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# Sustainable ecotourism in the Rio Tempisque Basin (Costa Rica)

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Can ecotourism be  
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July 2012

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Can ecotourism be beneficial for the biodiversity and the livelihood of the local communities?

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## Preface and acknowledgement

In January 2011 I got an email from my classmate Jelleke Bosma. That email contained the following purpose: *“Saskia, since you want to go abroad anyway, I thought you can come with me and go far away”*. Thank you Jelleke. Without you the enrichment of my life would not have been the same.

To finish my master in Social and Political Science of the Environment I wrote this thesis based on research in Costa Rica together with Jelleke, from March 2011 until July 2011. In the Rio Tempisque Basin in Costa Rica I learned a lot about the environment in Costa Rica and the current situation in that area. After the great trip I started to write down everything I learned. That ‘trip’ was even longer. Nevertheless, I am proud of the results and this thesis.

Jelleke, thank you for a great experience in Costa Rica and the nice teamwork we had and still have. Second, I would like to thank my supervisor, Jaap Gersie, for supporting me during the long writing of this thesis. Without this helping hand I would not be able to write this thesis. I would also like to thank Ben Warner and Chris Kuzdas for showing their enthusiasm for Costa Rica and giving insight in their research. In Costa Rica, I would especially like to thank Rigoberto Rodriquez Quiros and the University of Nicoya for their hospitality and help. Both help for the research, as well as help to survive in our grand, but incomplete, house. Then I would like to thank Santos Molina Ruiz for letting me experience the real research area. David and Courtney, thanks for your friendship and help with our questionnaires.

My English improved but is still not perfect. Nora and Loes, thank you for reviewing my writings. René, thank you for giving me the space to go abroad and the patience while I was writing this thesis. Mom and dad, thank you for all the financial and physical support.

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## Summary

The objective of this research is to contribute to the two-sided problem of the Rio Tempisque Basin, providing a livelihood for the local communities and the conservation of the biodiversity, by analysing the opportunities and constraints for the development of ecotourism in this kind of areas and local communities. The research took place in the Rio Tempisque Basin in the three villages of Rosario, Puerto Humo and Pozo de Agua. The objective is reached by answering the following main research question as described in chapter 1:

*'How, and to what extend do the local institutions and livelihoods determine the opportunities and constraints for the development of ecotourism in the Rio Tempisque Basin?'*

As shown in chapter 2 the problem in the research area is complicated. The loss of biodiversity overall is an issue that needs to be taken into account. There is a shortage on water for the local communities and this drought leads to vulnerable wetlands as well. The second part of the problem is the use of resources by the local communities, this leads to loss of biodiversity as well. Besides, the current illegal hunting and the change in land use also lead to problems for both the local communities and the biodiversity.

In order to solve the problem in the research area ecotourism is mentioned as a solution. Ecotourism can be considered as a solution on several conditions. In summary, it needs to be attractive to tourists, be environmentally, economically and socially responsible and the local, social and cultural traditions should be respected. With that, a high-quality management plan has to be made in order to be able to implement ecotourism and ecotourism needs to be small scale and the activities need to be locally owned.

To answer the research question two theories were used. The combination of the institutional rational choice (IRC) theory and the sustainable livelihood approach (SLA) are the base of the research and this combination structures the research as can be seen in chapter 3.

The IRC theory is developed by Ostrom and assumes that institutions are necessary to guide individual decisions in order to protect the common goods (Ostrom, 2011). The IRC theory alone has a minimum focus on the actor itself. Therefore, this theory is supported by the SLA that presumes that cultural background is of influence on the choices people make and the way people live and act (Serrat, 2008). The SLA helps to plan development activities by clarifying what prevents or limits the people from improving their situation (Serrat, 2008).

The two theories are combined in a conceptual model that will guide the course of the empirical part of this research. In this conceptual model the current situation in the research area will confront the criteria of sustainable ecotourism.

The combination of the two theories leads to a variation of qualitative and quantitative used methods, as shown in chapter 4. The methods that are used to answer the research questions are interviews with experts, literature study and questionnaires that were distributed in the three villages Rosario, Puerto Humo and Pozo de Agua.

In order to operationalise the conceptual model and make it practical an analytical model is made. This model relates the methodological process to the conceptual content of this research. The

analytical model creates a clear guideline for the empirical research activities with the variables and indicators derived from the conceptual model. Figure 4.3 in chapter 4 shows these concepts, variables and the used methods.

In chapter 5 the results of the research are displayed. The current social situation is investigated, as well as sustainable ecotourism in its most sustainable way. Both aspects lead to several criteria. All these criteria are confronted with each other in order reach the objective of this research. This confrontation leads to a number of opportunities and constraints.

The first opportunity that came out is the fact that it is managerially, socially and politically possible to implement sustainable ecotourism in the research area. The second opportunity is that the current social and cultural traditions are not a barrier for the implementation of sustainable ecotourism. The existence of two protected areas is an opportunity to start sustainable ecotourism and the common sense of the inhabitants is positive. The fifth opportunity is the fact that sustainable ecotourism will lead to income and with that, illegal hunting will possibly decrease. A sixth opportunity is the management plan that is being developed at this moment and the last opportunity is that it is not a problem that people do not own their own soil, since sustainable ecotourism can be done in several ways.

Three constraints must be taken into account. The lack of knowledge of the local communities and their 'common ignorance'. Also, the missing of an overview of costs and benefits can be a constraint. And at last, local people are hardly involved in the development of the existing protected areas while this collaboration is essential for the implementation of sustainable ecotourism.

Chapter 6 shows the conclusion, some recommendations and a reflection on the research. The answer to the research question is that it is managerially and politically possible to work with ecotourism in the research area. The inhabitants are willing and able to work with ecotourism and to collaborate. The existence of the two protected areas is a good start to invite tourists and offer employment. The three mentioned constraints can be overcome with the management plan that is currently being developed in the research area. Within the plan several constraints can be illuminated. It will contain the definition and use of ecotourism, advice on the monitoring of illegal activities, a definition on the value of an ecosystem and clear boundaries in land use. In this way the lack of knowledge, the missing overview of costs and benefits and the involvement of people in the protected areas can be overcome.

The main recommendation for the experts of CEMEDE, MINAET and Por Siempre and the local inhabitants of the research area is to implement sustainable ecotourism. The use of the management plan makes the constraints possible opportunities. The management plan is therefore an ideal foundation for the implementation of sustainable ecotourism. A recommendation for the experts is to contain courses that are based on literature study, but most important on the review of existing ecotourism in Costa Rica.

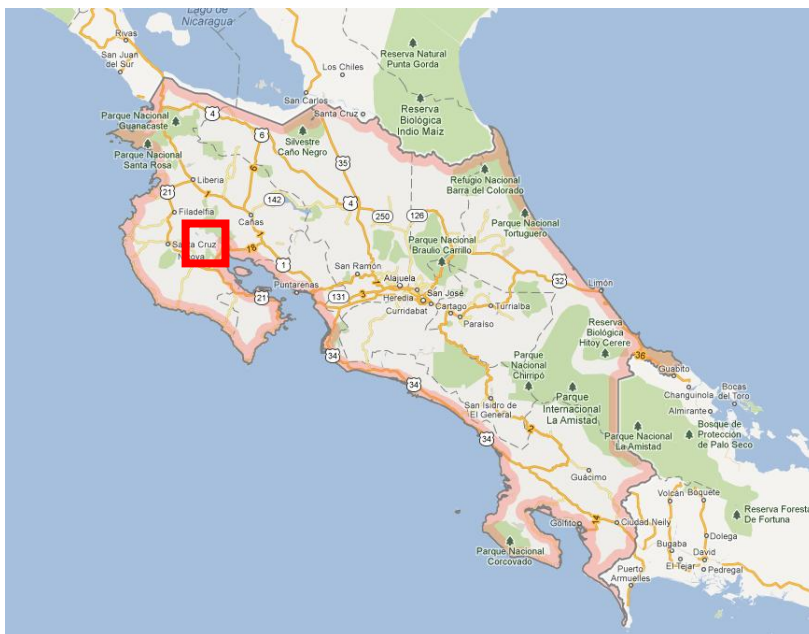
The main reflection on the research is that the use of both theories turned out to be a good combination. Also, the use of both qualitative and quantitative research tools turned out good. Nevertheless, the used methods could have been more extensive. A larger number of questionnaires and some in-depth interviews with inhabitant would have been desirable.

# 1 Introduction

## 1.1 Background

Located in the heart of Nicoya Peninsula, the peninsula of Costa Rica, is the town of Nicoya. Nicoya is one of the bigger towns in Costa Rica and has about 15000 inhabitants. Three little communities that belong to the municipality of Nicoya are Puerto Humo, Pozo de Agua and Rosario (see figure 1.1 and 1.2). These three communities are located next to the Tempisque River in the area that is called the Rio Tempisque Basin. This river delineates the peninsula from the mainland of the country. The three communities are highlighted in the figure to illustrate the research area of this document.

The area is the focus of a research done by Ben Warner who is a PhD from the Arizona State University, School of Sustainability. The municipality of Nicoya asked Mr. Warner to research the possibility of creating adaptive capacity in climate stressed tropical wetland's socio-ecological systems to deal with critical transitions (Warner B., personal communication, February 2<sup>nd</sup>, 2011). Following this enquiry this document contains a connecting investigation to that of Mr. Warner.



*Figure 1.1 Costa Rica; the research area in the red square, (see also figure 1.2 p.2; based on Google maps 15-03-2012).*

The problem of the critical transition, located in the research area, concerns two aspects. First, there is loss of biodiversity in the area due to climate change and human impact. Human impact is in general not positive for the biodiversity. The use of natural resources to obtain an income destroys the ecosystems and with that the biodiversity. Also, destroying ecosystems to use the land for agriculture and cattle leads to loss of biodiversity. Wastewater and the use of water for agriculture and cattle, fresh water and energy leads to drought in the area which thus leads to loss of the original wetlands (Daniels and Cumming, 2008). Moreover, climate change reinforces the problems concerning the research area. Climate change leads to serious problems all over the world. Examples of these problems are extreme drought, mudflows, floods and loss of habitat for species and

indigenous peoples (Houghton, 2009). The research area is a wetland which is the most threatened type of ecosystem (Daniels and Cumming, 2008). Wetland losses are exceeding 50% of the original size (Daniels and Cumming, 2008). With the loss of original extents the biodiversity is threatened.



*Figure 1.2 In red the three research villages Puerto Humo, Pozo de Agua and Rosario. In orange the city of municipality Nicoya (based on Google maps 15-03-2012).*

The second aspect of the problem is change because of human behaviour and its influence on the local communities. The change of ecosystems, as mentioned above, influences the land use of the local communities regarding their livelihood and leads to a necessary change in providing an income. Former land use has to transform to the new type of ecosystem or even fade away. Furthermore, the necessary protection of the biodiversity leads to limits in land use for the local communities. Even though the local communities are yet forced to expand their land use because of market demand.

To make the changes manageable for both the biodiversity and the local communities there are several potential solutions. For example a Payment for Ecosystem Service (PES) could help conserve biodiversity and simultaneously provide a livelihood for the local communities. However, this is only possible if the area is mainly privately owned and people are in possession of large parts of land. The latter is not the case in the researched area. Furthermore, the area is a wetland whereas the existing Costa Rican PES regulation is a solution aimed at forests (Bosma, 2012). Another solution can be a change in agriculture, for example switching to sustainable agriculture. With sustainable agriculture the biodiversity will remain. Nevertheless, in order to implement sustainable agriculture the inhabitants need to be in possession of large parts of land. A solution that does not ask for large privately owned soil and can be applied to wetland is ecotourism.

Due to the fact that ecotourism can be beneficial for both the biodiversity and the local communities this will be considered as the possible solution in this research. Ecotourism can be beneficial for the biodiversity since it is a way of tourism that works together with nature rather than against her. With ecotourism no ecosystems will be destroyed in order to give the tourists an accommodation or attraction. Instead, the tourists will be part of the nature and culture of the area. Second, the local communities will benefit since ecotourism will provide them with income (unlike regular tourism where only the tourist organisations earn profits). Besides, since the biodiversity and ecosystems in the area will be preserved there is no need for an intense change in former land use.

The conservation of biodiversity is often regarded as an integral part of sustainable development in a country. However, in this case it is considered independent of the sustainable livelihood of the local communities. The possible improvement of the livelihoods is only sustainable for the local communities and the biodiversity is not the main concern for these people. Their concern is purely local and personal. Nevertheless, the reason ecotourism is introduced is not only for the local interest. There is a worldwide need for conservation of biodiversity. Ecotourism can contribute to this and the local concern.

There is no ecotourism in the area at the moment. There is some regular tourism, but this is not profitable, neither for the biodiversity, nor for the local communities or the general economy. The current tourism in the area is only profitable for the owners of the tourist organisations. This tourist sector is not only not helpful but even harmful for the region. For example, it limits the water use for the local communities because of retraction of water from the local watershed (Warner B., personal communication, February 2<sup>nd</sup>, 2011).

Several publications mention (eco)tourism as a growing sector in the region (Murcia, 2011, Jimenez et al., 2001, Daniels and Cumming, 2008). Nevertheless, ecotourism is not a common solution for similar problems in Costa Rica. This makes it an interesting subject to analyse, because the country has a growing number of tourists and tourist organisations (Palomo L., personal communication, June 12<sup>th</sup>, 2011). Ecotourism is a promising solution for the problems in the country involving local communities and biodiversity.

This research focuses on clarifying the circumstances under which this promise can materialize and become a sustainable solution for these kinds of areas and their local communities and, at the same time, be a local contribution to global biodiversity.

## **1.2 Research objective**

To clarify the circumstances for a sustainable future of these kinds of areas the objective of this research is:

*Contribute to the solution of the two-sided problem of the Rio Tempisque Basin providing a livelihood for the local communities and the conservation of the biodiversity by analysing the opportunities and constraints for the development of ecotourism in this kind of areas and local communities.*

The concepts mentioned in this objective will be shortly clarified here. First, there is the two-sided problem of the Rio Tempisque Basin that will be explained in detail in chapter 2. Second, the term

Rio Tempisque Basin refers to the three research areas Rosario, Puerto Humo and Pozo de Agua (see figure 1.2). These three communities asked Ben Warner to research climate change adaptive strategies since they are forced to change their livelihood (Warner, 2010).

The approach to analyse the current situation and the opportunities and constraints of ecotourism by analysing both the impact on biodiversity and livelihood it will become clear whether it is possible for these two aspects to collaborate. Once there are constraints that are unable to resolve ecotourism might not be suitable as a solution. Opportunities and constraints pave the way to feasible, passable ways for the introduction of ecotourism, besides, it shows the dead ends where ecotourism might lead to a decline of the area. That is why these opportunities and constraints need to be analyzed. Chapter 4 describes how this analysis is realized.

### *Relevance*

With this objective one aim is to support the local communities since ecotourism can provide the local communities with a stable income. This way, the inhabitants do not have to move to a bigger city or live in poverty. Ecotourism gives the inhabitants the possibility to live in their traditional surroundings providing their own livelihoods. Also, the research will give insight in the constraints of ecotourism itself.

Another aim of the project is to sustain the biodiversity in the area. With the implementation of ecotourism the inhabitants do not necessarily have to destroy the surrounded area they work in. The inhabitants have little choice on how to work with their surroundings in the present. The market demand is to offer more products and the only way to make this possible is to destroy nature in order to keep cattle and work with agriculture. As an alternative ecotourism could provide the inhabitants an income so that they are able to live with their surrounded nature instead of pulling it down.

A third aim of the research is the protection of the ecosystem services. These services are the basis of the livelihoods of the local communities. It gives the inhabitants access to water and food. Besides, the wetlands protect the area against flooding (Hey and Philippi, 2006). With the loss of biodiversity, and with that the loss of ecosystems, the former services will be threatened or even disappear.

The fourth element of relevance is the fact that the results of this research can be used for similar research in different areas. Although the conclusions and recommendations will be specific to the Rio Tempisque Basin there are several parts of the results that will be useful to scientists studying any of the numerous other places in the world that deal with similar problems.

### **1.3 Theoretical framework**

Since it is not possible to investigate a problem from all perspectives at the same time every research requires a logical structure or theoretical framework to 'peel off' the problem. The first is the institutional rational choice theory (IRC), the second is the sustainable livelihood approach (SLA). Both theoretical approaches will be combined and integrated in a conceptual model, elaborated and presented in chapter 3. Nevertheless, an introduction to both theories is given here.

The objective of the research is to clarify the opportunities and constraints of ecotourism in the research area. Within the institutional rational choice, the institutional aspects, the rules, the structures and organizational arrangements and issues impacting the actions of people are central.



These concerns are relevant to the implementation of ecotourism which is why the institutional rational choice theory is chosen as the main theory in this research.

Besides these concerns it is important to also include the actor-level. Since it is necessary to understand how people look at institutions and how this influences their acting the sustainable livelihood approach is used.

#### *Institutional rational choice theory*

The institutional rational choice theory focuses on institutions; it analyses the actor in its complete world including time and resources, knowledge of people with whom they interact and institutional rules. The IRC theory analyses how institutions influence the collective choice of individuals.

Using the IRC theory institutions will be described and investigated. The rules, structures and ideas of the involved institutions are of great importance for the possibilities of implementing ecotourism. This top-down approach is important since rules and structures influence human acting. As will be described in detail in chapter 3 the IRC theory is rather focused on the institutional level, the structure of a problem. The actor oriented classical rational choice theory is replaced with a structure oriented theory. In order to involve the standards and values of the local communities, the actors, it is important to not only investigate and develop the institutional level, but also include the view of people on the collective good level. This is the reason to combine the IRC theory with a more constructionistic view. The sustainable livelihood approach will be the leading theory to develop an outcome that is profitable for the local communities without overlooking the government. Therefore, the SLA will be used to analyse the livelihoods of the local communities. This way, both the structure and the actor level are taken into account.

#### *The sustainable livelihood approach*

The sustainable livelihood approach (SLA) stresses that people are the main concern, not resources or governmental organisations (Krantz, 2001). The livelihood approach helps understanding the complexities of poverty by using a framework. Next to that it uses a set of principles to guide action to address and overcome poverty (IFAD, 2011). The focus of SLA is livelihoods of the poor. The approach is not only focused on one specific sector like agriculture or water, but covers all sectors. And, very important, the SLA not only involves people in implementing the action, but also in identifying the problem (Krantz, 2001).

Using SLA makes it possible to understand in what way people look at institutions. It will give a view on how people create their own impression of an institution using the information they have. This impression will influence their response to the possible change, in this research the change of implementing ecotourism.

#### *Scientific relevance*

With the combination of the institutional rational choice theory and the sustainable livelihood approach 'the structure' and 'the actor' of the problem are united. Where other research only focuses on either the structure or the actor, the challenge of this research is the mixture of these two. The result is a detailed overview of the problem which will be more specific than it would have been using only one theory. With this, the aim is to give practical solutions with a solid scientific base. By making this combination this research contributes to the scientific discussion on actor-structure.

Furthermore, by using this combination the research will show new insights and shed new light on a worldwide recognized issue, that is the change in biodiversity and livelihood because of

climate changes and due to human behaviour. Consequently, it is an opportunity to generalise and increase knowledge about ecotourism.

#### **1.4 Research questions**

The objective of this research is to contribute to the mutual problem of the Rio Tempisque Basin providing a livelihood for the local communities and the conservation of the biodiversity with clarifying the opportunities and constraints of working with ecotourism. In order to reach this objective there is a research question. The main research question in this research is:

*How, and to what extend do the local institutions and livelihoods determine the opportunities and constraints for the development of ecotourism in the Rio Tempisque Basin?*

The following research questions are answered to attain the answer to the research question:

1. What are the changes in the Rio Tempisque Basin and why does this require a change in the livelihoods?
2. What is ecotourism and in what way can it be used?
3. What conceptual model can be made out of the interaction of the IRC theory and the SLA?
4. What are the characteristics of the local institutions and livelihoods of the Rio Tempisque Basin?
5. To what extend do these characteristics determine the opportunities and constraints of implementing ecotourism in the Rio Tempisque Basin?
6. In what way can ecotourism be a solution for the problem in the Rio Tempisque Basin and comparable problems in other areas?

Answering the first question will give an explanation of the changes in the area because of human impact and because of climate change. That will give insight in the need for change in the area, it gives the problem description that is necessary to start a research. The second question is an explanatory question in order to give a clear description of what is meant with ecotourism. Ecotourism is presented as the possible solution in this research, therefore it is important to know exactly what ecotourism is. The answer will lead to criteria for successful implementation of ecotourism which is necessary to be able to compare the current situation in the research area to these criteria. The answer to the third question will first describe the two theories that are used in this research and arising from these theories, it will explain the conceptual model that will be used throughout the research. Answering the fourth question is necessary in order to find out what the current situation in the area is in terms of all the aspects that are of importance to implementing ecotourism. The exact form in which it will be investigated will emerge from a research model. The fifth question will answer in what way the results of the fourth question will lead to opportunities and constraints for the implementation of ecotourism. Here, it will become clear if it is possible to implement ecotourism in the current situation and if it will both provide a livelihood and conserve the biodiversity. The last question shows whether ecotourism can be the solution for the problem in the Rio Tempisque Basin. With this question recommendations can be given. With all these questions and answers an answer to the research question and a possible road to a sustainable future can be given.

The final objective of the research is to contribute to the solution of the two-sided problem of the research area by analysing the opportunities and constraints for the development of ecotourism in this area as shown in the research model in figure 1.2.

