

One CDP specialist discussed concerns with another hindering factor; that CDP specialists have many other responsibilities within other departments of EARTH University, and do not have unrestricted time to spend on responsibilities in the communities.

“We link with other projects and continue linking with other projects and departments of EARTH. Therefore we take too much responsibility, I would say. There is the community and we are standing outside of the community, working in other projects.”\(^{68}\) (Interview 7, 2011: 3).

As one of the main success factors for the learning process experts see follow up activities by CDP and a long period of cooperation. Follow up activities mean that after beneficiaries learned how to apply sustainable agricultural practices, they receive regularly technical support and advice from CDP specialists for sustainable agriculture in order to guide them in the learning process. A CDP specialist stated the following:

“[…] one thing is to go and teach how to do something, but later how do you know if you apply it correctly or not or if the people have doubts, how to do it and if they do not receive a follow up, they don’t care about it anymore and give up because it is difficult for them. Hence I think that one very important success factor is the follow up.”\(^{69}\) (Interview 9, 2011: 5).

A CDP specialist considers the intended one year of follow up activities, after one year of capacity building, as insufficient for the sustainable and successful transfer of knowledge and environmental innovations.

Furthermore, case studies showed that informal relations between CDP specialists, students and beneficiaries play a crucial role for building for trust. Trust favors motivation and initiative for the development of projects.

\(^{67}\) Original quotation: “Ahora la pregunta que yo siempre me hago, cual es el impacto, […] cuales son los indicadores?”

\(^{68}\) Original quotation: “Nos vinculamos en otros proyectos y seguimos vinculándonos en otros proyectos y en unidades de la misma EARTH. Entonces nos saturamos de trabajo, diría yo.[…] Esta la comunidad y nosotros estamos aquí a fuera la comunidad, trabajando en otras cosas.”

\(^{69}\) Original quotation: “[…] una cosa es ir y enseñar hacer algo pero luego como sabe usted si lo aplicó bien o no lo aplicó bien o si las personas tienen dudas de cómo hacerlo y si no les da seguimiento pues ya no les importa, lo dejan porque les cuesta. Entonces creo que un factor muy importante en el éxito es el seguimiento.”
4 Discussion of Results

4.2.5 Market access

Beneficiaries face serious problems in terms of commercialization of products due to market barriers.

Small and medium scale farmers are producing agricultural products to sell them on the local market. They face serious market barriers due to the following factors. The quantities, these farmers are producing, are too small to sell them directly to a packing company or a supermarket. Furthermore, farmers often do not have the means to transport or facilities to store their products. Nor, do they have a corporate body, which enables them to commercialize their products on their own such as a cooperative.

Consequently these farmers are dependent on the intermediary, who will buy their products but for a very low price. Hence, it is very difficult to improve income generated through the sale of small amounts of agricultural products.

Accordingly, the access of beneficiaries to a selling market determines the success of the business projects. Case studies show that successful business projects, supported by CDP such as the agro-ecotourism project in ‘La Argentina’, depend on cooperation with the Tourism Office of EARTH University, which sends clients to the projects. No other successful business projects with a significant impact were found during the fieldwork. Beneficiaries did not establish a stable selling market for their products for a regular income.

4.2.6 Political framework

National policies focus on the main exportation products of the region: pineapple and banana. They do not consider agricultural activities of small, medium and big farmers. In the County of Guácimo, the production of papaya is one of the most important agricultural activities of small, medium and big farmers, but the MAG does not promote the production of papaya, because it is not an important export product for Limón province. Governmental policies in agriculture are focusing on the region, in this case Limón province, but not on the local level. Small, medium and even big scale farmers, who are producing papaya, are not seen by the government and do not receive support regarding the production of papaya.

“I think there is also a big problem on the government level, the institutions of the government are focusing more on national and regional politics, but two or three products and there are zones, for instance Guácimo, where the most important product of the small scale farmers is papaya, but they are focusing on the two most important agricultural crops of the zone which are pineapple and banana”70 (Interview 2, 2011: 3).