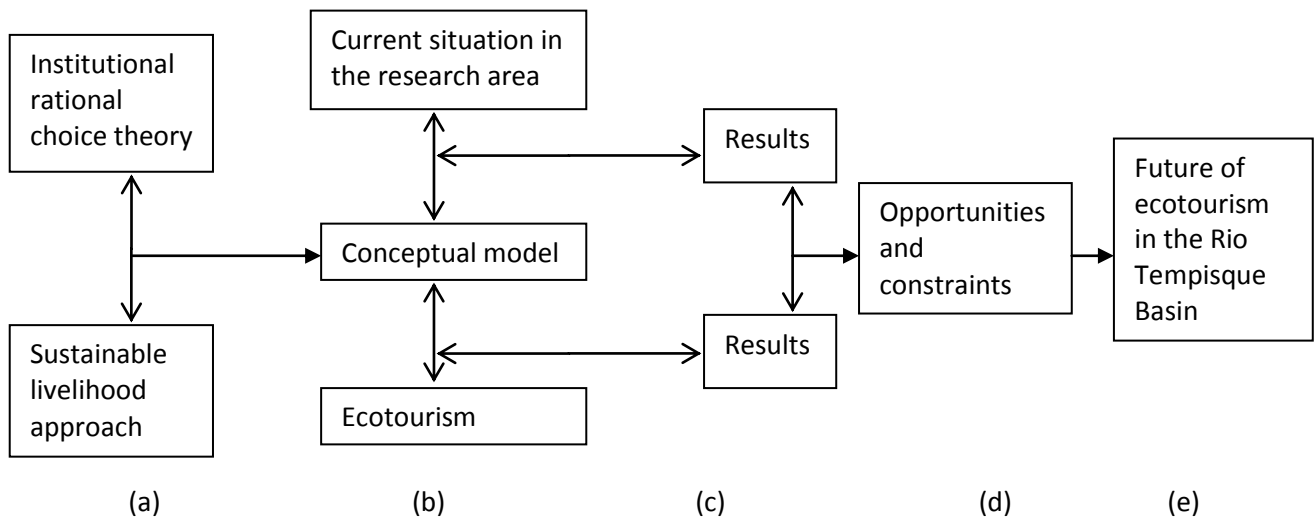


Figure 1.2 The research model.

(a) The study of the institutional rational choice theory and the sustainable livelihood approach result in (b) a conceptual model which is applied to the current situation in the research area as well as to how ecotourism can be implemented. (c) The results of investigating the current situation and ecotourism and its criteria will lead to several results. (d) The comparison of these results will lead to opportunities and constraints of using ecotourism in the research area. (e) This brings the required insight into the future of ecotourism in the research area, the Rio Tempisque Basin.

## 1.5 Research methods

The research case contains the three communities of Rosario, Puerto Humo and Pozo de Agua which are chosen at their own request on how to live in the area without destroying their nature (Warner B., personal communication, February 2<sup>nd</sup> 2011).

The research is a mixture of a case study and a survey. Like a case study, it consists of a detailed approach that uses qualitative tools and involves a small number of organisations (Verschuren and Doorewaard, 2000). Nevertheless, there is also quantitative research in the form of questionnaires and telephone interviews. Both research methods will be further explained in detail in chapter 4 of this research supported by a description of the validity and reliability of this research.

Sources of information are both a literature study as well as empirical studies. The theoretical literature about the institutional rational choice theory of Ostrom (1990) and the sustainable livelihood approach (Krantz 2001). Besides these theories, ecotourism and its criteria are being analysed through existing literature. Ecotourism is investigated through interviews as well both inside and outside the exact research area. With these methods the first three sub-questions are answered.

The empirical study consists of two parts. The first group are the inhabitants of the three communities who are asked to fill out a questionnaire based on the institutional rational choice theory and the livelihood approach. With this, the fourth sub-question is answered.

The second group includes governmental organisations. Also, these interviews are set up on the basis of the institutional rational choice theory. Insights from these interviews contribute to answers on all sub-questions, except for the third.

The empirical literature that is analysed is at most fifteen years old. In order to have valuable data it is in some cases necessary to look back more than ten years. However, deliberately no older data is used in order to ensure validity of the research, since the research area has developed substantially over the last years. Looking back more than 15 years would be ineffective in the light of our objective and research questions.

## **1.6 Contents**

The contents of this thesis are as follows. Chapter 2 contains a detailed description of the problem in the Rio Tempisque Basin. Next to that, a description of ecotourism is given and the amount of ecotourism and general tourism in the area is illustrated. In addition, the former and current situation and the changes in the area are clarified. Chapter 3 gives the theoretical context. The institutional rational choice theory and livelihood approach will be described in detail. In chapter 4 the methods used in this research are clearly described. Chapter 5 gives an analysis of the current social, natural and institutional situation based on the research methods. Furthermore, the criteria for ecotourism and the outcome of the current situation will be confronted. That will lead to an overview of the opportunities and constraints of working with ecotourism in the Rio Tempisque Area. This overview together with the conclusion and recommendations will be given in the following chapter, chapter 6. This final chapter contains recommendations for the government on how to implement ecotourism. Chapter 6 also contains a reflection on the research and recommendations on sequel research.

## **2 Ecotourism and the problems of the Rio Tempisque Basin**

The objective of this research is to contribute to the solution of the two-sided problem of the Rio Tempisque Basin providing a livelihood for the local communities and the conservation of the biodiversity by analysing the opportunities and constraints for the development of ecotourism in this kind of areas and local communities. In order to reach this objective, first the problem in the research area needs to be clear. The two-sided problem, as mentioned in chapter 1, will be explained in the following chapter. In order to solve this problem a solution in the form of ecotourism is stated. Therefore, ecotourism will be explained in this chapter. When these two elements are clear it is possible to further investigate the research questions as will be done in chapter 3, 4 and 5.

In paragraph 2.1 the social, natural and institutional problems will be described. This will give insight in the current situation and why this situation is undesirable. With that, the first sub-question will be answered; what are the changes in the Rio Tempisque Basin and why does this require a change in the livelihoods?

After that a description of ecotourism will be given in paragraph 2.2. Ecotourism is a complicated concept that perhaps leads to confusion and debates. This chapter clarifies the concept of ecotourism and the way it is used in this research. As such, it will give an answer on the second sub-question: what is ecotourism and in what way can it possibly be a solution for the area?

Paragraph 2.2.4 gives a conclusion of the chapter. The problem will be summarized followed by a description of the possible solution in the appearance of ecotourism as stated in paragraph 2.2.

### **2.1 The Tempisque problems and the research objective**

In order to find an answer to the research question *"What are the opportunities and constraints for the development of sustainable ecotourism in the Rio Tempisque Basin and how, and to what extent do the local institutions and livelihoods determine the opportunities and constraints for this?"* the problem needs to be described in detail. This will be done in this section. As mentioned in the introduction the problem concerns two aspects. The first is the loss of biodiversity due to climate change and changes because of human impact. The second is the influence of these changes for the local communities. In order to get a clear view of the problem this dichotomy will be maintained in subparagraph 2.1.2 and 2.1.3. However, the research area will first be described in detail in subparagraph 2.1.1. With this, a clear view of the area will be reached and this will facilitate the understanding of the problem.

#### **2.1.1 Research area**

The research case contains the three communities of Puerto Humo, Rosario and Pozo de Agua. These are located in the lowlands of the Tempisque river. During wintertime, the rainy season, the area is flooded. During the dry season it is plains, dry land.

The three communities are living in certain poverty at the moment. There are many places in the world where poverty is a problem regarding local people and their surrounded environment. The fact that Costa Rica is a leading country in the protection of nature and the fact that it is a democratic country with a relatively high prosperity makes it an interesting research area. Because of the reasonable prosperity and the lead in nature reservation it is not necessary to start at the foundation of the problems but at a certain level. As an example, the government is already familiar with nature

protection and the consequences for the local communities. This way, it is not necessary to inform them on this subject. These advantages make the country a practical sample on how people can adapt to climate change in order to save their income and their surrounded environment.

There are different types of wetland located in the research area. Nevertheless, this is mainly tropical dry forest. Next to that, there is some riparian forest, four types of mangroves, swamps and savannah (Ruiz, S. M., personal communication, May 2<sup>nd</sup>, 2011). Close to the town of Rosario there is a protected wetland which is called Mataredonda. It is supervised by the Palo Verde Park (Ramirez R., April 10<sup>th</sup>, 2011. Ruiz, S. M., May 2<sup>nd</sup>, 2011. Bravo J., March 13<sup>th</sup>, 2011. Personal communication). This wetland is used for livestock watering, animal feeding and waterfowl nesting (Rodriguez N., personal communication, May 5<sup>th</sup>, 2011).

The main economic activities in the area are cattle holding, rice and some sugarcane plantations (Rodriguez N., May 5<sup>th</sup>, 2011. Ruiz S. M., May 2<sup>nd</sup>, 2011. Bravo J., March 13<sup>th</sup>, 2011. Personal communication). Another income that is important to mention is the income of people working outside the area. These people travel to bigger city's like Nicoya and even San José to work during the week.

At this moment there is some tourism in the area. There is a tourist lodge in Puerto Humo, called Rancho Humo. This is a protected wetland spread over 50.000 acres (Bravo J., personal communication, March 13<sup>th</sup>, 2011). In addition, there are some private boat owners in the region. These people live close to the river and are focussed on tourists that accidentally pass the area. A third touristic activity is the Safari Zoo in Rosario. Though, this is not visited much at the moment (Ruiz S. M. personal communication May 2<sup>nd</sup>, 2011). There is no ecotourism in the area currently.

Most of the area is private owned property except for the one protected area that is called Mataredonda (Ruiz, S. M., personal communication, May 2<sup>nd</sup>, 2011). Nevertheless, this is not registered in the land index (Rodriguez N., personal communication, May 5<sup>th</sup>, 2011). The sizes of the properties vary, some people own large pieces of land, however, most people own small parts of about 20 or 30 hectares (Rodriguez N., personal communication, May 5<sup>th</sup>, 2011). The large areas, that contain 100 or more hectares, are mainly owned by foreigners. These owners grow pineapple or melon in these areas (Bravo J., personal communication, March 13<sup>th</sup>, 2011).

The water that is used for agriculture and cattle comes from different sources. Rodriguez (personal communication, May 5<sup>th</sup>, 2011) states that the water comes from the Tempisque river and smaller rivers that ends up in the Tempisque river. Bravo and Ruiz (personal communication, May 5<sup>th</sup> and March 13<sup>th</sup>, 2011) state that the water comes from the wells in the area which means it is mainly groundwater. Ruiz adds that there is an organized system in all the communities. One person of the community is in charge of the water access. Especially in the dry season they decide when to use water, how much and for what purpose. Nevertheless, the water is a possible grand problem in the future because there will be too little water in the future (Ruiz S. M., personal communication, May 2<sup>nd</sup>, 2011).

There is no development plan of zoning at this moment. The province is currently working on such a plan for the coastal areas, nevertheless, this is something that just started and is not implemented so far (Bravo J., personal communication, March 13<sup>th</sup>, 2011). However, it means there is development in this field of zoning.

Ruiz (personal communication, May 2<sup>nd</sup>, 2011) states that is important for the region to make these plans. There is need for zoning in all the areas for human safety. Rodriguez N. (personal communication, May 5<sup>th</sup>, 2011) transcends this by saying that the communities need to have a source of income in their future. It is of great importance to have projects that help to gather income and

are good for the environment at the same time. Possible solutions that Rodriguez gives are sustainable agriculture and rural tourism projects (Rodriguez N., personal communication, May 5<sup>th</sup>, 2011). Nevertheless, information and promotion in this area is obligatory.

### **2.1.2 Loss of biodiversity**

Climate change and change because of human impact is of great influence on the biodiversity in the research area. Humans affect the ecosystem at this moment and climate change will lead to great changes in the coming future. Loss of biodiversity needs to be stopped and ecotourism could be a possible solution.

One of the problems is the necessity of water in the research area. The ecosystems, and especially the wetlands, require a large amount of water. However, the area will become dryer with the temperature rise and decrease of precipitation (Anderson, Cherrington, Flores, Perez, Carrillo R. and Sempris, 2008). This is in accordance with Anderson et al. (2008), where models show that there will be impact because of climate change in Costa Rica. Ramirez (personal communication, April 10<sup>th</sup>, 2011) states that it is already getting dryer in Costa Rica. And also Ruiz (personal communication, May 2<sup>nd</sup>, 2011) gives the example of a shortage of water in the dry season. He states that even in the rainy season the water resources are poor. According to Mattarita (personal communication, April 27<sup>th</sup>, 2011) the soil is too dry in May and April. The soil opens and because of the increased winds, due to climate change, the soil dries too fast. This drought is also affective in the river where it brings sand bars (Mattarita J., personal communication, April 27<sup>th</sup>, 2011). This is due to the hot water that comes from the temperature rise.

Another problem is the vulnerability of the ecosystems. When an area is vulnerable there is great risk that climate change will have a higher impact (Jimenez, Gonzalez and Mateo-Vega, 2001). The shortage of water in the area makes the wetlands vulnerable, so this will lead to a weak protection against climate change.

A third problem is the temperature rise and its consequences for the species that will be extended to other regions with better conditions (Anderson et al., 2008). This change or loss of species leads to more change in the biodiversity.

Human impact is also leading to changes in the biodiversity. First, there is the use of resources, nevertheless, this is not the only change that humans bring. The local people converted the wetlands into pasture for cattle and for land for agriculture in the past two years (Rodriguez N., May 5<sup>th</sup>, 2011. Bravo J., March 13<sup>th</sup>, 2011. Personal communication).

As well, the wetlands without activities are invaded by aggressive vegetation such as cattails and black berry. This causes loss of natural fresh water and thereby space for waterfowl. Some of these changes are driven by people in their efforts to develop the soil, nevertheless, climatic conditions and the imbalance of biodiversity are as well of influence on these vegetations.

People have a negative impact on the biodiversity by their hunting. The hunting is increasing in this area and especially in the protected areas (Mattarita J., personal communication, April 27<sup>th</sup>, 2011). The hunting is mainly because of the loss of other income and besides, certain former hunting areas are being closed to become a protected area. People start to hunt more often in order to compensate their loss of income. As well, people start hunting illegally, for example in protected areas. The hunters sometimes burn the forest to distract the rangers in the parks. This distraction is

in order to be free to hunt while the rangers are working on the fire. Also, the rangers are not able to react because of their poor transport possibilities (Ramirez R., personal communication, April 10<sup>th</sup>, 2011). With this burning large parts of the nature are being destroyed.

Monitoring is an issue that frequently opposes as a problem. Another example of this is the inadequate control on fishing nets. There is no control because of poor transport possibilities (Bravo J., personal communication, March 13<sup>th</sup>, 2011). However, fishing leads to change in, or loss of, biodiversity.

### **2.1.3 Changes for the local communities**

The second aspect of the research is the influence of climate change and change because of human behaviour for the local communities. Climate change and change because of human impact leads to changes in the ecosystem as mentioned in the previous section. This change leads to a necessary transformation of using the land for an income as cited in chapter one.

As mentioned, the local people sell their soil to foreign landowners in order to gather some income. This ownership of large pieces of land (over 100 hectares) by foreigners is increasing the last two years. Before this, there were more cattle. These changes lead to changes in the use of the ecosystem. There is more need for water which will lead to drought and change of ecosystem. As well, the people hand in their possessions which will lead to fewer opportunities of providing a livelihood for themselves and requires the people to move or work in someplace else.

In addition, there is need for more soil. Local communities are cutting or burning forests in order to get more land for their cattle and agriculture (Ramirez R., April 10<sup>th</sup>, 2011. Bravo J., March 13<sup>th</sup>, 2011. Personal communication). And these cattle also injure the wetlands (Ramirez R., personal communication, April 10<sup>th</sup>, 2011). It is possible to keep cattle in wetlands, yet, not too much. At the moment the amount of cattle is increasing and injuring the wetlands. The need for more soil is a problem since there is no more soil available, just nature. Loss and shortage of soil leads to fewer opportunities of providing a livelihood. However, the available soil does not meet the current standards of living, hence there is a shortage.

As mentioned in 2.2.2, hunting is of influence on the biodiversity. Besides, the local people feel changes. Their need to hunt is increasing in order to gather a livelihood. Next to that, their hunting opportunities are changing. More land is being protected so people need to replace their hunting or start hunting illegally.

The shortage of water is also leading to changes. Humans use the natural resources for their livelihoods. First of all, this leads to damaged nature and with that the biodiversity. As an example, the local communities require water for fresh water, energy, wastewater, water for cattle and agriculture. This use of water is in rivalry with the water use for the wetlands (Daniels and Cumming, 2008). The local people converted the wetlands into pasture for cattle and land for agriculture in the past two years (Rodriguez N., May 5<sup>th</sup>, 2011. Bravo J., March 13<sup>th</sup>, 2011. Personal communication). Second, the shortage of water leads to shortage in drinking water for the local communities, this means that the livelihood is decreasing. Consequently, it may lead to conflicts within the community. Therefore, a change in water use or more water is necessary.



## **2.2 Ecotourism**

In subparagraph 2.2.1. a clear definition of ecotourism will be given. This way, ecotourism and the way it is used in this research becomes understandable. In subparagraph 2.2.2 the advantages and disadvantages of ecotourism and its use are described followed by the current ecotourism in the research area in subparagraph 2.2.3. Subparagraph 2.2.4 gives a short summary of ecotourism and its essence in this research.

### **2.2.1 Principles of ecotourism**

The term ecotourism is surrounded by confusion (Cater and Lowman, 1994). To define ecotourism a distinction between ecotourism and community-based ecotourism will be made. The latter approach will be used in this research although it will be named ecotourism. There is a great deal of literature about what ecotourism and community-based ecotourism is. This research will focus on the literature by Scheyvens (1999) and Cater (1993), because their view of ecotourism is best appropriate with this research.

Ecotourism is tourism that is, first of all, environmentally responsible (Cater and Lowman (1994). Tourists travel to undisturbed natural areas to enjoy and respect nature and experience the life of the local people. The tourist attractions are located in natural areas without five star hotels and swimming pools. An example of an experience is a day tour where a tourist buys its own bus ticket. With that the tourist travels to the local community, works a day with the community and spends the night in their house with their comfort (Palomo L., personal communication, June 12<sup>th</sup>, 2011). This way no nature has to be destroyed in order to build resorts and swimming pools. Besides, there is no unnecessary spoiling of water and other natural resources in order to keep the tourist satisfied.

The ecotourism mentioned here not only focuses on the environment, however, the local communities are involved as well. It is of great importance that not only the touristic organisations will profit but, most important, the local people that are involved in the tourist activity will profit. This involvement can differ in size and amount of time. There are people that offer their homes for tourists and there are other people that clean hiking trails every day. The involved people are compensated according to their activities (Palomo L., personal communication, June 12<sup>th</sup>, 2011). However, the real advantage that a community can get from ecotourism is presented relatively weak in this literature. In chapter 3 the social part, that is ecotourism in a way it is really profitable for the inhabitants, will be strengthened.

To prevent the possibility that wilderness and lands occupied by local people will become too vulnerable because of the increase of ecotourism it is necessary to define ecotourism from the needs, concerns and welfare of the local peoples. Within community-based ecotourism there are appreciations for the needs of the host population in the short and long term (Scheyvens, 1999).

When ecotourism is focused both on the environment and the local people the local economy will increase as well. Ecotourism gives an economic value to ecosystem services that protected areas provide (Drumm and Moore, 2005). This means that ecotourism is environmentally responsible, economically responsible for tourist organisations and beneficial for the local community.

Some principles of ecotourism should be taken into account within this research. With these principles the term ecotourism becomes better understandable and there will be no misunderstandings. According to Cater and Lowman (1994), there is a need for an environmental organization or a high-quality management plan in order to manage the implementation of ecotourism. Second, payments should not go back to tourist organizations, but the local hosts should get the profit. Third, tourism needs to be attractive to tourists and, above all, it should improve nature and not injure the environment. The fourth principle is that there needs to be respect to the social and cultural traditions in the host countries. The fifth principle is that ecotourism needs to be small scale and the activities need to be locally owned. Developing wildlife parks and reserves needs to be done in cooperation with the local communities. That is the only way that ecotourism can be beneficial for the local communities.

Certainly, ecotourism is associated with tourism in the wild unspoiled natural environments. For this, the environment will still be injured. To cover this, the ecotourism mentioned in this research should not necessarily be in the wild unspoiled environment. The eco-tourists should be in local areas surrounded by the local peoples while working and eating with those people and not entering places that the locals do not go. Then still, there will be a small degree of damage, though, this will be less than with 'normal' tourism (Cater and Lowman, 1994).

### **2.2.2 Advantages and disadvantages of ecotourism**

A first disadvantage is the meaning of the word ecotourism. It is an extremely diverse used term within the travel- and tourism business. Cater (1993) states that ecotourism in the tourism business is more an example of environmental opportunism rather than truly ecologically. Consequently, this can give misunderstandings with the tourists, the local communities and areas where ecotourism is accomplished (Cater and Lowman, 1994).

Another issue with using the term ecotourism is the definition of sustainability. Ecotourism is supposed to be sustainable, nevertheless, there can be great variation in using the term sustainable and its meaning (Cater and Lowman, 1994). Tourist organizations probably define sustainable as not being vicious to the environment while local communities might define sustainable as meeting the needs of the present generation without negotiating the capacity of the future generations. Both arguments are correct, however, people will use the term in their personal advantage.

Coherent with that is the preference of the local communities. In their case sustainability is a luxury, not something possible (Cater and Lowman, 1994). Poor people sometimes do not have an option other than choosing the economic benefits. And in some cases the economic benefits are not environmentally positive.

The last disadvantage is that it is difficult to define the financial value of an ecosystem (Cater and Lowman, 1994). There will be a struggle between how much a tourist is willing to pay and what the environment and the local communities require. An example is the suspiciousness of Cater (1993) on the term ecotourism which is given here. There is a danger of assuming that ecotourism is environmentally sensitive, nevertheless, this is not reality per se. Cater names two reasons for that. The first is that it is possible that tourists do not pay for their consequences for the long term. Those people are just visiting and go someplace else the following year. Second, the tourists that are using

ecotourism are paying much for their visit and see it as their right to fully use the resources in the area (Cater, 1993). This financial value makes implementing ecotourism a challenge.

An advantage of ecotourism is the benefits that come along as mentioned in the previous section. First of all, it will lead to income for the local communities. Second, it will not injure the environment the way 'normal' tourism does. The biodiversity protection will be improved (Cater and Lowman, 1994). And third, the overall economy in the area will increase.

One more advantage of ecotourism is that it is a growing sector. It is an attractive investment proposition because of its development (Cater and Lowman, 1994). This can be rather positive for the financial requirements that are needed in order to implement ecotourism.

### **2.2.3 Current ecotourism in the research area**

Costa Rica has two programs on ecotourism that are both under development. Nevertheless, the area is aware of the existence of these programmes.

#### *Blue Flag Program*

First, there is a Blue Flag Program. Even though it is still under development it exists for more than twenty years. The program is devised in seven categories. These categories are beach, educational centres, communities, natural forests/reserves, river protection, climate change and climate neutral (Ruiz S. M. personal communication May 2<sup>nd</sup>, 2011). Organizations that want to get involved get a flag when they work in a sustainable way in accordance with the preconditions of the Blue Flag Program.

The Blue Flag Program makes sure that organizations involved in the program consider the requirements made in their specific category. For example: clean water at the beaches, trash cleaning and giving security information to the tourists about the area. There are three analyses each year to check whether the organizations are still working in the correct way.

Within the Blue Flag Program environmental education is involved. People and schools get education on reforestation, protection of the environment, recycling and water. The responsible institutions take care of the education in their category.

In the Guanacaste province, where the research area is located, most of the Blue Flags are located on the beach site. After implementing it here the organizations discovered that the pollution on the water comes from other areas in the country. So the centre of the country is getting involved increasingly and the program is developing every year.

Every mentioned category has a different institution that is in charge. For example, the ministry of education is in charge of the educational centres. The Costa Rican Water and Sanitation Institute (Aya, section of MINAET) is in charge of the communities and rivers. Within these categories one person participates in the overall commission of the Blue Flag. This commission is in charge of the decisions on who is to get a Blue Flag.

The result of the Blue Flag Program is rather positive. An example of the success is the fact that in the beach category there are over 650 flags involved (Ruiz S. M. personal communication May 2<sup>nd</sup>, 2011).

### *Certification of Sustainability*

Besides the Blue Flag Program, in Costa Rica there is an organization that is called Certification of Sustainability. Currently it only exists for hotels and tour operators. They get a manual with about 150 questions that has to be answered by the organizations that want to work with the Certification of Sustainability (Ruiz S. M. personal communication May 2<sup>nd</sup>, 2011).

At this moment, the organization of the Certification of Sustainability is working on two new categories to certify. These are rental cars and managing activities. The manuals for these two categories are in development.

### **2.2.4 Conclusion**

The problem in the research area is extensive. That is why there are some critical issues that need to be taken into account in the research. First, the loss of biodiversity overall is an important issue. This problem includes the shortage of water for the local communities. This drought leads to vulnerable wetlands as well. The second issue is the use of resources by the local communities. Both by human and aggressive vegetation. The third issue is the negative impact of hunting for the biodiversity followed by the lack of monitoring in the area. The fourth issue that needs to be taken into account is the loss of soil on the one hand and the need for more soil on the other hand. The change in land use by foreign landowners is a fifth problem, since this leads to more demand of water which is already in shortage.

The problem described above should be solved. In this research ecotourism is mentioned as a solution. In summary, ecotourism first of all needs to be attractive to tourists. Another important element is that ecotourism has to be environmentally, economically and socially responsible. With that the local, social and cultural traditions should be respected. Another element that needs to include the implementation of ecotourism is the existence of a high-quality management plan and/or an environmental organisation that is involved. Nevertheless, ecotourism has to be small scale and the activities need to be locally owned and in cooperation with the local community.

With the knowledge of the problem in the research area and the possible solution it is possible to reach the objective of this research; *“contribute to the solution of the two-sided problem of the Rio Tempisque Basin providing a livelihood for the local communities and the conservation of the biodiversity by analysing the opportunities and constraints for the development of ecotourism in this kind of areas and local communities”*. This will be done in chapter 5 where the current situation is confronted with the criteria of ecotourism.

### 3 Theory

As mentioned before in the introduction the conceptual base of this research consists of the Institutional Rational Choice theory (IRC) combined with the Sustainable Livelihood Approach (SLA). This chapter contains a detailed explanation of both theories. Starting with the classic rational choice followed by the IRC the structural part of the research will be taken care of. This IRC is an institutional theory that has a minimal focus on the actor itself. Therefore, another theory is introduced in which the actor aspect of the research will emerge. This theory is the SLA. It will become clear in what way these two approaches will contribute to reach the given objective; *“contribute to the two-sided problem of the Rio Tempisque Basin providing a livelihood for the local communities and the conservation of the biodiversity with clarifying the opportunities and constraints of working with sustainable ecotourism”*.

In subparagraph 3.1 the orientation on policy theories and the reason for choosing IRC are given. Subparagraph 3.2. contains the structure and actor aspects in society. After that the classical Rational Choice theory will be discussed in detail in chapter 3.3 followed by the Institutional Rational Choice theory in chapter 3.4. Subsequent to this, the Sustainable Livelihood Approach will be described in subparagraph 3.5. The latter two theories are used combined in the research. How this works will be explained in subchapter 3.6 where a conceptual model is set. This will be followed by the methodology in the next chapter, chapter 4.

#### 3.1 Explicating IRC

The aim of this research is to find out whether ecotourism can be a solution for the problem in the Rio Tempisque Basin. To manage this, a change in policy guided by some governmental actor is very likely. So a theory about policy and policy change will help to find a solution to overcome the competition between providing a livelihood and conserving the biodiversity. This two-sided research problem is public and there are many involved actors with all different values, interests, influence and impact. On top of that, a possible solution might be expensive and a great amount of complicated work is involved (Sabatier, 2007). This all makes it very difficult for people to create their own conditions while creating a solution. Therefore, a policy theory is preferred. Sabatier (2007) selected several important policy theories of which IRC is one.

As an alternative on the IRC theory the multiple streams model of Kingdon (Zahariadis, 2007) could be used. Kingdon distinguishes three streams of process. First there is the problem stream. Central is to recognize and admit there is a problem. Second, in the policy stream it is central to formulate policy alternatives. And third, the political developments are essential in the political stream. This model is useful in understanding the complexities and realities of policy-making. Recognizing and admitting there is a problem could be very useful in this proposed research. As well, the alternatives in the policy could be helpful. Nevertheless, policy is not the motivation of the research and the basis is much more concentrated on the actors at a local level, not at a policy or political level.

Another option that Sabatier (2007) describes is punctuated equilibrium. This theory focuses rather on how different themes get on the policy agenda. Since this is not the objective of this research and nature conservation is already on the policy agenda punctuated equilibrium is not a useful theory for this research.

A third option is the discourse analysis presented by Sabatier (2007). This theory focuses on the different discourses in a policy process. These different discourses are present in this research. There are several options for the use of the land and the way to provide a livelihood for the inhabitants of the Rio Tempisque Basin. Nevertheless, this research has its focus on providing a livelihood in a way that it conserves the area and its biodiversity with the use of ecotourism. Other possible discourses are excluded.

Then again, the IRC theory suits perfectly to this research. It is a theory that helps to understand the institutional dynamics that are involved in the conservation of ecosystems. Therefore, the IRC theory will be the leading theory in this research. Why the IRC theory is the preferred choice will be described in detail in the following paragraphs.

The IRC theory is relatively focussed on institutions. However, actors need to be involved as well. This is a limitation to the IRC theory in its use in this research. Therefore, the IRC theory will be combined with the SLA approach. This theory deepens the relationship of institutions with the local communities. The dualism of structures and actors will be discussed in the next paragraph, 3.2.

### **3.2 Structure and actors in social life**

To make clear why there is a distinction in structure and actor aspects, first, there will be a short explanation of the structure/actor approach by Anthony Giddens (1984). Giddens thinks that the distinction between structure and actors is the most significant in social science (Giddens, 1991). With the actor/structure division Giddens means the dualism between acting people and structural phenomena of institutions. Giddens sees the opportunity to let these two separate aspects collaborate (Giddens, 1991).

According to Giddens (1984), the structures in life are the rules and resources that are concerned in institutions. An institution can be seen as a structurally present aspect in social life (Giddens, 1984).

The actor is seen as knowledgeable and capable in certain procedures (Jacobs, 1993). The actor is able to make changes and adjustments in events in the world. And besides, they are aware of certain knowledge where they can rely upon (Jacobs, 1993). This way, the actor creates its social life, nevertheless, not under full control. Therefore, interaction between structure and actor is necessary.

As Dom (2005) states, the important aspect of the dualism of structure and actor is the fact that there is interaction between actors and structures. Individuals give structures a meaning with day to day operations and people make structures and systems. Then again, structures give a meaning to individuals and their choices (Dom, 2005). People behave in respond to given structures and systems. In other words, institutions shape the behaviour and choices of people (Jacobs, 1993).

Where the IRC theory started as an actor oriented theory named rational choice theory it now is a more institutional theory (Ostrom, 2007). The former classical theory used the actor in a truly rational way based on costs and benefits. The basic idea being that an actor behaves in its own way, with its own preferences and its own knowledge. It is questionable whether costs and benefits are really the motivation for people to make a choice. Furthermore, Ostrom (2007) itself states the view of the actor as a rational thinker is challenged on many fronts. It is more likely to use the actor in its complete world. This means, for example including time and resources, knowledge of people with whom they interact and institutional rules. All these aspects are of influence on people's rational choice. This is exposed in the later formulated Institutional Rational Choice theory.

Therefore, by using the IRC theory the institutions that are involved will be described and investigated as well. In order to implement ecotourism the rules, structures and ideas of the involved institutions are of great importance for the possibilities of ecotourism to develop. The IRC theory centralizes this top-down approach for the reason that rules and structures are part of human acting. Without the institutions there is a chance that there will be social dilemma's (Ostrom, 1990). These social dilemmas will be described in detail in a following subparagraph 3.2.1.

With the use of the SLA the aspect of the actor, the perspectives of the inhabitants of Puerto Humo, Rosario and Pozo de Agua, will become clear. There will be an understandable view of the way the actors react to the institutions, how they construct their view on institutions, how these institutions determine their views and actions and what the actors think of ecotourism as a possible solution for their problems in their specific institutional environment.

### **3.3 Classical rational choice theory**

The IRC as described in chapter 1 is originated in the classical rational choice theory that centralizes the rational choice of actors, individuals and organizations. People make rational choices based on costs and benefits. These choices lead to behavioural patterns (Ostrom, 1990). The individual choices can lead to collective behaviour; people do see benefits in cooperation (Ostrom, 1997). Nevertheless, there is always self-interest involved. An example of self-interest is when local inhabitants decide to use water resources because they need the water for their agriculture even though they know that there is a water shortage. On the other hand, without using the water there will be no income and the individuals will have a dreadful livelihood. This interaction between self-interest, where a person chooses to use water for his agriculture, and collective action, where a person chooses to not use water in benefit of his community, is the difficult balance that people try to find in order to make a rational choice.

#### **3.3.1 Social dilemma's and the limits of the classical rational choice theory**

The classical rational choice is a good approach which could be said by its overall recognition and results. Though, there are some limitations that Ostrom recognizes as well. Ostrom (2007) describes that the theory mentioned that communities as a collection of individuals can regulate itself without institutions or governments. However, the involvement of institutions is important since without institutions Ostrom (2007) states that three possible social dilemma's may occur. These are the possibility of free riders, the tragedy of the commons and the prisoner's dilemma.

The free riders problem occurs when an individual or group of actors does not participate in an action, however these people do get the benefits of the action. This way, there will not be consensus and this will lead to more free riders for the reason that it is not beneficial for any individual to participate (Ostrom, 1990).

The tragedy of the commons happens when all individuals pursue their own interest instead of choosing the collective good. This occurs when there is no collective control which leads to no collective goal. This means that everyone chooses self-interested and this is not beneficial for other individuals and for the involved resources in an area (Ostrom, 1990).

The third problem, the prisoner's dilemma, occurs when people do not cooperate. An actor has three options: take action and choose self-interest, choose to cooperate, or do nothing at all. When an actor chooses its own interest, the other actors will have disadvantage as well as the

natural resources. When an actor chooses to cooperate all the actors have the same benefits and the natural resources will be secure. At last, sometimes an actor chooses to do nothing at all when this seems less risk full than cooperating with other actors (Ostrom, 1990).

In the research area it is most possible that the tragedy of the commons and the prisoners dilemma will occur. When there is not enough knowledge on water and land use there is the possibility of a tragedy of the commons. Besides, a lack of communication can lead to the prisoners dilemma. To prevent these social dilemmas monitoring and providing selective stimulus is of high importance (Ostrom, 1990). When stimulated, a group will be more interested in participation. This stimulus is best applied when using an institution (Ostrom, 1990).

Not only these three social dilemmas are a limitation. Ostrom (2011) itself states that strategies for conservation techniques have been too general up to now. There is no notice for local tradition, economics and politics (Ostrom, 2011). According to Ostrom (1997) it is not possible to generate all people and choices. Human nature is a complex mixture. On the one side there is self-interest. On the other hand people are capable of acquiring internal norms of behaviour and follow rules. Ostrom (1997) states that *“Rational Choice helps us understand humans as self-interested, short term maximizers”*.

Ostrom (1997) identifies another three limits. The theory is limited 1) as an instrument for normative analysis, 2) as a tool for empirical explanation and 3) for including history, institutions and cultural traditions. As Ostrom (2007) mentioned, the rational choice of a person differs for each individual and for each group of individuals. The reason is not only the variation in individuals but also the variation in involved institutions (Ostrom, 2007). Every community contains certain rules. These rules are moral rules as well as rules out of the law. This means there are institutions that have the possibility to influence these rules and with that the actions of the community (Ostrom, 2007). To overcome the three social dilemmas and to solve the mentioned limitations Ostrom (2007) introduced the IRC theory.

### **3.4 Institutional Rational Choice Theory**

As mentioned in the previous subchapter the IRC theory is now a more institutional theory. The classical rational choice theory used the actor in a truly rational way based on costs and benefits for since an actor behaves in its own way with its own preferences and its own knowledge. It is questionable whether costs and benefits are really the motivation for people to make a choice. Furthermore, Ostrom (2007) itself states the view of the actor as a rational thinker is challenged on many fronts. It is more likely to use the actor in its complete world. This means, for example including time and resources, knowledge of people with whom they interact and institutional rules. All these aspects are of influence on peoples rational choice. This is exposed in the later formulated Institutional Rational Choice theory.

By using the IRC theory the institutions that are involved will be described and investigated and the structure part is more emphasized than the actor part. In order to implement ecotourism the rules, structures and ideas of the involved institutions are of great importance for the possibilities of ecotourism to develop. The IRC theory centralizes this top-down approach for the reason that rules and structures are part of human acting. As mentioned in the previous subparagraph; without the institutions there is a chance that there will be social dilemma's (Ostrom, 1990).



It is to say that it is possible to guide the choices of individuals in a positive direction (Ostrom, 2007) for both the collective good and the protection of the ecosystem. Ecotourism can be the key between the institutions and the involved actors. The key being where the institutions give their rules and structure in order to protect the biodiversity and give all inhabitants a possibility to gather an income. And the key in which actors choose rationally for the collective good in the long way and not for their self-interest at short notice. Ecotourism can, as well, possibly become the institution itself. Where it started as an activity it can become an institution because of its possibilities to become the best choice for the people. When people choose what's best, and ecotourism is experienced as the best choice, ecotourism can be a leading institution that solves the problems in the area.

Ostrom (1990) gives two clear procedures that are indispensable in order to let ecotourism become the institutional environment for the actors and help avoid social dilemmas. These two processes are the eight design principles (Ostrom, 1990) and the Institutional Analysis and Development (IAD) Framework (Ostrom, 2007) that will be described in subparagraph 3.3.2. These two procedures are used as a theory in various researches over the years starting in 1990. Besides, it is commented and improved numerous times. The IAD Framework is an alternate form of IRC that is mostly used for Third World Countries. The IAD Framework, together with the SLA, will be used in this research. Therefore it will be situated in its most valuable use for this research. How this will be done will be described in subchapter 3.5, the conceptual model.

### **3.4.1 Institutional Analysis and Development Framework**

According to Ostrom (2007) the IRC theory is a complex theory that needs a clear system in order to be manageable. To find out in what way ecotourism can become the institutional environment for the three communities the Institutional Analysis and Development (IAD) Framework will be used (Ostrom, 2007). The IAD framework helps to organize the capabilities of the research area on the implementation of ecotourism. With the framework it is possible to analyze diversely structured communities. Therefore, it looks at the current situation in the area as described in chapter two and participates on this (Ostrom, 2007). The elements that are necessary to organize this are given in the IAD framework as shown in figure 3.1 and will be explained here.

The physical and material conditions in the framework are the elements that are present in the research area. In order to implement ecotourism some elements are necessary. Therefore it is necessary to find out which elements are present and if they meet the requirements of ecotourism. Some examples of these requirements are the willingness to implement a management plan, respect to social and cultural traditions and a certain amount of tourists in the area (Ostrom, 2007).

The attributes of the community include the social context like norms, traditions, desires and experiences of the inhabitants (Ostrom, 2007). Besides, it is important to know which soil is used by who and what access there is to water and other resources. The attributes as well include the current knowledge that the inhabitants have about the possible solution which in this case is ecotourism.

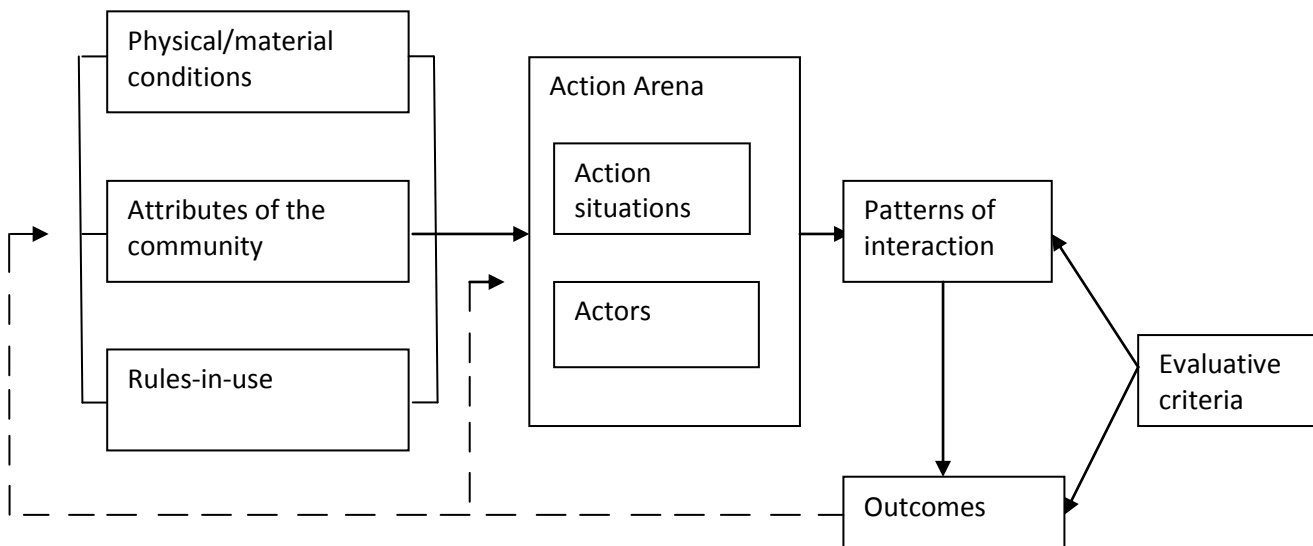


Figure 3.1 The Institutional Analysis and Development (IAD) Framework (Ostrom, 2007).

The rules in use are statements about what is allowed, what is permitted and sanctions when someone ignores or misuses the rules. When the current rules are known it is also known where these rules are from. It is possible that there are rules out of the law but there can be unwritten rules out of the community as well (Ostrom, 2007). Therefore, Ostrom (2007) introduced three different levels of rules. These levels show how changes can be made. In order to implement ecotourism and to gather a collective good it is necessary to know where, in which level, to start changing. The first level is the operational action. These are the individual actions that are of direct influence on the world. In this level a selective stimulus leads to participation of the individual. The second level is the collective good action. In this level rules are made on how to act in the first level, the operational action. Moral considerations of the participators are of great influence on these rules. The third level is the constitutional level. These are rules from a higher level not out of the community, but for example by government (Ostrom, 2007).

With insight in the structure and rules of the local communities it is possible to provide rules in order to change the current actions. Within the IRC theory the approach is the actor within its institutional environment. When finding the structure in an action arena the action of the actors can be changed. The action of the actors in the Rio Tempisque Basin needs a change that will hopefully lead to profitable ecotourism. To realize this it is important that the action arena is clearly defined.