70 Original quotation: “Creo que una problema grande al nivel de gobierno, las instituciones de gobierno ya empiezan a enfascarse más en políticas al niveles nacionales o regionales, pero dos o tres productos y hay zonas por ejemplo Guácimo, el cultivo más importante de los pequeños productores es la papaya, pero ellos se concentran ellos en dos cultivos más importantes de la zona que son pina y banana.”
The shift to sustainable agriculture and organic agriculture is not promoted by national policies. People are not ready to pay a higher price for products of organic or sustainable agriculture. Since organic agriculture is much more labor intensive than conventional agriculture, farmers would make much less profit, if they would shift to organic agriculture. Hence it is much more complicated to convince farmers, who have the financial means to buy chemical products and who practice conventional agriculture to shift to sustainable or even organic agriculture.

“The agricultural products are more expensive even though the costs of production are less high. People are not buying so people are not motivated. Also it is more labor intense to collect fruits and leaves when they fall, this increases the labor about five days, [...] at the moment when the market starts to follow as well and starts to recognize economically, the farmer can change”\(^\text{71}\) (Interview 2, 2011: 1).

Due to a small budget of CDP, the activities of CDP depend on funding of other institutions and as a result CDP’s activities are directly dependent on national politics. Since the level of poverty decreased significantly in the County of Guácimo, there is no public funding available anymore, and as a result CDP terminated efforts in the County of Guácimo and shifted its focus on the Counties Siquiris and Pococi.

### 4.3 Strategy change

The following chapter will explore how the strategy change of 2007 is influencing the improvement of the beneficiaries’ quality of life through the transfer of knowledge and environmental innovations.

CDP changed its strategy due to the perception that their activities do not have a significant impact on the communities and due to the realization that they did not reach the target group, they aimed to reach.

Due to the strategy change of 2007 the impact sphere of CDP’s activities extended. Before 2007 the impact of CDP’s activities concerned a particular group of people who had an idea and asked CDP for support in realizing that idea. CDP was supporting plenty of groups in plenty of different communities. Since 2007 CDP is working with entire communities and reduced the number of communities, they were working with, from around twenty down to two or three. CDP aims to achieve a more significant impact and an impact on the community level by investing its resources in fewer communities and by working with the whole community instead of working with small groups in specific projects, improving the quality of life of this specific group. With the new strategy of 2007 CDP started to support ideas or projects which generate an improvement of the quality of life of the entire community.

\(^\text{71}\) Original quotation: “Los productos son más caros aunque los costos de producción son más bajos. La gente no compra entonces la gente no se motiva, también más trabajo, más mano de obra, recolectar frutas y hojas de desecho cuando se caen, aumenta la mano de obra por unos 5 días más por mes, [...] al momento que el mercado empieza a seguir también y reconocer económicamente el productor puede cambiar.”
In 2007 CDP started to work with IDA as a strategic partner in order to select the most vulnerable population, to work with, in the neighboring counties. So CDP stopped completely working in the settlements in the County of Guácimo, because these were not relevant any more in terms of poverty level, and started to work with vulnerable settlements in bad need in the Counties of Siquiris and Pococi. So since 2007 CDP is working with the target group, they want to reach, the most vulnerable people in the neighboring counties. Case study 3 ‘La Florita’ is one of these vulnerable communities. This was not the case before 2007, partly because groups were approaching CDP instead of CDP was selecting beneficiaries to work with.

In addition CDP reached a much higher number of people of a settlement. Before 2007 CDP’s activities focused on groups of around 10 people, today they are working with an entire community; in the case of ‘La Florita’ with around 30 families.

In 2007 CDP started to work with the methodology of ‘Open Classroom’ which had a positive impact on the transfer of knowledge and environmental innovations.