To find out what the action arena, i.e. the action situation and the actors, in the research area is it is essential to find out 1) who the participants are, 2) the position these participants have, 3) the set of accepted actions, 4) the potential outcome, 5) the level of control every participant has, 6) the available information on the action and, 7) costs and benefits (Ostrom, 2007). When this is described it is known what regularities there are in actions and how these can be changed.

In this research the actors, the position of the actors, the available information and the costs and benefits will be leading. The set of accepted actions will be excluded because ecotourism is an individual choice and does not depend on possible barriers, or else, these barriers will be avoided. The implementation of ecotourism is independent on whether things are allowed in the area since

these things can be changed and chosen individually. The level of control that every participant has is excluded as well. Ecotourism is an individual case where people remain in charge of their own decisions and belongings. This does not depend on the control they have.

The potential outcome as mentioned in the framework is not part of this research either. The event that leads to a potential outcome is ecotourism. This is already stated. Therefore, other possible outcomes will not be investigated.

### **3.4.2 Eight design principles**

To ensure the quality of an institution and the success of self-organized governance systems there are eight design principles that have to be used. The eight design principles will help the involved people to build a self-organized cooperation over a long period of time (Ostrom, 2000). With these principles it is clear in what way a research area is working and who is involved, in what way they communicate and what norms and values are present. These elements are different in every situation and need to become clear in order to be able to work with the group of people.

Ostrom (1990) gives eight design principles to get a stable management:

- *“Clearly defined boundaries (effective exclusion of external unentitled parties);*
- *Rules regarding the appropriation and provision of common resources are adapted to local conditions;*
- *Collective-choice arrangements allow most resource appropriators to participate in the decision-making process;*
- *Effective monitoring by monitors who are part of or accountable to the appropriators;*
- *There is a scale of graduated sanctions for resource appropriators who violate community rules;*
- *Mechanism of conflict resolution are cheap and of easy access;*
- *The self-determination of the community is recognized by higher-level authorities;*
- *In the case of larger common-pool resources: organization in the form of multiple layers of nested enterprises, with small local common-pool resources at the base level.”*

These eight principles are needed in order to give the people in the research area the possibility to make a self-organized cooperation. Therefore, the principles will be integrated in the conceptual model in paragraph 3.5 where the elements of the research are defined.

### **3.4.3 IRC in this research**

In the previous subchapters several optional forms of the theory invented by Ostrom are mentioned. All options, choices and references lead to a choice for this research. First of all, the classical rational choice is excluded of this research. Therefore, the IRC theory, its three levels of action and its framework will be used in this research. A change needs to be made in the Rio Tempisque Basin. To change rules within a community it is necessary to gather insight in the rules in this community. With the IRC theory and the structure stated by Ostrom (1993) it is possible to get this insight. The classical rational choice is less suitable for this kind of research that clearly includes an institutional fragment.

Second, people make decisions in their own rational way. Within a group or community there are many individuals involved. In the IRC theory Ostrom gives the insight that a collective good can lead

to consensus in a group of actors or community. By using the three levels of action situations within the framework it is possible to make a collective change and reach the objective of this study which is to clarify the opportunities and constraints of using ecotourism in this specific area with her specific action situation. The eight design principles are not used visibly, nevertheless, these will be taken into account once using the framework.

Third, within the IRC theory Ostrom states that people need stimulus to make the 'right' rational choice. Essential for the research area is to make sure what these stimulus are and how to use these to come to a consensus on the collective good. With finding this stimulus it is possible to state opportunities and constraints on using ecotourism in this area with its specific own choices. Moreover, it can be questionable whether costs and benefits are really the motivation of people to make a choice. The background, for example culture, tradition, norms and knowledge, can have a great influence. With this in mind the local communities will be analysed as well. It is important to find out if costs and benefits are the motivation and if not, what the motivation is and what the opportunities and constraints of this specific background are. For this, it is helpful to introduce another approach. This will be the sustainable livelihood approach that will be described in the following paragraph.

This SLA uses a more constructionistic view where constructionism presumes cultural background to be of influence on the choices people make and the way people live and act. Where the rational choice used to be an actor oriented theory it is now, as IRC, a structure oriented theory. In order to be comprehensive the actor needs to be involved. The sustainable livelihood approach meets these needs. It is a modern, sustainability theory that focuses on the actor and its ideas.

### **3.5 The Sustainable Livelihood Approach (SLA)**

Ostrom (1997) states that an institutional top-down approach will mostly be a fail. It is necessary that local traditions are noticed and besides, people and their choices cannot be generated (Ostrom, 1997). It depends specifically on the involved actors and their capabilities how to take advantage of a problem (Krantz, 2001). Therefore, it is of great importance that the community will be involved.

This is established in literature on ecotourism as well. For instance, according to Scheyvens (1999) it is necessary to start ecotourism from the needs, concerns and welfare of the local peoples. When using ecotourism to conserve the biodiversity and change the way of providing a livelihood for the local communities those communities need to be equipped for change. To gather this insight a rather subjective method of studying is desirable, a study that focuses on the actor. This way, the real background can be revealed.

According to economists meaning is given, already known. People only need to select the optimal option (Gifford jr, 2005). But this is a rather simplistic view. People can misunderstand the given options. This depends on the meaning they give to the options. Gifford (2005) states "*the process by which cognition becomes embodied is both the process by which meaning is determined and the process by which rationality is constructed*". This is a verification that it is necessary to have some background to express a meaning and to make choices. This background consists of knowledge, perceptions and personal interest (Krantz, 2001). The missing of this background can lead to irrational decisions. To overcome this the IRC theory in this research is supported by the SLA.

In order to make clear what the term livelihood means the overall used definition will be used here as well. Written by Serrat (2008) this is: *'A livelihood comprises the capabilities, assets, and activities required for a means of living. It is deemed sustainable when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities, assets and activities both now and in the future, while not undermining the natural resource base.'* This is why it is chosen to use SLA. The research area needs to be able to recover from climate changes and change because of human impact and besides, while not undermining the natural resource base.

The SLA stresses that people are the main concern not the resources or governmental organisations (Krantz, 2001). With the approach there will be insight in the livelihoods of the studied communities. The SLA makes a connection with people and their overall environment including the institutions (Serrat, 2008). With the SLA there will be insight in the different constructs that people and groups make and why they make these constructs. It is possible to look at values and norms that people or groups have.

This approach helps to plan development activities by clarifying what prevents or limits the people from improving their situation (Serrat, 2008) and live in an economically, ecologically and socially sustainable manner. Put differently, the SLA seeks for their view of the institutional environment, with this, the SLA supports the IRC theory that has the similar goal.

### **3.5.1 The SLA framework**

To find this view of the institutional environment SLA uses a framework in combination with a set of principles. The set of principles will be described in subparagraph 3.4.2. The principles and framework will be used to get a clear view of the problem and takes all aspects into account. In addition, it brings together the different perspectives on the problem. The focus will be on finding those issues or subject areas where changes can lead to successful solutions (Krantz, 2001).

The framework as shown in figure 3.2. shows how peoples of all levels have access to different assets and their ability to put these in use (Krantz, 2001). This gives an overall view of how the group of people in the research area operates in its environment. In addition, the framework describes what strategies are stimuli for the involved people (Krantz, 2001).

The framework starts with a meter on poverty. Here the definition of poverty includes, among others, income, consumption and access to land, water, credit, education, political rights and economical security (Adato and Meinzen-Dick, 2002).

The framework recognizes people in itself (Adato and Meinzen, 2002) as actors who act in search of their own ideas. Instead of thinking that these people are not able to think for their selves.

The assets shown in figure 3.2. are the human capital, social capital, natural capital, physical capital and financial capital (Serrat, 2008). The assets are wide ranged and there are five different types. The natural capital includes land, water, forest, marine resource, air quality, erosion protection and biodiversity. The physical capital includes transportation, roads, buildings, shelter, water supply and sanitation, energy and technology. The financial capital contains savings, credit as well as state inflows. Human capital includes education, skills, knowledge, health, nutrition and labour power and social capital contains networks that increase trust, ability to work together, access to opportunities, reciprocity; informal safety nets; and membership in organizations (Adato and Meinzen, 2002).

These assets are the basis for the strategy in the plan that is necessary to obtain a change in the area. Therefore, these assets interact with policies, institutions and processes. These formal and informal policies, institutions and processes form the livelihood outcomes that make the final rules and structures in order to solve the problem (Adato and Meinzen, 2002). As well, these factors influence the access to livelihood strategies, vulnerabilities and terms of exchange.

The vulnerability context is outside the control of the people as well as human or animal health, natural disasters, impact by governance and resource availability. These vulnerability elements can influence the choice of people whether or not to implement ecotourism (Adato and Meinzen, 2002).

The livelihood outcomes of the framework can be an assured income, food security and sustainable use of natural resources (Adato and Meinzen, 2002). These outcomes are desired in the research area.

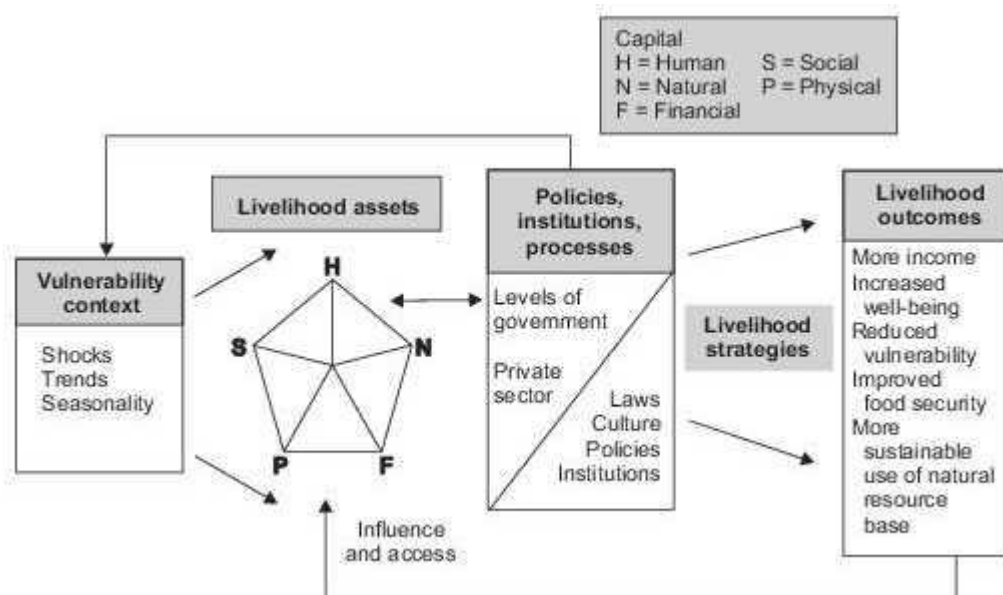


Figure 3.2 The Sustainable livelihood approach (DFID, 2003)

### 3.5.2 Guiding principles

The guiding principles that are used to get a clear view of the research area and its understandings, are (IFAD, 2011):

- Be people-centred
- Be holistic
- Be dynamic
- Build on strengths
- Promote micro-macro links
- Encourage broad partnerships
- Aim for sustainability

People themselves know best what is necessary to solve their problems (Krantz, 2001). They know their situation and needs and therefore it is best to involve these people in the processes in order to solve their problems. People's skills, socials networks, access to physical and financial resources and ability to influence institutions will be explained with the use of these principles.

Not only people are different in each situation, the complete context is unique. Therefore each situation requires an explicit analysis of the current situation. In such an analysis the knowledge, perceptions and interest of all the involved people will be heard (Krantz, 2001). It will show a variety of people's activities that they carry out in order to make a living.

With this broad view on the human capital, social capital, natural capital, physical capital and financial capital SLA gives a holistic view on the important resources. Access to these assets differs in all communities. With a better access to the assets people will have a greater influence on structures and processes (Serrat, 2008).

The SLA links the micro and macro and formal and informal which means that all people involved on all levels are included and all rules and structures will be used. This leads to a more strategic desired change (Krantz, 2001). Specifically, it means that micro level understanding of the problem will be included in the policy and institutional change processes (Farrington, Carney, Ashley and Turton, 1999). However, the focus in this research is on the micro level.

### **3.5.3 SLA in this research**

With the use of the SLA, the aspect of the actor, the inhabitants of Puerto Humo, Rosario and Pozo de Agua, will become better understandable. There will be an understandable view of the way the actors react to the institutions, how they construct their view on institutions, how these institutions determine their views and actions and what the actors think of ecotourism as a possible solution for their problems in their specific institutional environment.

The guiding principles as well as the eight design principles that are used by Ostrom are not used in this research. Certainly, these principles are very important. Nevertheless, for this research it is chosen to use the principles that are part of ecotourism as a solution. Fortunately, many of these principles overlap the eight design principles and the guiding principles. The principles as shown in the SLA will be integrated in the conceptual model as shown in figure 3.3.

The SLA framework gives a view of how people recognise themselves and gives all the necessary assets that are the basis for a change in the area. There is interaction with policies, institutions and processes from the view of the people themselves. People know best what is necessary to solve their problems (Krantz, 2001), therefore it is best to involve the actual background of these people in this research. Besides, their unique, specific context will become clear by using the SLA framework. In order to solve a problem the specific context needs to be understandable.

However, the IRC framework and the SLA framework will be the base for the research. How this will be achieved will be shown in figure 3.3 the conceptual model, on page 29.

## **3.6 Conceptual model**

With the intention of getting the knowledge that is necessary to reach the research objective it is desirable to make a conceptual model. A conceptual model is used to clear all thoughts, to provide logical arguments in a way that it is understandable for the readers. The elements will be separated and the research will be defined. In this case, the two studied theories will be the guides to get a complete model with the IRC theory as the leading theory. Some details in order to get a clear view of this research area are missing in this theory. Therefore, SLA is introduced. For the reason that the

IRC theory is the main theory the conceptual model, shown in figure 3.3, is based on the IAD framework used by Ostrom (2007). The SLA framework as shown in section 3.3.2 will be used to fill the elements that are missing in the IAD framework. In this paragraph the IAD and SLA framework will be analysed in detail and the motives for the conceptual model will be described.

### **3.6.1 Institutional, social and natural environment**

Ostrom (2011) states herself that the IAD framework is complex in its use. Therefore, it is chosen to use only the functional parts of the existing models. In order to make this complex and versatile naming and using useful for this research the institutional, social and natural environment are introduced as shown in figure 3.3. By renaming the terms of the SLA and IAD framework an own model is created. Within this model both theories are used in the most favourable way, plus, it gets closest to the actual research. Other researchers in similar areas with similar problems can use the final model.

#### *Institutional environment*

Within the institutional environment the rules in use which are used in the IAD framework are adjusted to the research. These include the current set of institutional rules in the area and contain three levels of rules. These are the constitutional level, the collective good level and the operational level (Ostrom, 2007). With the three levels it becomes obvious that for example Payments for Ecosystem Services is a strategy that has to be implemented through the constitutional level while ecotourism can best be implemented through the second level, the collective good level. Therefore, this research has its focus on the collective good level. This means that the collective good rules are included in the institutional environment.

#### *Social environment*

Ostrom (2007) uses the physical and material conditions in the IAD framework. Some examples of these elements are respect to social and cultural traditions and the amount of tourists in the area. These are important to complete this research. These elements are displayed in the livelihood assets that are used in the SLA framework as well. The livelihood assets include natural capital, physical capital, financial capital, human capital and social capital (Adato and Meinzen, 2002). The social and human capital will be used in this research, named social environment. The physical and natural aspects (SLA) and physical and material conditions (IAD) will be included in the natural environment. The financial aspects will be taken care of in the action situation (see figure 3.3) as used in the IAD framework.

The IAD framework includes the attributes of the community. These will not be used in this model for the reason that it is not questionable whether ecotourism can be implemented in the local tradition. Nevertheless, the actors are of great importance in this research. As shown before, these are included in the SLA framework in the social capital. In this research this will be called the social environment. In order to give a clear view of the current social environment it is necessary to find out which actors are involved, what their ideas are about ecotourism and how they communicate and interact in their community. This can be seen as the most subjective part of the model where the ideas and norms of people are included. It is expected to lead to a detailed moral inside in the research area.

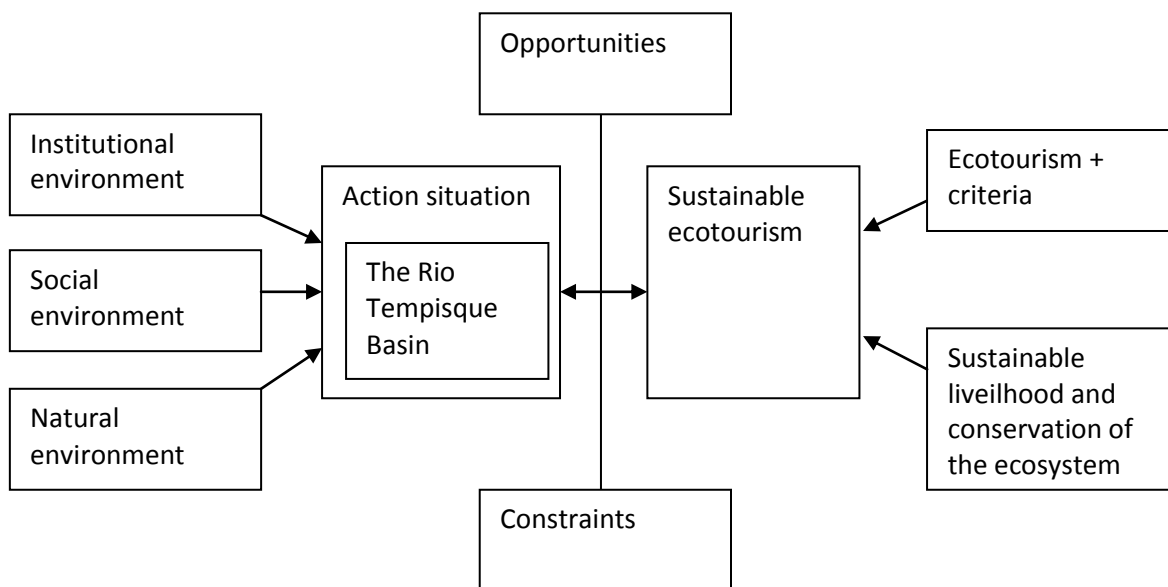


### *Natural environment*

The physical and material conditions (IAD) and natural capital (SLA) will be included in the model and will be called the natural environment. The natural environment sets to find out whether it is possible to implement ecotourism in the area. Therefore, it is important to get to know the opportunities of land use and distribution in the area. The present ecosystems are also vulnerable for the current climate change and change in the area because of human impact. Ecosystems are changing and in order to implement ecotourism it is necessary to find out what changes there are in the research area.

The vulnerability context that is used in the SLA framework contains the climate change in this case. This part of the model is included in the natural environment as well. The vulnerability context includes the sustainability of the area. Once an area is sustainable it will be less vulnerable.

The vulnerability context can also be used as a strategy to make people capable of recovering from climate changes and changes because of human impact. The inhabitants need to be able to recover from shocks and trends. Nevertheless, this part of the vulnerability context is the actual impact of ecotourism in the area. Ecotourism will be implemented in order to give people the opportunity to recover, or even resist, shocks and trends.



*Figure 3.3 The conceptual model for this research*

### **3.6.2 The action situation**

The next step in the model is the action situation as used in the IAD framework. Before, Ostrom (2011) used both the terms action arena and action situation. Because of confusion when using the model Ostrom decided to simplify and name it action situation (Ostrom 2011). The focus in this term is on the action situation and how this leads to interactions and outcomes.

In the model shown in figure 3.3 the natural, social and institutional environment lead to the specific action situation. This action situation is the research area known as the three communities of Rosario, Puerto Humo and Pozo de Agua. In this action situation the experience of the actors in the three communities is leading. In this action situation it will become clear how the actors see and

react to their environment and how they experience the thought of ecotourism.

Ostrom (2007) uses seven questions to find out what the action situation is. These questions are who the participants are, the position these participants have, the set of accepted actions, the potential outcome, the level of control every participant has, the available information on the action and the costs and benefits (Ostrom, 2007). The action situation in this research model will consist of the four most significant for this research that are, the actors, the position of the actors, the available information and costs and benefits. How this will be done will be discussed briefly in subchapter 3.6.4 and in detail in chapter 4.

### **3.6.3 Sustainable ecotourism**

The sustainable ecotourism as shown in the model in figure 3.3 is the ultimate ecotourism. For this reason now it is called sustainable ecotourism instead of ecotourism. It shows ecotourism at its best and hopefully ecotourism the way it will be in the future in the research area. The sustainable livelihood is fed by ecotourism, its criteria's, the idea of a sustainable livelihood and conservation of the ecosystem. Ecotourism is described in chapter 2. Together with the picture of conservation of the ecosystem and a livelihood for all inhabitants, mentioned in chapter 2 as well, it leads to the ultimate picture of ecotourism. This ultimate picture takes care of the livelihoods of these specific involved inhabitants, it makes sure all the inhabitants will have a livelihood and besides, these people work with their ecosystems instead of only using the ecosystems. That is why it is called sustainable ecotourism from now on.

In short: sustainable ecotourism adheres to the criteria of ecotourism. This means it is environmentally, economically and socially responsible. And in this particular case sustainable ecotourism meets the specific needs of these local communities and provides them an income. On top of that, sustainable ecotourism improves and conserves the current biodiversity in this particular research area.

### **3.6.4 A glance at the operationalisation**

Sustainable ecotourism meets the action situation that leads to interaction and outcomes according to Ostrom (2011). This confrontation is based on sustainable ecotourism as written in the former subparagraph. Thereby, the confrontation is based on the current action situation that will be described in chapter 5; the current action situation in the research area based on the ideas of the local communities and the involved organisations and experts.