It will be presented, how this strategy change determines the transfer of knowledge and environmental innovations and its possible impact on the beneficiaries’ quality of life. Additional new dimensions of impact referring to the three strategic areas of CDP, which the strategy change entails, will be emphasized in reference to case study 3 ‘La Florita’. However it has to be considered, that this case study is seen by CDP experts as an outstanding positive example with a high level of impact.

**4.3.1 Sustainable Agriculture**

The strategy change of 2007 influenced the transfer of knowledge in the area of sustainable agriculture and the adoption of environmental innovations significantly.

The fact that more people are participating in the trainings in sustainable agriculture increases the exchange between farmers and fosters the learning process in the settlement, which can be observed in ‘La Florita’. The motivation of beneficiaries to experiment with sustainable agricultural practices may increase when the other people in the settlement are trying the same.

A new established strategic alliance with MAG fosters the adoption of environmental innovations. In particular the ministry is funding biodigesters and so fosters the adoption of biodigesters by beneficiaries. As seen in ‘La Florita’, where most of the farmers own a biodigester.

Since 2007 an increasing number of beneficiaries are learning about sustainable agriculture. In ‘La Florita’ the big majority of the beneficiaries are adopting sustainable agricultural practices. New dimensions of environmental impact can be observed in the settlement due to the fact that a bigger number of beneficiaries are shifting to sustainable agricultural practices and so a bigger territory is affected. This extension of territory has a direct positive impact on the biodiversity in the settlement. Likewise the minimization of contamination of natural resources is increasing significantly if the whole community is involved in the process of shifting to sustainable agriculture. The contribution of CDP’s
activities to an environmental sustainable development of the community is much more significant if the whole community is involved in the transfer of knowledge and environmental innovations. Accordingly experts perceive a big environmental impact in ‘La Florita’.

The adoption of sustainable agricultural practices is also favored due to the fact that it is much easier to control plagues in a sustainable way, when the whole community is shifting to sustainable agricultural practices and organic alternatives. Experts experienced that the control of plagues in a sustainable way is easier on a bigger scale. (Carazo, 2011b)

As a consequence of the shift to sustainable agricultural activities in the entire settlement also the social impact is much stronger. The stronger protection of natural resources through a minimization of contamination and wide adoption of sustainable agriculture contributes to an improvement of quality of life in terms of a healthier living environment, identified by beneficiaries in ‘La Florita’.

In general the positive environmental effects are much stronger for an individual if he is not the only one in the settlement, who is shifting to sustainable agriculture. At the same time, an increasing number of beneficiaries in a settlement favor the learning success, because beneficiaries can support each other and share experience and new gained as well as traditional knowledge. So in the case of the same individual efforts a beneficiary is investing in the adoption of sustainable agricultural practices, the impact on him increases, if other people in his neighborhood join this learning process.

4.3.2 Human Development

The impact of CDP’s activities in the area of human development increased since 2007 referring to the case studies. More beneficiaries could be reached in a settlement and social capital could be formed on a community level. CDP fostered the formation of people’s organization on a community level. Emerging informal political organizations, such as ‘juntas’ and committees, are one of the results of CDP’s activities. Hence new space and opportunities of participation was created. People turn into political actor. The development of ownership and leadership is estimated as relatively strong and significant in ‘La Florita’. Additionally, the settlement is more united since CDP entered in the settlement.

4.3.3 Rural Entrepreneurship

Regarding CDP’s strategic area rural entrepreneurship new dimensions of the emerging projects can be observed. Instead of supporting a business idea of a particular group of people, CDP is trying since 2007 to develop ideas, such as the formation of a cooperative, which generate a new or better income to the entire community and not only to a group of people.
5 Conclusion and Recommendations

Results show that there is an improvement of the beneficiaries’ quality of life through the transfer of knowledge and environmental innovation. In particular a better food security and the opportunity to save costs through the adoption of technologies such as biodigesters and organic fertilizer are considered as highly relevant, view that rising market prices for food products, agro-chemical products, electricity and transport present serious problems for poor farmers these days.