The interaction, or confrontation, as shown in figure 3.3 is to find out whether sustainable ecotourism suits the action situation the way it is at present. The criteria of sustainable ecotourism, will confront the criteria of the current action situation as will be shown in chapter five. Within this interaction there will be several outcomes. These outcomes will contain both opportunities and constraints. With these opportunities and constraints the objective of this research will be achieved.

It is possible that sustainable ecotourism does not suit the current action situation or vice versa which will result in constraints. These constraints will be noticed in chapter 5 and these will be of impact whether ecotourism will possibly be implemented and in what way. An example of a constraint is the willingness of the local people to implement ecotourism. When the results of the current action situation show that local people are not willing this is a constraint to implement sustainable ecotourism.

Alternatively, the interaction may show a good harmony which will result in opportunities on how to implement ecotourism in the area. The opportunities will occur whenever the current action

situation meets the needs of sustainable ecotourism. An example of an opportunity is that it is necessary to have knowledge in order to implement ecotourism. Once the current action situation asks for knowledge and the local people are willing to learn this can be seen as an opportunity.

The opportunities and constraints will be described in detail. Next to that, there will be possible solutions and adjustments to solve the constraints in order to increase the probability of implementing sustainable ecotourism. Eventually, it will show whether ecotourism can be implemented, in what way, and with what conditions.

Before the confrontation all aspects of the conceptual model need to be investigated. This means, there is an investigation in the institutional environment, social environment, natural environment, action situation, sustainable ecotourism, ecotourism and its criteria and the sustainable livelihood and conservation of the ecosystems, all elements of the model. These aspects and how this will be done is described here preliminary and will be described in detail in chapter 4; methods.

First in this research, the conservation of the ecosystems and the sustainable livelihood are investigated. This is described in chapter 2, paragraph 2; the Tempisque problem and the research objective. The criteria arising from this are discussed in chapter 5.

Second, the term ecotourism is clarified in chapter 2. Ecotourism is investigated through literature study, besides, inhabitants needed to be questioned on their opinion on ecotourism and touristic organisations on their professional opinion.

The combination of these two aspects of the conceptual model together arranges sustainable ecotourism. Ecotourism that is specific for this area with its circumstances and with the intention to conserve the local biodiversity and create a sustainable livelihood. Together this is the right sight of the model. The criteria arising from this research are presented in chapter 5.

The elaboration of the left side of the model is given in chapter 5 as well. For the institutional environment it is important to find out what the collective choice and the local rules are in the communities. Therefore, the involved inhabitants needed to be questioned. Besides, it is necessary to find out what type of organized rules there are currently. This is operationalised by questioning the actors that are involved which are comprised of the inhabitants of the research area, a knowledge institution that works with the area and the ministry that is involved and the municipality.

Second, the social environment is investigated to get a clear view of the current action situation. Therefore it was necessary to investigate which actors are involved, what their ideas are about ecotourism and how they communicate and interact in their community. Therefore, the involved actors needed to be questioned whether they are interested in the implementation of ecotourism. Besides, they needed to be questioned on how they feel about their environment and their community.

Third, the natural environment needed to be investigated. Therefore, it is important to get to know the opportunities of land use and distribution in the area. The experts, for example the municipality, the local university and ministry, needed to be questioned for this. Besides, it is possible that some areas are protected which needs to be known before implementing ecotourism. And since the present ecosystems are changing these changes needed to be investigated which is done in chapter 2.

These three aspects of the conceptual model together establish the current action situation. The actors within the action situation are the inhabitants of the Rio Tempisque Basin, the three villages of Rosario, Puerto Humo and Pozo de Agua. To find out their position the question in the

action situation is how these actors think about implementing ecotourism. Within the action situation knowledge is an important issue. In order to implement ecotourism it is of great importance that people have knowledge on the subject. It is therefore necessary to first identify what knowledge the people involved have on ecotourism. With that, it is possible to find out what knowledge needs to be added in order to actually implement ecotourism. The last part of the action situation is the insight in costs and benefits. To be able to implement ecotourism it is necessary to give insight in costs and benefits for the local communities. It will be a stimulus for the people when they see that the costs are low in comparison to the benefits. All these aspects are explained in chapter 5.

### **3.7 Conclusion**

The IRC theory is a rather structure oriented theory that focuses on the institutions. The problem in the Rio Tempisque Basin has not only a structure aspect but also an actor aspect. Therefore, the IRC theory is combined with the SLA. The SLA stresses that people are the main concern and insight in the livelihood of the involved communities will be gathered.

These two theories are combined for this research. This is done by making a conceptual model that includes both aspects of the IRC theory and the SLA. In the conceptual model the institutional environment, the social environment and the natural environment determine the action situation. The other side of the model contains sustainable ecotourism that is shaped by ecotourism and its criteria and the criteria of a sustainable livelihood and conservation of the ecosystems. Together, this will clarify the opportunities and constraints for the use of sustainable ecotourism in the Rio Tempisque Basin.

The conceptual model as shown in figure 3.3 is the representation of the used theories. Nevertheless, this model can be approached in several and endless ways. Therefore, chapter 4 contains the research material, the research method, the research strategy and the operationalisation of the concepts of the conceptual model based on the two theories; IRC theory and SLA the way these are used and interpreted in this research.

## 4 Methods

In order to provide an answer to the research question; *“What are the opportunities and constraints for the development of sustainable ecotourism in the Rio Tempisque Basin and how, and to what extent do the local institutions and livelihoods determine the opportunities and constraints for this?”* the current action situation needs to be confronted with sustainable ecotourism; ecotourism in its finest outline. Therefore, the current action situation needs to be examined first. This investigation takes place in the Rio Tempisque Basin within the three communities of Rosario, Puerto Humo and Pozo de Agua. The inhabitants of the communities, experts, organisations, government and tourist organisations are involved. To examine the current action situation these participants need to be questioned according to the conceptual model as shown in figure 3.3. This needs to be done with several methods. These methods are comprised of two different theories.

However, they both have different philosophies which means that the methods that are used are diverse as well. Where the IRC theory is a more positivistic theory and uses rather quantitative methods the SLA is more a constructionistic philosophy that uses more qualitative methods. This mix of methods is presented in this chapter.

This chapter contains the arguments for all the choices that are made in this research which includes an explanation of the research strategy, research material and operationalisation. This research is based on a research image which is described in paragraph 4.1 empirical philosophy. After that, the research strategy is given in paragraph 4.2. This contains the information on what type of research this is. In paragraph 4.3 a description of the used research material and the data collection is given. Paragraph 4.4 discusses how this research is operationalised, and continuously how this will be connected to the actual research and its conclusion is shown in paragraph 4.5. The chapter will conclude with the validity and reliability of the research.

### 4.1 Empirical philosophy

There are several possible philosophies for the empirical study. In this study the dominant perspective will not be a positivistic view, but a constructionist view. Positivists believe there is one reality and that it is possible to generalise things (Crotty, 1998). Constructionists believe there is more than one truth and that it is not possible to separate the knower of the knowledge (Crotty, 1998). Since it is supposed in this research that there rather is a construction by human in the way they act a constructionistic empirical research is used.

With constructionism there will be insights in the different constructs that people and groups make and why they make them. With this view it is possible to look at values and norms that people or groups have and the cultural background is taken into account (Crotty, 1998). The SLA theory is a constructionist approach where the focus lies on the actor in its life and the methods used are mostly quantitative. With insight in the way people think and make decisions it is possible to find another way to manage a problem and the real background can be revealed. Such insight is promising for the implementation of ecotourism, hence a constructionistic view will be the main objective used in this research.

However, the IRC theory, also used in this research, is a more positivistic theory. Things can be generalised: there are rules, structures and institutions and the methods that are used are merely quantitative.

Combining the merely positivistic IRC theory and the more constructionistic SLA is possible since Ostrom (1990) protects the group at all times. This is of great significance in the philosophy of constructionism as this is a social philosophy. The combination of the two theories creates a complete arrangement of investigation by combining realistic facts out of the IRC theory with norms and cultural background out of the SLA enhanced with a constructionistic philosophy insight. All these aspects have their own functional details. Ostrom (1990) confirms this by saying that *“rational choice and institutional analysis are likely to be essential complements in the political science of the twenty-first century”*.

This mix of theories leads to this mixture of visions as mentioned before which results in a mixture of methods as well. The positivistic approach leads to the use of quantitative methods for example a questionnaire. Where with the qualitative methods, interviews and informal interviews can be used.

This empirical philosophy is the foundation for the next step which is designing the research strategy. In the following subchapter the research strategy and its progress, using both qualitative and quantitative methods, are set down.

#### **4.2 Research strategy and analytical model**

A research strategy is a plan of action which directs empirical research activities guided by the former presented conceptual model (Verschuren and Doorewaard, 2007). With a clear strategy the research is done systematically. First, it has to become clear what strategy of research is used.

In this research, there is one research objective that is directed towards the three communities of Rosario, Puerto Humo and Pozo de Agua. Because of this objective the research is not an experiment, a theoretical research or a desk research. In this case two important strategies are possible. This research can be a survey-based research as well as a case-study.

##### *Survey or case-study?*

When using a survey approach quantitative analysis is done. Information of a large number of organisations are collected with different methods, however, the in-depth research is limited (Vennix, 2006). Examples are questionnaires and telephone interviews (Verschuren and Doorewaard, 2007). The goal of the approach is to seek for relationships among different organisations and to generalise these (Gable and Guy, 1994). This makes the survey approach not a detailed method. It mostly contains little information on many subjects instead of detailed information on a few things (Verschuren and Doorewaard, 2007).

The case-study approach is a more detailed approach that uses qualitative methods (Verschuren and Doorewaard, 2007). There will be detailed information on just a few organisations instead of broad information on many, since the goal of a case study is to get a detailed description of an individual unit (Baxter and Jack, 2008). Examples of methods for this are participant observation and in-depth interviews. The case study provides the opportunity to ask perceptive questions, nevertheless, the conclusions possibly will be particular for the investigated object (Gable

and Guy, 1994), since it is mostly not possible to generalise the conclusion of a case-study approach (Verschuren and Doorewaard, 2007).

In this case a mix of these two approaches, case-study and survey, will be used. In order to reach the objective both qualitative and quantitative research is desirable. Nevertheless, qualitative methods are dominant.

First of all, because of the language barrier it appeared essential to use questionnaires and a translator to understand the local Spanish speaking people. Secondly, when finding out the real means of the local community a large group needed to be questioned. This is where quantitative methods are used in order to generalise the information which is necessary because of the many actors involved and the number of analyzed communities.

The quantitative data will be used as a basis for the qualitative research. The qualitative methods are used to zoom in on the context. Detailed qualitative information is essential to find out the real needs of the actors involved and the specific area. Therefore, the interviews are designed as open interviews and the interviewees are invited to clarify their answers. Because people are often associated to the same group and it is assumed that they have the same ideas. However, participating in a group can be by different means and a diverse level of obligation and identification (Snow, 2001). This means that people can construct their reality in a group in a varying way. People are not connected in the same intensity to the group and the collective good of that group.

The mixture of these methods consists of the following: there is a questionnaire that questions the inhabitants, nevertheless, the group of organisations that is part of the research is small. Furthermore, there are several in-depth interviews which will provide some detailed information that is used to answer the research question. Conclusively, it is possible to generalise the conclusion of the research. Certainly these communities are unique in their own way. Therefore, it is not possible to do a one-on-one generalisation. Nevertheless, the problem that takes place in this area is a problem that is recognized in many other communities and even countries. For that reason it is possible to use the conclusion of this research in order to have a foundation and a certain research view to help other similar situation with a solution.

In short, the quantitative methods used in this research are a questionnaire, documents and literature. The qualitative research methods used are interviews and informal interviews. How and why these are used will be discussed in the paragraph 4.3 and 4.4.

The use of these methods is based on the conceptual model as shown in figure 3.3. Nevertheless, the use of the conceptual model with its concepts seems to be an endless research that can direct in several ways. In order to make the conceptual model operational for this particular research it is necessary to make the concepts practicable. How this will be done is presented in the following section.

#### **4.2.1 Analytical model**

The conceptual model as shown in figure 3.3 and the research model as shown in figure 1.2 will be further expanded in an analytical model. A research model is a plan of activities as the stream through which the research is taken and a conceptual model defines the research by clearing all thoughts and provide logical arguments in a way it is understandable for the readers. Nevertheless, this will not structure the gathering of selected data, but will lead to an endless research of all and everything. Therefore it is necessary to firmly indicate the guidelines that this research characterises.

This analytical model as shown in figure 4.1 will create a selective guideline for the empirical research activities with the variables and indicators derived from the conceptual model. This guideline is created by the ecotourism shaped view that is inserted into the analytical model. This means that the research will be done with a view that is shaped by the knowledge on sustainable ecotourism. This means that several variables, not related to sustainable ecotourism, will be excluded of the research. The variables that concern sustainable ecotourism are filtered out by the ecotourism shaped view and included in the research. These variables are extracted from the literature study on ecotourism as shown in chapter 2. This ecotourism shaped view reflects the constructionistic view as mentioned in paragraph 4.1. It makes sure that the background of the communities is investigated through a view that is constructed by ecotourism.

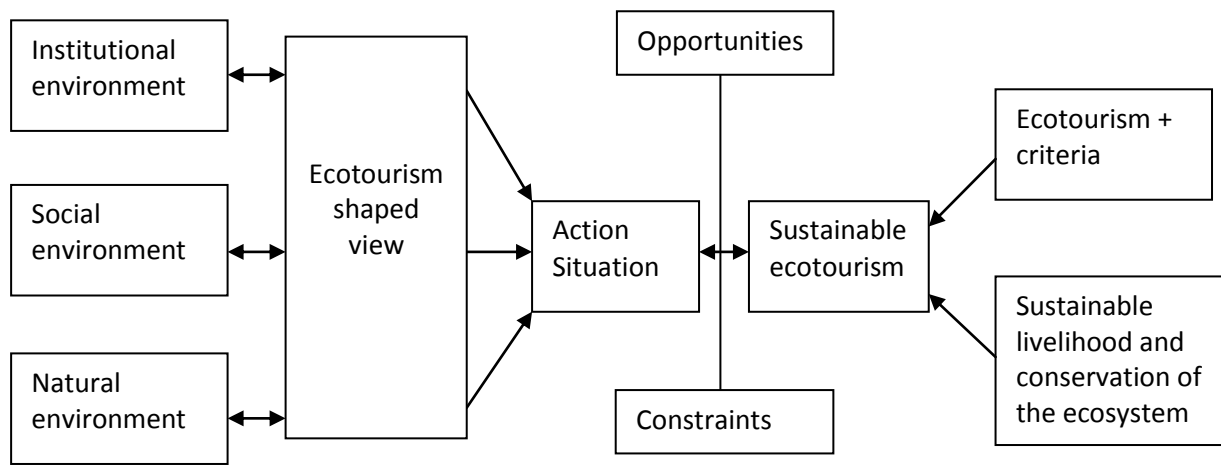


Figure 4.1 The analytical model

The left side of the model shows the institutional, social and natural environment that shape the current action situation. With this ecotourism shaped view an action situation, relevant for sustainable ecotourism, is created. The left side of the model will be confronted with the right side of the model which is sustainable ecotourism. This is done in chapter 5. All the concepts mentioned in this model will be operationalised into variables that are important for the research problem that is described in the next section.

#### *Institutional environment*

As mentioned in chapter 3 institutions consist of rules, norms and unwritten rules. In this research, with the ecotourism shaped view, the choice is made to investigate the rules and unwritten rules of the research area. Norms are seen as a part of the social environment in order to make that concept more people centred. The institutional environment in this case contains the collective choice of the communities, the local rules, the organized rules, illegal activities and the management plan that is written.

First, it is important to find out whether all involved people are willing to choose the same way in order to solve their problem. Without a collective choice there will be no collaboration and the implementation of something new will be complicated. This collective choice is directly linked to the local rules, because when the local rules that the communities formed themselves do not match the implementation of a new solution it will not occur. Therefore, this is investigated in order to



implement sustainable ecotourism in the research area (annex 2, institutional environment, interviews and literature, questions 5 and 6).

Second, the organized rules are of importance. Sustainable ecotourism has to fit the existing rules and laws in the area. This is investigated in the area by visiting the municipality and asking several people. Next to that, these people are asked in what way illegal activities are being monitored and prevented by local organisations since the local authorities can help prevent them (annex 2, institutional environment, questionnaire question 1, interviews and literature, question 1-5).

Third, while investigating the researcher found there is a management plan in development. Within this management plan the whole research area is determined and several solutions are optional. The management plan gives answers to the following questions as shown in annex 2; interviews and literature, question 1, 2, 5 and 6.

### *Social environment*

The social environment consists of several variables as well. After shaping the ecotourism view the important variables are the norms, values and traditions of the communities, the ideas on the problem in the area, the ideas on ecotourism and their communication and interaction.

First, the norms, values and traditions of the local communities need to be explained. It is important to know this since it is necessary to find out whether these are open for the implementation of sustainable ecotourism. As Krantz (2001) states it depends specifically on the actors involved and their capabilities how to take advantage of a problem. Local traditions and people and their own particular choices need to be noticed (Ostrom, 1997). Therefore, these variables are investigated in this research (annex 2, social environment, norms and values, the questions from the questionnaire, interviews question 1, 2 and 3).

Second, the ideas on the problem and the ideas on implementing sustainable ecotourism need to be investigated. Without the knowledge whether people are willing to implement sustainable ecotourism there is no possibility to start implementing such a solution. These questions were asked through interviews and questionnaires with local people and at several organisations (annex 2, social environment, norms and values, questions from the questionnaire. Interviews, question 2 and 3. Livelihoods, questions of the questionnaire, interviews question 3. Natural environment, changes, questions of the questionnaire. Action situation, position and knowledge, questions of the questionnaire).

Third, the communication within the communities and their interaction is of importance for the implementation of sustainable ecotourism. Once people have a common sense on their environment and their livelihoods it is less complicated to implement a new strategy. This common knowledge is investigated by comparing the questionnaires and look at similarities and differences. An example of this is the question in the questionnaire that is presented in annex 2, social environment, common knowledge.

### *Natural environment*

To find out the natural environment that is of importance for this research and shaped by an ecotourism view there are some variables that need to be investigated. These are the ecosystems and land protection, the opportunities of land use, the changes in the area and the vulnerability context.

First, the ecosystems and land protection are investigated to get a clear view of the problem

in the area. For this the ownership and ecosystems needed to become clear. This is done by interviews and questionnaires (annex 2, natural environment, ownership, questionnaire. Interviews question 1 and 2. Ecosystems, interviews and literature, question 1, 2, 3 and 4).

Second, the opportunities of land use need to become clear. Once it is known what possibilities there are with the current soil it is possible to give recommendations on the use of sustainable ecotourism (natural environment, ownership, interviews, question 1-5 and 7. Ecosystems, interviews and literature, questions 1, 2 and 3).

The third question is to what extend is the change in the area and what is the vulnerability context in this research. There can be change because of human impact and because of climate change. These changes can lead to opportunities or constraints with the implementation of sustainable ecotourism. Loss of water for example, leads to change in the possible land use. This change gives insight in how vulnerable the area is. For this reason these variables are investigated (annex 2, natural environment, changes, questions of the questionnaire, question 1, 2, 3 and 4 of the interviews and literature).

### *Sustainable ecotourism*

When the results of the left side of the model are presented the right side of the model follows. The creation of sustainable ecotourism does not change compared to the conceptual model. Ecotourism in its most sustainable way is shaped by ecotourism, its criteria and the desire to change the area into a sustainable livelihood where the ecosystems are conserved.

Nevertheless, in order to find out what ecotourism is first there was a literature study. In order to implement a solution like ecotourism the term needs to be clear and distinctive. Next to that, sustainable ecotourism has to suit the research area. To find out whether it is manageable in the research area the opinion of the involved people and organisations is asked. Thus, the investigation of sustainable ecotourism is partly by literature and partly by interviewing people that are working with ecotourism (annex 2, sustainable ecotourism, interviews and literature, questions 1-19).

### **4.3 Final analyses: opportunities and constraints**

All the methods that are used lead to a certain outcome and all this information is useful for this research. Nevertheless, not all the information will and can be written down in this research since some information is not useful regarding the research objective. To reach the final outcome, taking into account the opportunities and constraints for the research area, the action situation is confronted with ecotourism in its most sustainable way. How this outcome is used will be described here.

First, the current situation will become clear by describing the social, natural and institutional environment. Second, it is important to know when ecotourism is most sustainable. Sustainable ecotourism has its own criteria that have to be met in order to be sustainable. After the investigation of all of these concepts with all these methods it will be clear what sustainable ecotourism is and what the real current situation is. When this is clear it is possible to confront these two objects which will be done by using criteria. Sustainable ecotourism meets criteria as well as the current situation with its own clear rules and norms and values. For example; a criteria of ecotourism is that ecosystems need to be protected and not disappear. This will be confronted with the current situation; it is possible that the current rules in the area are to protect the ecosystems. This way, it

could be stated that these criteria meet each other and this leads to opportunities for the implementation of ecotourism. Regarding the research all the criteria of ecotourism will be confronted with the current situation. This leads to several opportunities and constraints. The results of the investigation will be presented in chapter 5. The left side of the conceptual model, the action situation, will be presented in the form of criteria. The right side of the model, sustainable ecotourism, will be presented in criteria as well. These criteria are necessary for the confrontation to take place. This confrontation will be described in paragraph 5.8. After describing these opportunities and constraints there will be a recommendation on how these constraints can become opportunities and thus the answer to the research question will be given.

#### **4.4 Research material and data collection**

In order to operationalise the analytical model research material is needed. In this paragraph this research material is described. First, research material in general in this research is described in paragraph 4.4.1. After that, paragraph 4.4.2 provides the view of this material. How the data is operationalised in this research is presented in paragraph 4.4.3, the research material in this research. The last paragraph, 4.4.4 shows a figure that contains all the concepts made operational as described in paragraph 4.3 and 4.4.

##### **4.4.1 Research material**

There are several possible research materials; persons, media, real life, documents and literature (Verschuren and Doorewaard, 2000). In order to gather data and knowledge about the situation three of these materials are used in this research. These used materials are persons and literature as well as the use of documents. These materials will be explained explicitly below supported by annex 2 Indicators, interviews and questions, where a detailed description of the used methods is shown.

The other possible data sources are not used because they do not fit the objectives and needs of this research. The media is not a research material because of the location and access to the three communities. There is not much media in this area and the local events are not world news. Observation is not really excluded in this research. When located in the research area there is always some observation. The inhabitants are observed, as well as the area and how these people behave in and with this area. Nevertheless, it has not been officially since there was no documentation or observation plan.

##### *People*

People are an important source for this research. The people in the area have much knowledge on the real situation. There are several people considered sources. These people are part of the social environment and the action situation as mentioned in the conceptual model. The action situation clarifies how the actors see and react to their environment and how they experience the possible implementation of ecotourism. The four elements that are used to find out this situation are; the actors, the position of the actors, the available information and costs and benefits (Ostrom, 2007).

Who the actors are is stated in advance. Nevertheless, who exactly is included or excluded becomes clear with using documents and the knowledge of experts.

##### *Documents*

The documents that are used in this research are information on the number of inhabitants of the three communities and GIS (Geographic Information System) documents. These documents contain

information on the livelihoods, the soil, protected areas, the water, borders and the use of the area, for example agriculture. The documents used are part of the social (number of inhabitants) and natural environment (data about the area) as shown in the conceptual model in figure 3.3 in the former chapter.

#### *Literature*

First, literature research is used in the previous chapters one and two in order to describe ecotourism, its criteria and the used theories. Second, it is necessary to know what the costs and benefits of ecotourism are which is investigated through literature research and interviews. There is no knowledge of this in the direct area since there is no ecotourism yet. Therefore it was necessary to both interview an organisation that is well experienced in ecotourism and on top of that do literature research.

#### **4.4.2 Data collection methods**

The previously presented research materials are investigated with different types of methods and vary from interviews to literature research and are described below. First, figure 4.2 shows what the used methods are in comparison to the analytical model because these two parts of the research need to be connected correctly. This is indeed the case in this research as shown in annex 2 Indicators, interviews and questions. After a description of the used methods the actual operationalisation of the materials combined with the methods is presented in paragraph 4.4.3.

	Institutional environment	Social environment	Natural environment	Action situation	Sustainable ecotourism	Ecotourism criteria	Sustainable livelihood and conservation ecosystems
Interviews	x	x	x	x	x	x	x
Informal interviews				x			
Documents		x	x				
Literature				x	x	x	x
Questionnaire	x	x	x	x	x		x

*Figure 4.2 Connection conceptual model and actual used method.*

#### *Interviews*

Several open-ended interviews were taken in this research. The objectives varied, since there were interviews in order to investigate all the aspects of the conceptual model; ecotourism and its criteria, sustainable livelihoods and conservation of the ecosystems, sustainable ecotourism, the social, institutional and natural environments and the action situation.

There were some informal interviews with local people in the research area. These interviews were not structured and recorded, however, these interviews are useful when providing insight in the area, the behaviour of people and the problem.

### *Documents and literature*

Most of the theoretical research is done with documents and literature. Furthermore, the knowledge on ecotourism and the area that is already investigated by other researchers helps improve the knowledge of the researcher.

### *Questionnaire*

In order to get an insight of the view of the people involved it is necessary to ask all these people about their community, work, norms and values and their opinion on implementing ecotourism. A questionnaire was used to do this.

#### **4.4.3 Research material in this research**

In the previous paragraph the used methods were situated. The next step is to state what is done with these methods. This is the part where the abstract methods become measurable.

### *Interviews*

Several people are involved in this research. These are the three communities, the Ministry MINAET, the research centre CEMEDE, two tourist organisations, the municipality of Nicoya and the local experts. By doing the open-ended interviews the interviewees are chosen in advance. The interviewees are people that have knowledge on the subject. Since the research took place in another country it was not known who were the experts on the subjects in advance. The research started at the University of Nicoya where some experts are working on the same subject. The rest of the interviews came during the investigation as a snowball effect.

All the interviews were open-ended interviews. The interviewer prepares the interview and has a leading function. However, the interview is open and it is possible for the interviewee to fill the subject in a direction that the interviewee thinks is important for the research. The interviews were all introduced by a short description of the interviewer, the objective of the interview and the research.

In order to get a good interview result the best way is a face-to-face interview. Nevertheless, not all people were interested in doing a face-to-face interview, therefore, some interviews took place through email or telephone. The face-to-face interviews that took place were all recorded in order to focus on the interview completely and to enable the researcher to listen to the interview afterwards. The used transcripts are available on request.

Another reason to choose to do an interview through email or telephone was the language barrier. Several interviewees spoke English, nevertheless, not all people in Costa Rica speak English. Hence, it was necessary to either write a Spanish interview or use an interpreter. Both options were used. The interviewer speaks a little Spanish although not enough to do an interview on expert level. Therefore, the interviewer wrote some interviews in Spanish which were confirmed by a Spanish speaking person both in advance and after the return of the interviews. As well, some interpreters were applied. One of the interpreters was an employee of the University of Nicoya. This person interviewed some people by telephone. Besides, there was a colleague investigator that helped doing Spanish interviews.

Since the informal interviews were not structured and recorded there was no real data collection with this method. The information and insight gotten from these informal interviews are not part of

the information in this research, nevertheless, it was used to get an impression of the area and the opinion of the involved actors.

The following interviews took place (an information table is shown in annex 1 Interviews):

1. Three people of MINAET were interviewed of which one, Norma Rodriguez, face-to-face in English and the other two, Luis Angel Jimenez and Ana Saray Bri Ceno Cardenos, by email in Spanish. MINAET is the Ministry of Environment, Energy and Technology. These people work in the research area on subjects like biodiversity and ecosystems. Besides, MINAET is involved in the making of a management plan in the exact same area. This plan is focused on the development of the area in order to provide people with an income and to protect the environment. These experts were mainly questioned on the rules and rights of the inhabitants, natural surroundings, the ecosystems, changes because of climate change and the use and definition of ecotourism
2. Rafael Ramirez is an employee at the Organisation for Tropical Studies (OTS) that is an organisation situated in the Palo Verde National Park that is close to the research area. This interview was taken in order to get more insight in the local biodiversity and the behaviour of the local communities. Furthermore, the interviewee knows many people that have knowledge on the subject. The interview was a face-to-face interview in English.
3. Santos Molina Ruiz works at the tourist centre of Costa Rica ICT; Instituto Costarricense de Turismo. The interview took place face-to-face and the subject was the use of tourism in the area, the local biodiversity, the behaviour of the local communities and the possibility of ecotourism. Mr. Ruiz is inhabitant of Puerto Humo which makes him a very useful contact. Next to the interview Mr. Ruiz gave the interviewer the opportunity to visit and experience Puerto Humo and its inhabitants, observe the area and do some informal interviews.
4. Juan Bravo, Adolfo Salinas and Rigoberto Rodriguez are employees of the University of Nicoya and work for CEMEDE which is the research department of the University. These people were interviewed face-to-face in English about the area, the inhabitants, the ecosystems, the livelihoods of the communities, the management plan and the possibilities of ecotourism in the area.
5. The municipality of Nicoya was interviewed since the research area is part of this municipality. It was a face-to-face interview both in Spanish and English and the subject was the area and its destination and some rules according to the use of land.
6. Jorge Mattarita and Hernan Urieta are inhabitants and were interviewed with an interpreter, one by phone and the other one face-to-face. Mr. Mattarita has a boat on which he works with tourists. Mr. Urieta is a local farmer. Both interviews were about their experience of their work and their opinion about the problem in the area and ecotourism as a solution.
7. Laura Palomo works at ATEC which is an ecotourism organisation located in Puerto Viejo on the other side of Costa Rica. The interview took place in Puerto Viejo, face-to-face, together with the director of ATEC and Ms. Palomo in English. The interview was about ecotourism in itself, ecotourism in Costa Rica and ecotourism as a solution for the problem.

### *Documents*

One of the documents that is used is the information on the number of inhabitants of the three communities This is done because the number of inhabitants has to be known in order to get a reliable result. It is used to describe the research area in detail as well. Other used documents are GIS

maps of the area that are given by OTS (the research centre of the Palo Verde Park) and used to get insight in the current and past area and the changes in the area.

### *Literature*

The literature that is used is mainly literature found at the library of the Radboud University in Nijmegen. Besides, research systems like picarta, webofknowledge, scirus and scholar.google.com are used to gather appropriate literature. Mostly, the two theories are investigated through literature. However, also ecotourism and the current situation in Costa Rica and countries like Costa Rica are investigated through literature.

The literature that contains information on ecotourism is used to describe the criteria of sustainable ecotourism as will be shown in chapter 5. These criteria explain when ecotourism is sustainable and what is necessary in the research area to be able to implement ecotourism. This is essential in order to confront ecotourism with the current situation in the research area.

### *Questionnaire*

Next to the experts the inhabitants of the three communities are part of the research as well. They were not all interviewed face-to-face. The position of the inhabitants and how they think about implementing ecotourism is investigated by using a questionnaire. This questionnaire as shown in annex 3 and 4 is based on the conceptual model. All aspects that include working with ecotourism are used in order to find out how these people think about ecotourism and to find out whether it is possible to implement ecotourism according to their norms, values, ideas and even more important, their current living conditions. The questionnaire contains many questions that are mostly about the current situation of the people as in their norms and values, their knowledge, their experiences with the changing area and about their experience and thoughts about ecotourism.

A questionnaire is a good method to question a great amount of people, nevertheless, it is not possible to ask all the inhabitants in the set research time. Therefore it is chosen to randomly ask people in the research area to fill in a questionnaire. The questionnaires are given to 7,3% of the population. Rosario has 206 inhabitants of which 12 people filled in the questionnaire. Puerto Humo has 104 inhabitants where 10 people responded. Pozo de Agua has 144 inhabitants of which 11 people filled in the questionnaire (INEC, 2000).

The questionnaire is translated in Spanish with the help of several interpreters both from the University and a colleague researcher. A few were filled in with the help of the interpreters because some people did not understand the questions or were unable to read or write.

Usually, a questionnaire is given to people and they respond independent within a certain time. However, the researcher overheard colleagues say that the inhabitants will not respond to the questionnaire this way. Hence, the researcher made the choice to ask the people to fill in the questionnaire while waiting and sometimes supporting the people. The advantage working this way is that it makes sure 100% is responded and there is the possibility to support the people.

All the methods mentioned previously are used in order to reach the objective of the research. To substantiate the words just written a table in annex 2 is made. The table shows how the used methods; interviews, documents, literature and questionnaires are used combined with the conceptual model and its subjects; ecotourism and its criteria, sustainable livelihoods and

conservation of the ecosystems, sustainable ecotourism, the social, institutional and natural environments and the action situation.

#### 4.4.4 The operational concepts

Within this research several methods are used to investigate different materials as written in the previous paragraph. The goal of this investigation is to delineate the information that is actually needed to give an answer to the research. The information is categorized into variables, shown in paragraph 4.2, to give the research a clear direction. This material, methods and variables are combined during the investigation. To give a clear view of how this is operationalised in this research these concepts are summarized in the following model, figure 4.3 The operational concepts.

Concept	Variable	Methods
Institutional environment	Collective choice	Questionnaires and interviews
	Local rules	Questionnaires and interviews
	Organized rules	Questionnaires and interviews
	Management plan	Interviews
	Illegal activities	Interviews
Social environment	Norms, values and traditions	Questionnaires
	Ideas on the problem in the area	Questionnaires and interviews
	Ideas on ecotourism	Questionnaires and interviews
	Communication and interaction	Interviews
Natural environment	Ecosystems and land protection	Interviews
	Opportunities of land use	Interviews
	Changes in the area	Questionnaires, interviews and documents
	The vulnerability context	Interviews
Ecotourism	Terminology and facts on ecotourism	Literature and interviews
	Opinion involved people	Interviews
	Professional opinion	Literature and interviews
Sustainable livelihood and the conservation of the ecosystem	The Tempisque problem	Interviews, documents, literature

Figure 4.3 The operational concepts

#### 4.5 Validity and reliability

The validity and reliability of a research determine whether a research is valuable. Describing the validity gives a view on whether the research really measures what was intended to measure (Golafshani, 2003). Reliability confirms whether the research is replicable (Golafshani, 2003) and shows accidental errors in the research. Subparagraph 4.6.1 describes validity in this research and the reliability is discussed in subparagraph 4.6.2.



#### **4.5.1 Validity**

A distinction will be made between internal and external validity. The internal validity shows whether the research questions and results are suitable and the external validity shows whether it is possible to generalise the research (Vennix, 2006).

For the internal validity the researchers used a sample of the questionnaire that is, later on, given to the inhabitants. This way the method was made operational. The researcher had the opportunity to measure whether the questionnaire answered the questions that are required for the research. Experts of CEMEDE examined the questionnaires critically. In addition, a Spanish speaking interpreter was present while questioning the inhabitants. Two persons acted as interpreter, both experts on the problem and current situation in this region. Another example of internal validity is the development of the interviews. After each interview the questions were checked and improved. This way, the questions became increasingly valid for the research. These measurements increased the internal validity.

Another example of internal validity is the development of the interviews. After each interview the questions were checked and improved. This way, the questions became increasingly valid for the research.

The external validity shows whether it is possible to generalise the research. It is partly possible to generalise this specific case of the three communities. The mixture of a case-study and a survey explains this. Where a survey seeks for relationships among different organisations and to generalise these (Gable and Guy, 1994), in a case-study it is usually not possible to generalise the research (Verschuren and Doorewaard, 2007). Using in-depth interviews and questioning a small number of organisations leads to detailed information on these organisations and this particular case. However, a survey analyses a large number of organisations while the in-depth research is limited. In this research the questionnaire is an example of a large number of interviews, nevertheless, the in-depth information is little. The questionnaire combined with literature research makes the research suitable to generalise.

With the former described use of methods, combined with literature and documents, the research contains triangulation in the used methods. Multiple data sources are investigated which improves the validity (Devers, 1999).

#### **4.5.2 Reliability**

Within a qualitative research it is hard to measure the reliability. Reliability in a qualitative research is sometimes even seen as irrelevant (Golafshani, 2003). Nevertheless, this research is a mixture of both quantitative and qualitative methods. The quantitative methods, like the questionnaire and the literature, lead to the same conclusions repeatedly which improves the reliability. The reliability also improves for the reason that 7,3% of the population filled in the questionnaire and the response was 100% since the researchers waited for the inhabitants to answer the questionnaire.

It is harder to draw the same conclusions on the diverse in-depth interviews that are taken which is detrimental for the reliability. Nevertheless, the fact that many people are interviewed increases the reliability of the qualitative research. The same questions were questioned eleven times in eleven different situations. Since the interviews are based on existing models and the operationalisation is described in detail it is possible for other researchers to imitate the research.

The reliability also improves if the results can be reproduced under the similar methodology (Devers, 1999). The use of the methodology as done in this research, combining the two theories and confronting the current situation with sustainable ecotourism, is suitable to reproduce. The conceptual model is clearly defined and the model overall is useful for other researchers.

#### **4.6 Conclusion**

This chapter discussed the methods of the research. This has been done carefully so that another researcher can replicate the research and obtain the same outcome. The analytical model helps to direct the path by which this investigation is done. It relates and structures the methodological process and the conceptual context of this research. The chapter also contains all the used materials and the methods to analyse them. Thereby, an overview of the used methods and the variables that will be investigated is given.

With all this knowledge the actual investigation can be done. This means, in the following chapter the left and right side of the analytical model will be outlined in their empirical detail. The outcome of both sides will contain several criteria both of the current situation and the criteria of sustainable ecotourism. After stating these criteria the confrontation of these two aspects can be done. This confrontation is the objective of this research since the outcome will contain opportunities and constraints of the implementation of sustainable ecotourism in the research area.

## **5 The Rio Tempisque Basin and ecotourism: data-analysis**

In this chapter the conceptual model will be elaborated to the empirical research. The former chapter presented the methods of the research. This leads to the results that are shown in this chapter. The data is collected in the Rio Tempisque Basin with the use of interviews, questionnaires, documents and literature. The analytical model shows a left side that is the current action situation with an ecotourism shaped view and a right side that is sustainable ecotourism. To investigate the current action situation the institutional, social and natural environment are investigated. This leads to certain criteria. In order to investigate sustainable ecotourism, ecotourism and the opinion of people on ecotourism needs to be investigated. When the left and right side of the model are described the criteria that arise will be confronted.

First, the actors that are involved will be written down. This is for the reason that these actors are part of all the concepts of the conceptual model. They are involved in the institutional, social, natural environment and thus the current action situation and on top of that, they are involved with sustainable ecotourism.

Paragraph 5.2, 5.3 and 5.4 contain the institutional, social and natural environment. This includes the variables as shown in figure 4.3, the operational concepts. The institutional environment is investigated with the variables of the collective choice, the local rules, the organized rules, illegal activities and the management plan. The social environment consists of the norm, values and traditions, the ideas on the problem in the area and ecotourism and its costs and benefits and communication and interaction. The variables that include the natural environment are ecosystems and land protection, the opportunities of land use, the changes in the area and the vulnerability context. Together this will lead to the current action situation and the criteria that belong to this current situation. These will be presented in paragraph 5.5.

In Paragraph 5.6 sustainable ecotourism is described. The results of the interviews and literature study will give insight in the terminology and facts on ecotourism and the opinion of the inhabitants and the opinion of professionals on the use of ecotourism. This all leads to ecotourism at its best which is called sustainable ecotourism. The results of this investigation are partly presented in chapter 2, Ecotourism and the problems of the Rio Tempisque Basin. Nevertheless, the resulting criteria are formulated in chapter 5.7.

When all the results are described and the criteria on the current situation and sustainable ecotourism are clear these will be confronted. This will happen in paragraph 5.8. This confrontation leads to several opportunities and constraints that will be discussed in detail in this paragraph. The consequences of this outcome will be discussed in this paragraph as well. After that, the opportunities, constraints and consequences will be summarized in paragraph 5.9.

Since this is a rather complicated chapter that contains a lot of important steps, these steps are displayed in the following figure 5.1, the subsequent steps to be taken in chapter 5.

Steps in this chapter	Contains		Result
5.1	Involved actors		
5.2	The institutional environment	Ecotourism shaped view	Conclusions
5.3	The social environment	Ecotourism shaped view	Conclusions
5.4	The natural environment	Ecotourism shaped view	Conclusions
5.5	Action situation	Combining the institutional, social and natural environment	Criteria for the confrontation with sustainable ecotourism
5.6	Ecotourism and its criteria  Sustainable livelihood and conservation of the ecosystems		Conclusions
5.7	Sustainable ecotourism		Criteria for the confrontation with the action situation
5.8	Confronting the criteria of 5.5 and 5.7	Ecotourism shaped view	Opportunities and constraints on implementing sustainable ecotourism in the Rio Tempisque Basin
5.9	Summary of the opportunities and constraints		

*Figure 5.1 Steps to be taken in chapter 5.*

### 5.1 Involved actors

The actors that are involved are important as they are involved in all aspects of the conceptual model. Both in the left and right side of the model. Actors are everywhere and they deal with all aspects. Therefore, the actors are written down here.

The most central actors in the research are the inhabitants of the three communities of Rosario, Puerto Humo and Pozo de Agua of which Rosario has 206 inhabitants, Puerto Humo 104 and Pozo de Agua has 144 inhabitants (INEC, 2000).

The next group of actors that is involved are the people that are involved in the management plan that is about to be written. These are four parties. The first group is the communities itself and is already stated in the former part. The second group is a Non Governmental Organisation (NGO), called Por Siempre, which works to preserve the best of Costa Rica. The third group of about five people that is involved is the Ministry of Environment, Energy and Technology (MINAET). This Ministry is involved through two conservation areas; ACT Area Conservation Tempisque and ACAT Area Conservation Areal Tempisque. The last group is CEMEDE, the research department of the University of Nicoya; 'Universidad Nacional Nicoya'. Five people of CEMEDE are participating (Rodriguez R., personal communication, June 22<sup>nd</sup>, 2011).

The third group that is participating in the research is the municipality of Nicoya of which the three communities are part. This municipality is not responsible for all matters in the three communities. As an example, preparation of roads is the responsibility of the national government (Ruiz, S. M., personal communication, May 2<sup>nd</sup>, 2011). Nevertheless, the municipality is part of the research since it is the municipality of the communities and whenever there needs to be institutional changes the municipality has to be involved.

The fourth group of involved people are the researchers and experts that are interviewed. Three people of MINAET are interviewed since these people know much about the environment, the local people and the area. One person of the Organisation for Tropical Studies is involved for the reason that he is involved in the development of the natural area. The interviewee of the tourist centre of Costa Rica is involved for the reason that he knows several things about the area and the nature. Besides, he is an inhabitant of one of the communities; Puerto Humo. This means that he is very knowledgeable on the social environment in the communities. Three people that work for CEMEDE at the University of Nicoya are involved since these are working on the management plan and besides, they are working with the protected areas in the research area.