However it has to be considered that case study 1 ‘La Argentina’ and case study 2 ‘La Florita’, which were used, present extremely positive examples with a highly visible impact of CDP’s activities while other activities of CDP did not have such a significant impact and could not improve the quality of life of the beneficiaries due to hindering factors such as poor accessibility of the settlement, a population with serious social problems or a population with very little knowledge in agriculture and without an interest in agricultural activities.

5.1 Sustainable Agriculture

In the area of sustainable agriculture, there is significant success in the transfer of knowledge and environmental innovations. It is perhaps a field for which successful transfer of knowledge is easily identified; through the adoption of a sustainable technology; such as a biodigester.

Through adoption of sustainable agriculture methods, beneficiaries seem to achieve a better quality of life through a healthier living and working environment; improved food security; improved income through the sale of agricultural products due to a better quality of agricultural products; increased quantity of agricultural products; and a better income through the diversification of agricultural products.

Through the implementation of technology such as biodigesters and organic fertilizers, beneficiaries’ quality of life may improve by saving costs for food, electricity, propane gas, coal and agro chemical products (including chemical fertilizers, pesticides and herbicides). Money saved may be used for other urgent needs, identified by beneficiaries as transport, better food, material for school, healthcare or shelter and improves therefore their quality of life.

A strong possible improvement of the quality of life is shown by farmers, who adopted the concept of ‘finca integrada’. Since results show that only medium scale farmers and families converted their farms into a ‘finca integrada’, there is a need for alternative concepts according to the resources and capacities of for small scale farmers and single women.

5.2 Rural Entrepreneurship

Regarding the area of rural entrepreneurship, an improved quality of life is noticeable through the transfer of knowledge and environmental innovations in the following areas.
By adding value to a product such as the production of coffee, organic fertiliser and cheese beneficiaries may create an additional income source. By offering agro-ecotourism activities beneficiaries may create a new income through the provision of tours on the farms and hikes in the rainforest, through serving meals and providing overnight stays. Additionally, the sale of handmade souvenirs such as jewelry, made out of recycling material or natural material like seeds may present a new income source for the beneficiaries.

An outstanding possible improvement of quality of life is achieved through the adoption of agro-ecotourism activities as a new income source. However further investigations should be made in order to develop concepts how to integrate settlements with bad accessibility in tourism activities and how to integrate small scale farmers with less attractions on their farms. Moreover there is a general need for tourism market researches and concepts how to integrate different tourism projects in a regional concept.

5.3 Human Development

An outstanding result of the transfer of knowledge in the area of human development presents the capacity of beneficiaries to organize themselves in groups and the capacity to coordinate projects. Leadership and ownership may be strengthened through CDP’s activities. Moreover beneficiaries may start to interact with public authorities and claim their rights in order to improve their quality of life in terms of infrastructure. A new self perception of the beneficiaries and a growing self confidence may foster motivation and initiative to change things through the beneficiaries own efforts. Furthermore, through the transfer of knowledge in the area of human development, the interaction within the community may be strengthened and solidarity may grow.

5.4 Strategy change

The strategy change of 2007 shows that CDP successfully conducted a change within its working structure, which enables them to reach the target group they want to reach and to work with the entire community in order to achieve an improvement of the quality of life on the community level.

Additionally, regarding the area of sustainable agriculture, a new strategic alliance with MAG was built. This alliance plays a crucial role because MAG is funding biodigesters.

Additionally, thanks to the new methodological approach of ‘Open Classroom’, farmers have a space where they can exchange experiences and knowledge and where they can help and support each other. The exchange of farmers between each other may influence positively the adoption of sustainable agricultural knowledge and environmental innovations. It also makes it easier to control plagues in a sustainable way on a larger scale. The positive impact of sustainable agricultural practices on the health of the beneficiaries may be much stronger because they benefit not only of their farm as a healthier living environment, but they benefit of a healthier environment in the whole settlement. The methodology of ‘Open Classroom for Farmers’ also has a strong impact on the area of
human development. Through the activities of ‘Open Classroom for Farmers’ the community may interact and communicate more between each other. Informal community groups may emerge and beneficiaries may turn into political actors. The community may become more united through the regular meeting during ‘Open Classroom for Farmers’.

### 5.5 Recommendations

In order to optimize an improvement of quality of life through the transfer of knowledge and environmental innovations hindering and favoring factors have to be put into consideration by CDP. Based on these factors, the following recommendations can be formulated.

Accessibility is one of the most important factors favoring or hindering the improvement of quality of life through the transfer of knowledge and environmental innovations. Therefore CDP should develop strategies how to improve the accessibility of a settlement; how to improve the road infrastructure. The relevant entities, like MOP should be involved.

In general the integration of public and private stakeholders is a crucial factor reinforcing the improvement of the quality of life of small and medium-scale farmers through CDP’s activities. The integration of stakeholders is particularly important due to the fact that CDP does not have a budget for providing financial support and a limited capacity to provide support in terms of materials. Therefore it is very important to maintain cooperation with stakeholders, such as MAG, CEDECO, ASIREA, JAPDEVA, and IMAS, that can provide funding. Additional cooperation should be built with microfinance institutes, in order to provide start-up capital; with the COBODES project, which is supporting starting organic farmers; with MOP, in order to address infrastructural problems.

As such, it is recommended to conduct a diagnosis of possible partners of cooperation, according to each strategic area of CDP in order to foster CDP’s activities. The potential role of public actors, like the municipality, NGOs and private companies, should be studied.

There is a lack of methodology within the organizational structure of CDP, which is hindering the successful transfer of knowledge and environmental innovations. Therefore, it is recommended to redefine a clear methodology for the work of CDP. A crucial part of this new methodology should be a diagnosis of the conditions and characteristics of a community before starting to work with a community. Is the community interested in agricultural activities? Do agricultural activities play an important role within their livelihood strategies? Where are the most urgent needs of the community? In which areas are their interests and capacities? It is recommended to conduct this diagnosis by means of participatory methods. After such a diagnosis, intended outcomes and goals can be defined together with the community. This methodology enables CDP to re-evaluate their work, and perhaps to redirect their strategies. Furthermore, follow up activities of CDP are considered as essential for a successful transfer of knowledge and innovations. It is recommended to extend the time of follow up activities since data shows that the recent timeframe of one year capacity building and one year follow up is not sufficient for a successful transfer of knowledge and environmental innovations. Results lead to the suggestion that a follow up of at least three years is necessary for a successful transfer of
knowledge and environmental innovations. Furthermore, it is recommended to implement a simple methodology in order to avoid that knowledge and experience gets lost through staff turnover. Ideas could be a simple form to fill before leaving CDP which includes strengths, weaknesses of CDP’s working structure, information about the cooperation with partners and general ideas of how to improve the working structure of CDP.

Moreover the improvement of quality of life of beneficiaries is hindered through serious market barriers they are facing. Hence it is recommendable that CDP is working more on the development of strategies how to overcome these market barriers. Without access to a market, the beneficiaries depend on the intermediary, who takes advantage of the situation and pays extremely low prices. Strategies could promote solutions that enable beneficiaries to commercialize their products themselves, such as the creation of cooperatives. In times of rising food prices this may have a significant economical impact on the beneficiaries. Simultaneously market research should be conducted in order to gain deeper knowledge about a possible selling market referring to products, farmers are able to produce.

In general it could be noticed during the fieldwork that few business projects were conducted successfully and lead to a significant improvement of the quality of life of beneficiaries. CDP experts, the regional NGO ASIREA and also beneficiaries perceive a lack of entrepreneurship in the region and little interest in starting business projects compared to other regions of Costa Rica. These observations should be put into consideration of CDP. CDP should collect information about a general interest of beneficiaries in business projects, before starting to work with a community in this strategic area.
6. References

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6. References


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