## **5.2 Sustainable ecotourism and the institutional environment**

To get a clear view of the institutional environment the variables as discussed in figure 4.3 will be described in detail here. This includes the local and organized rules and the collective choice of the inhabitants. Together with the already existing management plan this will give a good analysis on the institutional environment in the Rio Tempisque Basin.

### **5.2.1 Results**

#### *Local rules and management plan*

In order to find out the rules in use in the area the municipality is approached. It is important to realize that a municipality in Costa Rica is not comparable to a Western municipality. There is rarely a development plan of the areas. People are free to organize the soil. The research area has the same way of organisation. There are no clear boundaries in what is to be whose and what is protected area and what is not. For example Mr. Salinas, researcher at CEMEDE, is currently working on defining the borders of the protected area Mataredonda in the research area (Salinas A., personal communication, July 1<sup>th</sup>, 2011). As said by Mr. Rodriguez in an interview (June 22<sup>nd</sup>, 2011): *'We don't really know where Nicoya ends and begins'*. Nevertheless, a first step to make a destination plan is taken by the management plan that is being developed by a group of four parties; the local communities, NGO Por Siempre, MINAET and CEMEDE.

Por Siempre is the leader of the plan and does the financial part. They work together with MINAET and made a plan in order to gather more involved parties. Many applied, but CEMEDE was invited to participate (Rodriguez R., personal communication, June 22<sup>nd</sup>, 2011).

The overall picture of this plan is a general description of the laws involved, of the region and of the conservation areas. Besides, there is a description on how to prevent fires, how to protect the environment and how to manage tourism in the area. The system the group uses is different from the past where plans have been developed in offices without involving communities. Now, the group makes the communities part of the process (Rodriguez R., personal communication, June 22<sup>nd</sup>, 2011).

#### *Local rules and collective choice*

Another element of the institutional environment is the actual allowance of the municipality to implement something like ecotourism. In the questionnaire it is clear that it is possible at this moment to implement ecotourism in a managerial and political way (questionnaire, 2011). This means that it is allowed by the law and it is also possible within the present conditions. This says that the missing of a development plan is not a barrier for working with ecotourism.

#### *Illegal activities*

A last detail that is part of the social environment is the way people act to the protection of certain areas. Unfortunately, people hunt illegally in the protected areas close to the research area. Hunting is illegal from the time when these areas got protected. The people that hunt illegally start fires in these areas away from the place they want to hunt. This way they distract the rangers of the area. These rangers will try to stop the fire, meanwhile, the illegal hunters can hunt without being noticed (Ruiz, S. M., personal communication, May 2<sup>nd</sup>, 2011). The reason people hunt is not because of a hobby or protest, neither because they disagree on the protection of the area. The reason is that people need food and their hunting areas are becoming too small. A problem with the hunting and for example illegal fishing is the lack of monitoring of the controlling parties.

### **5.2.2 Conclusion**

Despite the fact that there is no development plan in the area and there are no clear boundaries it seems managerially and politically possible to implement sustainable ecotourism in the area. The current situation is that people are harming there environment for food even though these areas are protected. There are illegal activities in the area and there is not enough monitoring in this at this moment. This means that the current institutional situation, seen through the ecotourism shaped view, gives the following conclusions:

- No clear boundaries, no clear rules on land use
- It is managerially and politically possible to work with ecotourism
- Harming protected areas for food
- Lack of monitoring

### **5.3 Sustainable ecotourism and the social environment**

The actors that determine the social environment are the inhabitants of the three communities. These are the people that may work with ecotourism in the future. In order to find out the social environment in the research area it is important to know what their ideas are about ecotourism, the costs and benefits and how they communicate and interact in their community. Besides, they need to be questioned on how they feel about their environment and their community. This paragraph therefore includes the ideas and norms of people.

#### **5.3.1 Results**

##### *General description inhabitants*

It is possible to say that the source of income for these people in the specific area is mainly agriculture and cattle. Besides, a great amount of the people works in an area away from the communities (questionnaire, 2011). The people that work outside of the community mostly go to the bigger cities Nicoya and San José. Here, the deployment is bigger than in the smaller towns. However, the inhabitants name cattle to be the most important source of income for the community

at this moment (questionnaire, 2011). On the other hand, the livelihood of the people is changing currently (Bravo J., personal communication, May 13<sup>th</sup>, 2011). Before, land use was small and for own consumption. Right now, foreigners buy pieces of land and use it for extensive production of mainly pine apple. It not only requires a lot of water but local people sell their soil to these landowners and go to work in Nicoya or San José. This is an example of a change in the social environment (Bravo J., personal communication, May 13<sup>th</sup>, 2011).

Most of the inhabitants prefer family above income, the community and biodiversity. It could be said that this means that people are wealthier in having a family than having an income. However, according to Mr. Ruiz the main concern of the people is to survive because some of the inhabitants have no income at all (Ruiz, S. M., personal communication, May 2<sup>nd</sup>, 2011). Protecting the biodiversity comes in the last place in the questionnaires (questionnaire, 2011). Nevertheless, according to Mr. Ruiz this is not because people do not care about the biodiversity. The opposite is true. People are aware of the surrounded biodiversity and they want to protect this since they have grown up in this biodiversity and were taught by their grandparents (Ruiz, S. M., personal communication, May 2<sup>nd</sup>, 2011). However, people are first willing to improve their livelihood. They do not have enough knowledge to be aware of the fact that this can best be done by supporting the present biodiversity.

#### *Ideas on the problem*

Over 90 % of the inhabitants have seen changes because of climate change and because of human impact. They believe it is necessary to change their way of income in the future in order to adapt to climate change and to the human impact (questionnaire, 2011). As well, Mr. Ruiz thinks the effects of climate change and human impact will lead to changes. Nevertheless, he names it options; people have the option to gather a livelihood in a different way. There is no need for a big change since many people in the villages do not have an income (Ruiz, S. M., personal communication, May 2<sup>nd</sup>, 2011).

#### *Ideas on ecotourism*

When the inhabitants are asked what they think ecotourism is most of them choose for the option that ecotourism is beneficial for the local communities only. The rest of the questioned people choose divided, either environmentally responsible, economically responsible for tourist organisations or all three options together (questionnaire, 2011). This means that people are not really familiar with sustainable ecotourism that is all three options together.

This thought is strengthened by the outcome of the question whether people are familiar with ecotourism. Most inhabitants are not familiar with ecotourism, 25 out of 30. Nevertheless, most of them are positive towards ecotourism. People believe it will increase biodiversity and will have a positive influence on the livelihood of the community. 78 % of the questioned people are positive on working with ecotourism and they are sure it is accepted in the norms of the community (questionnaire, 2011). However, according to Mr. Ruiz the people are not interested in protecting the biodiversity with ecotourism. The reason that they are positive on working with ecotourism is because it will provide an income. Nevertheless, Ruiz states that it would be nice to have ecotourism in order to gather an income and besides, protect the biodiversity (Ruiz, S. M., personal communication, May 2<sup>nd</sup>, 2011).

### *Communication and interaction in the community*

Since there is conformity in the answers of the questionnaire it is to say that there is a common understanding. Examples of these general answered questions are what the main economy of the community is and if it is possible to work with ecotourism in a social, managerial and political way. This social cohesion is noticed in informal interviews as well.

Besides this positive common understanding it could be said that there is 'common ignorance' as well. There are several projects in the areas where local inhabitants are invited to cooperate to come to an overall plan. Nevertheless, people do not visit these meetings frequent (Ruiz, S. M., personal communication, May 2<sup>nd</sup>, 2011). According to informal interviews and a visit at a meeting with the management plan this is confirmed by the researcher.

### *Costs and benefits*

The costs and benefits are of great importance in the action situation. People will not investigate in a grand change while they do not see the reward. There is no insight in the costs and benefits of ecotourism at this moment. The inhabitants are interested in working with ecotourism, however, the income that it generates has to be at least the same, and more is very desirable, than the income the inhabitants have right now (questionnaire, 2011).

### **5.3.2 Conclusion**

People do have a common knowledge on the fact that a change is necessary in the future because of the changes in the area and the decreasing of the livelihood. Nevertheless, there is not enough knowledge within the communities in order to protect the biodiversity the way it is done at this moment. Also, the knowledge on ecotourism is minimum. Therefore a clear plan, like a management plan, is necessary. An additional problem to that is the 'common ignorance' of the people when organisations realize meetings in order to improve their livelihoods. With that, the solution that is going to be implemented needs to be positive and should obtain more than the current situation. All this means that the current social situation, seen through the ecotourism shaped view, gives the following conclusions:

- People agree on changing their way of income in the future
- Not enough knowledge at the local communities in order to protect the biodiversity
- Necessity of experts and a clear plan that people can join
- Not familiar with sustainable ecotourism and its criteria
- Positive on working with ecotourism
- 'Common ignorance' on support from outside
- The benefits of ecotourism need to be the same, or more, than the benefits of their current livelihood

### **5.4 Sustainable ecotourism and the natural environment**

In order to find out whether it is possible to work with ecotourism the physical and material conditions have to be clear. First a description of the ecosystems will be given. Nevertheless, a detailed description is already described in chapter two of this research. The vulnerability context will be discussed. For the reason that changes outside the control of people, like climate change, will lead to a certain opinion on working with ecotourism.



### 5.4.1 Results

#### *Ecosystems and protected areas*

The main ecosystem in the area is tropical dry forest. Besides, there is riparian forest, four types of mangroves, swamps and savannah (Ruiz, S. M., personal communication, May 2<sup>nd</sup>, 2011). Close to Rosario is a protected area called Mataredonda. This is under supervision of the Palo Verde Park. Then, there is a park that is protected as well. This park is called Rancho Humo and is located in Puerto Humo.

#### *Opportunities of land use*

Most of the area is private owned property except for Mataredonda (Ruiz, S. M., personal communication, May 2<sup>nd</sup>, 2011). The sizes of the property vary, some people own large pieces of land, nevertheless, most people own small parts of 20 or 30 hectares. The soil is suitable for rice cultivation, sugarcane, pine apple, melon and for livestock.

There is no knowledge of exact borders in the area. Nevertheless, people do own their own piece of land and use this for either agriculture or cattle. The missing of clear borders is no barrier for people to possess and use their soil in order to provide a living.

#### *Changes in the area*

As mentioned before, land use used to be small and for own consumption. An important change is the rise of foreign people buying and using big parts of land for extensive production. Not only the view of the land and the biodiversity changes but the water stock decreases as well.

Before, land use was small and for own consumption. Right now foreigners buy pieces of land and use it for extensive production of mainly pine apple. As a result the water in the area is decreasing. Not only the use of extensive production has this consequence, the water infrastructure in Costa Rica is changing as well (Bravo J., personal communication, March 13<sup>th</sup>, 2011). This leads to water decrease in the whole Tempisque area. This is a problem for the agriculture as well as for the cattle stock.

A threat for the biodiversity is the cutting of trees. These trees are cut in order to make more agriculture possible. This is necessary because of the decreasing prices in the economy, which means that people need to sell more to gather a livelihood. Besides this, the technique is improving. However, people do not have the money to keep up with these developments (Bravo J., personal communication, March 13<sup>th</sup>, 2011).

#### *The vulnerability context*

Climate change has its impact on the research area, an example are the longer and stronger winters. The main impact is drought due to less water resources in the area (Bravo J., personal communication, March 13<sup>th</sup>, 2011). This can be confirmed by the questionnaire for the local inhabitants. Although people disagree on the change in rain they agree on the fact that the temperature is much more high lately and the soil is more dry (questionnaire, 2011).

There is no knowledge of loss of biodiversity because of climate change up till now. Researchers are investigating the changes, nevertheless, this is in an early phase. For example Mr. Ramirez, who is researcher at the Palo Verde National Park, is working with a weather station that is supposed to measure the changes. However, Mr. Ramirez started this last year and has no data to compare the results with so far (Ramirez R., personal communication, April 10<sup>th</sup>, 2011)

#### **5.4.2 Conclusion**

The natural environment exists out of two protected areas at this moment. The soil is owned by local people as well as by foreign producers. The local people own small pieces and sell it to the foreign producers that own big pieces of land. Since there are several changes people know there is the need for a change of use on the land in order to be able to provide a living. The missing of a development plan is not a problem in this case. Changes in the area that are of influence on the land use are the decreasing of water and the decreasing of biodiversity. The conclusions on the current situation of the natural environment are:

- Two protected areas, of which one is a park for tourists
- People own small parts of land
- People sell their land to foreign producers
- Missing of the development plan is no barrier for ecotourism
- Change of view of the land
- Decreasing of water
- Decreasing of biodiversity
- Finding ways to provide more income, people need money

#### **5.5 Action situation**

The social, institutional and natural environment as shown in the former paragraph lead to criteria. This means, the left side of the conceptual model leads to certain criteria that together formulate the current action situation. These criteria can be positive and negative for the implementation of sustainable ecotourism. As shown in the analytical model in chapter 4 the criteria arise from an investigation with an ecotourism view. This means, the criteria are shaped with some background knowledge on ecotourism. With this ecotourism shaped view the criteria are made positive and negative as well as will be shown in the following paragraph.

While reading the criteria it will be noticed that these criteria are aberrant from the former presented conclusions. The criteria are expanded in order to make them understandable and operational when the analysis is missing as in this chapter. Besides, some conclusions as shown in the former paragraph are double and some conclusions as made in the former paragraph are the same. That is why these conclusions are combined and made operational criteria for the confrontation with the criteria of sustainable ecotourism.

First written down are the positive criteria that are interesting when it comes to working with ecotourism. After that, the negative criteria will be described. These may lead to constraints while willing to work with ecotourism. Certainly, these criteria cannot be stated as opportunities and constraints yet. As an example; negative criteria can turn into opportunities. The outlining of opportunities and constraints will be done after the confrontation with the criteria of ecotourism. Nevertheless, the researcher made a selection that is based on its knowledge and experience in the research field.

### **5.5.1 Positive criteria**

#### *Institutional environment*

- It is managerial and politically possible to work with ecotourism. There is no need for grand managerial changes for the local people. Besides, there is no political barrier in order to work with ecotourism.
- There is a necessity of experts in the area and a clear plan that people can join. These experts and the plan are in progress at the moment. Four parties are working on a management plan. These four parties include several experts such as MINAET, CEMEDE and the NGO Por Siempre. The fourth party is the local communities who are asking for experts.

#### *Social environment*

- The inhabitants agree on the necessity of changing their way of income in the future. This means that people are open for changes and they are possibly willing to work with, for instance, ecotourism.
- The local communities are positive among working with ecotourism. A positive attitude is important when starting something new and unknown in a community.

#### *Natural environment*

- There are two protected areas in the research area. This is a good start in order to protect the environment. Nevertheless, other than recently, it is necessary to involve the local people in these projects.
- Currently the water is decreasing as well as the biodiversity in the area. The decreasing of water is negative for the people while working with cattle and agriculture. However, this can be another reason for people to change their way of income. The decreasing of biodiversity is a sign that something has to change in the area. Since people are aware of these changes it is probably less difficult to show them the opportunities of using ecotourism.

### **5.5.2 Negative criteria**

#### *Institutional environment*

- There are no clear boundaries of land use. This can possibly lead to disagreement on land use concerning the inhabitants.

#### *Social environment*

- There is not enough knowledge inside the local communities. The inhabitants are missing knowledge on several things. First, there is no knowledge on how to protect the biodiversity. Second, there is not enough knowledge on sustainable ecotourism, its criteria and how to work with it. Third, the inhabitants do not have enough knowledge on the changes in the area and their consequences. These changes are both due to human impact and climate change.
- A negative, yet understandable issue is the 'common ignorance' on support from outside. People do not bother to investigate time and action in the organized seminars and meetings. Once people do not show interest and take action when help is offered it is hard to reach the people and to give them more knowledge and tools in order to work with ecotourism.

- People often harm areas with hunting in order to gather food. This means, food comes above the protection of the environment for the people. Nevertheless, this problem will be solved as soon as people get other ways of income like ecotourism.
- There is a shortage in monitoring the research area on illegal activities. This is a problem that has to be taken care of since this will still harm the nature once people work with ecotourism.
- The missing of insight in the costs and benefits can be seen as a negative criterion in the current action situation. However, this can change in to an opportunity ones confronting with the criteria of ecotourism.

#### *Natural environment*

- People started selling their soil to foreign producers. This means that not all people own soil at this time. Without soil the opportunities in working with ecotourism decrease. Nevertheless, there are still opportunities for people to work with ecotourism in different ways.

### **5.6 Sustainable ecotourism and its criteria**

As shown in chapter 2, ecotourism is a possible solution for the problem in the Rio Tempisque Basin. In order to implement sustainable ecotourism in the area there are several important issues that need to be taken into account. These issues are written down in this paragraph as criteria. Without complying to these criteria, it will be hard to implement sustainable ecotourism.

As shown in the conceptual model, sustainable ecotourism is shaped by literature and the opinion of experts on ecotourism combined with sustainable livelihood and the conservation of the ecosystem. This last criterion is what sustainable ecotourism makes it sustainable. Sustainable ecotourism adheres to the criteria of ecotourism, it is environmentally, economically and socially responsible. And in this particular case it meets the specific needs of these local communities and provides them a livelihood and it improves and conserves the current biodiversity in this research area.

Sustainable ecotourism is divided in two components as shown in the analytical and conceptual model. These components are ecotourism which includes the terminology and facts on ecotourism, the opinion of involved people and the professional opinion. The second component is the sustainable livelihood and the conservation of the ecosystem that includes the Rio Tempisque problem. All these components are written in chapter 2 as well. Nevertheless, a short summary will be given here. After that the criteria that shape sustainable ecotourism will be described. With that, the right side of the model is analysed and ready to be confronted with the left side of the model that is the current action situation. This will be done in paragraph 5.8.

#### **5.6.1 Ecotourism**

In order to form sustainable ecotourism first it is important to know what ecotourism is. This is analysed by literature study as well as by interviews with local inhabitants and experts.

#### **5.6.2 Results**

##### *Terminology and facts on ecotourism and the professional opinion*

Ecotourism is tourism that is environmentally, economically and socially responsible. It will not harm the environment and the species in the environment (Palomo L., personal communication, June 12<sup>th</sup>,

2011). The tourists travel to natural areas with respect for the nature and the life of the local people. It is socially responsible since the local people will profit. Other than regular tourism where the tourist organisation profit, in this case, mostly the local people will benefit. The tourists visit their particular area, and that is why the people in that particular area need to benefit, not the tourist organisations. This way, the livelihood of the local inhabitants will increase. Third, ecotourism is economically responsible since the ecosystem services of protected areas will get an economic value with ecotourism. Nevertheless, it is hard to define the financial value of an ecosystem.

Another fact on ecotourism is that it needs to respect the social and cultural traditions in the research area. Without this respect, the inhabitants will not accept ecotourism and the implementation will be unmanageable. With that, the activities need to be small scale in order to be successful, and existing wildlife parks or reserves need to work with the local community in order to be ecotourism (Palomo L., personal communication, June 12<sup>th</sup>, 2011). All the inhabitants have to be able to benefit. The best way to manage these criteria is in the form of a high-quality management plan, together with a management team that helps to implement ecotourism. At last, ecotourism needs to be attractive to tourists, without being attractive, there will be no tourists. When ecotourism is not attractive, working with ecotourism will not have benefits.

#### *Opinion involved people*

People are willing to implement sustainable ecotourism (questionnaire, 2011), nevertheless, they do not have enough knowledge on the subject. There is often confusion on the definition of sustainable ecotourism and its content. In order to implement ecotourism, it is of great importance that all involved people know what ecotourism is. With that, there is the necessity of knowledge on costs and benefits of ecotourism. Without this knowledge, people are not willing to implement ecotourism.

### **5.6.3 Conclusions**

Ecotourism has different terminology and people do have a varied opinion on what ecotourism is. Nevertheless, ecotourism is stated as respectful to the social and cultural traditions in an area, it is environmentally, economically and socially responsible, it has to be small scale and a management plan to implement it is necessary. Besides, it is of great importance that people have knowledge on what ecotourism is and this knowledge needs to be similar for all involved people. This leads to the following conclusions on ecotourism:

- Sustainable ecotourism has respect to the social and cultural traditions in the research area.
- Ecotourism needs to be environmentally, economically and socially responsible
- Ecotourism needs to be small scale and local inhabitants need to be involved in all touristic activities in the area
- There is the need for a high-quality management plan
- It is hard to define the financial value of an ecosystem
- Ecotourism needs to be attractive to tourists
- All the participants need to have knowledge of the definition of sustainable ecotourism and its content
- All the participants need to have knowledge of the benefits of sustainable ecotourism

#### **5.6.4 Sustainable livelihood and the conservation of the ecosystem**

To make ecotourism sustainable, the sustainable livelihood and the conservation of the ecosystem need to be included. The combination of ecotourism and this last component makes ecotourism sustainable. In order to describe the sustainable livelihood and the conservation of the ecosystem a summary of the problem in the Rio Tempisque is given. This description is given in detail in chapter 2.

#### **5.6.5 Results**

##### *The Rio Tempisque problem*

Currently, the biodiversity in the Rio Tempisque Basin is decreasing. First, the climate change leads to loss of biodiversity, and second, local inhabitants cause loss. As an example; inhabitants are forced to increase their number of cattle, or increase their farmland. This is necessary because of the decrease in income. When the inhabitants continue causing this loss, the biodiversity will disappear. On the other hand, when the inhabitants keep the biodiversity intact, their livelihood will decrease. Therefore, a solution needs to be introduced. This solution has to take care of the biodiversity and the livelihood. The biodiversity needs to be conserved or even improved. And with that, the local communities need to be able to stay in the area and have an income.

In order to solve the problem in the Rio Tempisque Basin, which means; provide a sustainable livelihood for the inhabitants, and conserve the ecosystems, ecotourism needs to be able to solve these problems.

#### **5.6.6 Conclusions**

The problem in the Rio Tempisque needs to be solved by using sustainable ecotourism. In what this has to be done is presented in the following conclusions:

- Sustainable ecotourism needs to conserve the ecosystems in the Rio Tempisque Basin
- Ecotourism needs to be provide a sustainable livelihood for the local communities

#### **5.7 Sustainable ecotourism**

The use of sustainable ecotourism leads to several criteria as shown in the former text. These criteria can be positive and negative for the implementation of sustainable ecotourism in the research area. With the background knowledge of the researcher these criteria are written down here divided in positive and negative criteria. Also the criteria are selected and divided into 6 variables. These variables are chosen in order to structure this paragraph, and to make the next step less complicated, which means that these 6 variables are used as keywords in paragraph 5.8 as well.

As well as with the current action situation the criteria written here are aberrant from the former presented conclusions. The conclusions are expanded in order to make them understandable and operational when the analysis is missing as in this chapter. On top of that, some conclusions overlap that is why these conclusions are combined and made operational criteria for the confrontation with the criteria of the current action situation.

First, the positive criteria are written down. Then the negative criteria will be described. These are not negative in a way that ecotourism is negative. Negative in this case means that it can possibly lead to constraints when confronting the current action situation. Opportunities and constraints will emerge as soon as the criteria confront. As said previously, the researcher made a

selection of positive and negative criteria that is based on its knowledge and experience in the research field.

#### **5.7.1 Environmentally, socially and economically responsible**

##### *Positive criteria*

- Sustainable ecotourism is environmentally responsible. This type of tourism will not harm the environment and its species. Therefore it is interesting to be implemented in the research area.
- Sustainable ecotourism will help the local community to increase their income and their livelihood. For this reason it is a possible solution for the livelihood of the inhabitants of the research area.

#### **5.7.2 Social and cultural traditions**

##### *Positive criteria*

- Sustainable ecotourism has respect to the social and cultural traditions in the research area. To achieve this it has to be documented and clear rules have to be stated.

#### **5.7.3 Knowledge**

##### *Negative criteria*

- All the participants need to have knowledge of the definition of sustainable ecotourism and its content and no confusion on the definition is desirable. Sustainable ecotourism is tourism as defined in this research: environmentally responsible, economically responsible for tourist organizations and beneficial for the local community. This criterion is negative for the reason that this definition is possibly diverse or not known by the participants.
- All the participants need to have knowledge of the benefits of sustainable ecotourism. Since poor people sometimes do not have an option other than choosing economic benefits, therefore sustainable ecotourism has to be the benefit itself and the people have to be aware of that. This criterion is negative since the participants might not have this knowledge so far.

#### **5.7.4 Financial value, costs and benefits**

##### *Positive criteria*

- Sustainable ecotourism gives an economic value to ecosystem services that protected areas provide. Once the number of tourists increases the income, earned due to the ecosystems, for the local people will increase as well.

##### *Negative criteria*

- It is hard to define the financial value of an ecosystem and there has to be a directive for this. This is a negative criterion for the reason that there is no directive at this moment.

#### **5.7.5 Management plan**

##### *Negative criteria*

- There is need for an environmental organization and/or a high-quality management plan. The implementation of a management plan can be seen as an opportunity, nevertheless, much attention and time is involved once implementing this.

### **5.7.6 Small scale and attractive ecotourism**

#### *Negative criteria*

- To be sustainable ecotourism needs to be small scale, the activities need to be locally owned and in cooperation with the local community. This is written at the negative criteria since there can be limitations to locally owned soil and disagreement on the destination and possession of soil. Besides, the necessity of cooperation can be difficult when people do not have a common sense.

### **5.8 Confronting criteria**

The criteria of ecotourism will be used as a base for this paragraph. The criteria as written in paragraph 5.7 are divided in 6 variables. These variables are environmentally, socially and economically responsible, social and cultural traditions, knowledge, financial value and costs and benefits, management plan, small scale and attractive ecotourism. These variables will be the leading headings for the analysis in which the current action situation and sustainable ecotourism confront. The reason for this is that sustainable ecotourism is the element that will possibly be integrated inside the current action situation. Sustainable ecotourism is the possible solution that is formulated in advance. It has clear criteria that need to be achieved. Without the criteria the tourism will not be ecotourism and sustainable. In contrast, the current action situation is suitable for change.

By working this way the variables of ecotourism will stay visible where the criteria of ecotourism and the criteria of the current action situation are mixed within these variables. The choice of this mixture is made by the researcher, since some criteria influence each other and some do not. The ones that influence each other are confronted and the ones that do not are not confronted.

The confrontation of the criteria again leads to positive and negative results for the implementation of sustainable ecotourism. These criteria are separated with the background knowledge the researcher has. Here, positive results can be seen as opportunities and negative results can be seen as constraints.

This paragraph contains the confrontation of the criteria in the most detailed possible way. After that in paragraph 5.8 the opportunities and constraints will be defined separately. Paragraph 5.9 contains a brief conclusion prior to the conclusion in chapter 6.

#### **5.8.1 Environmentally, socially and economically responsible**

##### *Positive criteria*

As described in chapter one, the municipality of Nicoya questioned whether it is possible to create adaptive capacity to climate stressed tropical wetlands. This research shows that not only climate change is a threat to the biodiversity in the research area, the impact of human is a risk as well. Therefore, the solution to the problem is to be environmentally responsible. Sustainable ecotourism as stated in this research is environmentally responsible. It will not harm the environment and its species.

However, not only the environment needs to be protected in order to solve the problem. It is necessary that it will increase the livelihood of the community, it must give an income and provide employment. Sustainable ecotourism meets these needs by being socially responsible as well.

Third, the economic value of the area must increase. This way, the income for an increasing number of inhabitants will enlarge. With sustainable ecotourism the ecosystem services get an



economic value. The number of tourists will increase and with that the employment and income of the local people will increase as well.

The fact that sustainable ecotourism is environmentally, socially and economically responsible is hopeful, since this will help to solve the problem in the research area. Nevertheless, this sustainable ecotourism will not implement itself. Therefore, the area and their people need to be positive towards sustainable ecotourism. Besides, it has to be achievable; it has to suit the current situation.

Here, the criteria of the current situation meet the criteria of sustainable ecotourism. The current situation shows that it is managerial and politically possible to work with ecotourism. There is no need for grand managerial changes and there is no political barrier in order to work with ecotourism. Furthermore, the inhabitants agree on the necessity of changing their way of income in the future. People are open for changes and are willing to work a different trade, for example ecotourism.

On top of that, currently the water is decreasing. This is negative for the inhabitants that work with cattle and agriculture. This can be another reason for people to change their way of income. The problem of the decreasing water can be a stimulus for the people to start working with sustainable ecotourism.

In conclusion, the area is suitable for implementing ecotourism and the inhabitants are willing to change. This is grand opportunity for the implementation of ecotourism.

### **5.8.2 Social and cultural traditions**

#### *Positive criteria*

The social and cultural traditions in a community need to be taken into account when implementing sustainable ecotourism (Scheyvens, 1999). Without taking this into account implementing ecotourism will be difficult, besides, the results of the implementation will be disappointing. In order to achieve this, the social and cultural traditions have to be open to the implementation of ecotourism. Besides, clear rules on ecotourism have to be stated.

Here, the criteria of the current situation meet the criteria of ecotourism. The inhabitants are positive among working with ecotourism. There is no boundary within their social and cultural traditions. The inhabitants indicate that there will be no problem with their traditions and implementing ecotourism. This positive attitude is important to be able to implement something new and unknown in the research area.

Second, the current situation gives a criterion on the necessity of experts in the area with a clear plan for the implementation. Fortunately, these experts are already working on such a plan. Four parties are working on a management plan. These four parties include several experts such as MINAET, CEMEDE and the NGO Por Siempre. The fourth party involved is the local communities that is asking for experts.

These social and cultural traditions will not lead to barriers while implementing ecotourism. Therefore, this criteria can be seen as an opportunity as well.

#### *Negative criteria*

Nevertheless, there is a problem that can be a constraint in this research. People are in the habit of hunting in order to gather food. This means that food is supplementary on the protection of the environment. However, the implementation of ecotourism will lead to income and with that, food. This means this constraint will not be problematic once ecotourism is implemented.

### **5.8.3 Knowledge**

#### *Negative criteria*

Actors behave in its own way, with its own preferences and its own knowledge (Ostrom, 1990). People select their optimal option (Gifford jr, 2005) with the knowledge they have. Knowing this, the necessity of having knowledge on the subject before implementing ecotourism is obvious. All the participants need to have knowledge on the definition of sustainable ecotourism and its content. Without this knowledge people make decision that exclude ecotourism, since there is no knowledge on ecotourism. This is even more important with the knowledge that poor people sometimes do not have an option other than choosing economic benefits. Therefore, sustainable ecotourism has to be the benefit itself and the people have to be aware of that.

Knowledge is a criterion that ecotourism has, however, the criteria of the current situation include knowledge as well. At this moment there is not enough knowledge inside the local communities. The inhabitants are missing knowledge on several things. First, there is no knowledge on how to protect the biodiversity. Second, there is not enough knowledge on sustainable ecotourism, its criteria and how to work with it. Third, the inhabitants do not have enough knowledge on the changes in the area and their consequences. These changes are both due to human impact and climate change.

Knowledge on ecotourism overcomes the knowledge on protecting the biodiversity and the changes in the area and their consequences. This again means there has to be knowledge on ecotourism. This must certainly be included in the earlier mentioned management plan. Nevertheless, this current lack of knowledge and the difficulty of providing and transferring the knowledge can be a constraint in implementing ecotourism.

In conclusion, the lack of knowledge can lead to a constraint in the research area. Nevertheless, there are opportunities with the management plan to solve this.

### **5.8.4 Financial value, costs and benefits**

#### *Negative criteria*

Costs and benefits are an important issue for people when changing, for example, their way of income (Ostrom, 1990). Therefore, it must be visible what the costs and benefits of ecotourism are. Since it is not possible to exactly show the income of each person that works with ecotourism there is the opportunity to show the people the benefits by giving them insight in ecotourism the way it is done in other regions. The area of Puerto Viejo, where the interviewed organisations ATEC is located, is perfectly suitable for this. The management plan that is written should therefore include the experience of ATEC.

Another constraint in this case is that it is hard to define the financial value of an ecosystem. To solve this, a directive can be a solution. Unfortunately, there is no directive at this moment. Nevertheless, this constraint can be changed into an opportunity once the management plan captures this.

### **5.8.5 Management plan**

#### *Positive criteria*

As mentioned several times before there is need for an environmental organization and/or a high-quality management plan. An opportunity in this case is the existence of the management plan managed by MINAET, CEMEDE and the NGO Por Siempre. This implementation of a management plan is an opportunity, nevertheless, much attention and time is involved once implementing this.

#### *Negative criteria*

One constraint of the management plan is the fact that there is 'common ignorance' with the inhabitants. People do not bother to investigate time and action in the organized seminars and meetings. Once people do not show interest and take action when help is offered it is hard to reach the people and to give them more knowledge and tools in order to work with ecotourism.

Another constraint that has to be elucidated with the management plan is the current shortage on monitoring on illegal activities. These illegal activities harm the nature and will continue harming the nature even when ecotourism is implemented.

#### **5.8.6 Small scale and attractive ecotourism**

##### *Positive criteria*

To be sustainable ecotourism needs to be small scale, the activities need to be locally owned and in cooperation with the local community. A common sense is very important when working small scale and in cooperation. This common sense is not a problem in this case, since the questionnaire shows that the inhabitants do have a common sense. Therefore, this can be seen as an opportunity.

Nevertheless, there are two possible constraints. First, there are no clear boundaries of land use which can possibly lead to disagreement on land use. Nevertheless, with implementing sustainable ecotourism with a management plan this can be captured. Second, people started selling their soil to foreign producers. This means, in the current situation some people do not own soil. Without soil the opportunities in working with ecotourism decrease. Nevertheless, there are still opportunities for people to work with ecotourism in different ways, for example in the two protected areas or by offering the tourists a place to sleep or insight in their culture.

In order to be attractive to tourists the inhabitants have to be active in making sustainable ecotourism and the area attractive to tourists. Inhabitants need to be active in making their area attractive to tourist. Nevertheless, as shown in the interview with the organisation ATEC, the real life of the inhabitants is already attractive to tourists (Palomo L., personal communication, June 12<sup>th</sup>, 2011). Tourists visit the area in order to see how inhabitants live in their own environment.

##### *Negative criteria*

Another opportunity in making ecotourism attractive is the current existence of two protected areas in the research area. This is a good start in order to invite tourists and protect the environment. Nevertheless, other than recently it is necessary to involve the local people in these projects. The possibility to involve the inhabitants can be a constraint in this case, since right now, inhabitants are hardly involved in the protected areas (Ruiz, S. M., personal communication, May 2<sup>nd</sup>, 2011).

#### **5.9 Opportunities and constraints in summary**

The former paragraph is a confrontation of the current action situation and sustainable ecotourism. This confrontation leads to several opportunities and constraints. These opportunities and constraints are written at the end of each confrontation as can be seen in paragraph 5.5. Nevertheless, to get a clear view on the opportunities and constraints these will be summarized here briefly. If possible, the constraints will be suppressed by opportunities.

### **5.9.1 Opportunities**

- It is managerially and politically possible to implement ecotourism in the research area. And the inhabitants are willing to change their current way of income.
- The current social and cultural traditions are no barrier for the implementation of ecotourism, in fact, these traditions are open to implement ecotourism.
- The existence of two protected areas is an opportunity. It is a good start to invite tourists and protect the environment. Besides, it can be useful employment for the inhabitants of the communities.
- The common sense that the inhabitants of the local communities have is an opportunity for implementing ecotourism. A common sense is important while working small scale and in cooperation with each other.
- The fact that people hunt is a constraint in the research area. Nevertheless, the implementation of ecotourism will lead to income and with that food. This means, this constraint will not be problematic once ecotourism is implemented.
- The management plan that is currently in development is a great opportunity. Within this management plan several constraints can be illuminated. It will include the definition and use of ecotourism, advice on the monitoring of illegal activities, a definition on the value of an ecosystem and clear boundaries in land use.
- The fact that people do not own soil will not be a constraint, since ecotourism can be seen as the opportunity to solve this. Examples of these chances are the employment in the current protected areas or by offering the tourists a place to sleep or insight in their culture.

### **5.9.2 Constraints**

- The lack of knowledge can be seen as a constraint. A way to capture this is the use of the management plan. Nevertheless, the 'common ignorance' will be a constraint. Once people do not show interest and take action when help is offered it is hard to reach the people and to give them more knowledge and tools in order to work with ecotourism.
- The missing of an overview of costs and benefits and the financial value of an ecosystem can be a constraint. Nevertheless, this can be solved by showing the success stories of ecotourism and include a directive in the management plan.
- The third and last constraint of ecotourism in the research area is the necessity of involving the people in the existing protection project. Right now inhabitants are hardly involved in the protected areas. Ecotourism itself is not able to make this involvement possible. The collaboration of the protected areas and the inhabitants is essential.

### **5.10 Conclusion**

In the previous paragraph 5.9 all the opportunities and constraints involving the implementation of sustainable ecotourism in the research area are presented in summary. Since there are three constraints it seems quite positive to implement sustainable ecotourism in the area. Nevertheless, this conclusion and the recommendations that will come out of this will be discussed in the following chapter 6 Conclusions, recommendations and reflection.

## 6 Conclusions, recommendations and reflection

The objective of this research is to contribute to the two-sided problem of the Rio Tempisque Basin, providing a livelihood for the local communities and the conservation of the biodiversity by analysing the opportunities and constraints for the development of ecotourism in this kind of areas and local communities. This two-sided problem is a complicated problem. The loss of biodiversity overall is an issue and furthermore there is a shortage on water for the local communities and this drought leads to vulnerable wetlands as well. The second issue is the use of resources by the local communities that leads to loss of biodiversity as well. In order to solve the problem ecotourism is mentioned as a solution. Ecotourism has several conditions that may help to solve the two-side problem. In this research the opportunities and constraints of using sustainable ecotourism as a solution are investigated. Therefore, the following main research question is answered in subparagraph 6.1.2:

*How, and to what extend do the local institutions and livelihoods determine the opportunities and constraints for the development of ecotourism in the Rio Tempisque Basin?*

In order to answer this main question at first six sub questions will be answered in subparagraph 6.1.1. After that paragraph 6.2 gives some recommendations for the involved experts on the outcome of the opportunities and constraints. At last, paragraph 6.3 shows a reflection on the research and the possible sequel.

### 6.1 Conclusions

#### 6.1.1 The answers to the research questions:

1. What are the changes in the Rio Tempisque Basin and why does this require a change in the livelihoods?

The biodiversity in the Rio Tempisque Basin is decreasing. First, the climate change leads to loss of biodiversity and second, local inhabitants cause loss. The main economy is agriculture and cattle and this requires a lot of water. This use of water leads to decrease of number of wetlands and with that a decrease in biodiversity. On top of that, inhabitants are forced to increase their number of cattle and the size of their farmland in order to gather a minimum income.

When the inhabitants continue causing this loss the biodiversity will disappear. On the other hand, when the inhabitants keep the biodiversity intact their livelihood will decrease. Therefore, a solution needs to be introduced. This solution has to take care of the biodiversity and the livelihood. The biodiversity needs to be conserved or even improved. And with that the local communities need to be able to stay in the area and have an income.

2. What is ecotourism and in what way can it be used?

Ecotourism is a type of tourism that is beneficial for the local communities and their environment. Therefore, first it has to be environmentally responsible. It will not harm the environment and its species. Second, ecotourism needs to be socially responsible, it will help the local community provide an income and increase their livelihood. Third, sustainable ecotourism gives the ecosystems an

economic value by increasing the number of tourists. Fourth, sustainable ecotourism takes the social and cultural traditions of a community into account.

3. What conceptual model can be made out of the interaction of the IRC theory and the SLA?

To combine the IRC theory and the SLA a conceptual model can be made. This model is shown in figure 3.3 and shown again here. The institutional, social and natural environment determine the current institutions, rules, norms, social interaction and the problems in the area. The outcome of these three components leads to the current action situation in the research area. This action situation has to be confronted with sustainable ecotourism in order to see if sustainable ecotourism can be a solution for the problems in the research area. This sustainable ecotourism is not ecotourism as it is described in literature where the social situation of the inhabitants in their community is mostly ignored. Therefore, sustainable ecotourism is shaped by ecotourism and its criteria and the sustainable livelihood and conservation of the ecosystem. This makes ecotourism real sustainable.

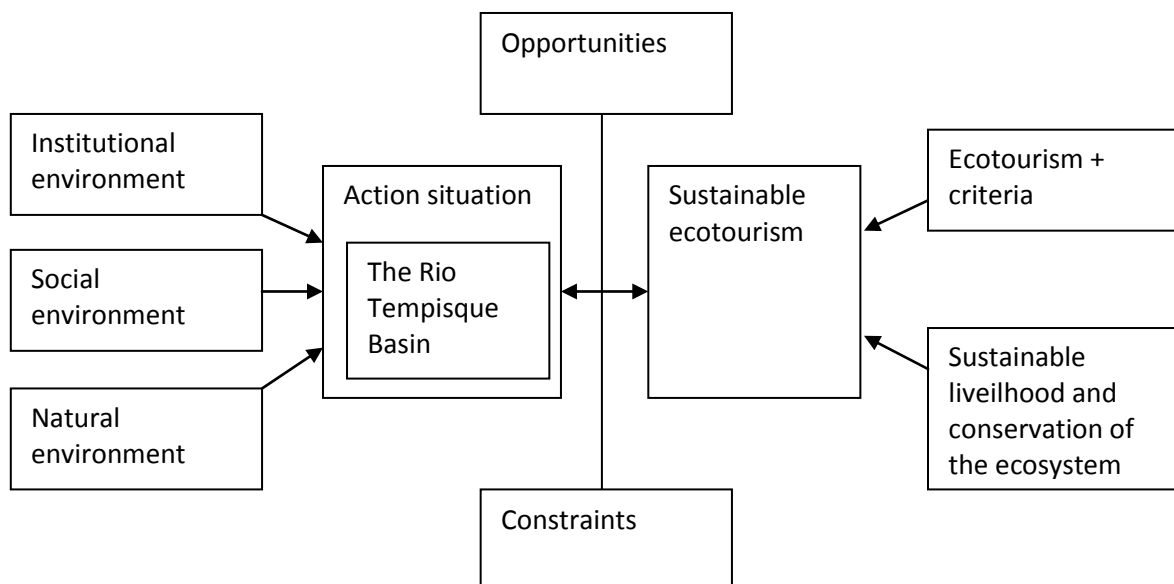


Figure 3.3 The conceptual model for this research

The confrontation of the action situation and sustainable ecotourism will lead to opportunities for the implementation of sustainable ecotourism in the research area. However, it can lead to constraints as well. These opportunities and constraints are discussed and possible constraints are tried to convert into opportunities.

4. What are the characteristics of the local institutions and livelihoods of the Rio Tempisque Basin?

The institutional environment includes the collective choice of the communities, the local rules, the organized rules and the management plan. With these variables the institutional environment becomes clear.

At this moment there is rarely a development plan of the area and people are free to organize their soil. Nevertheless, a first step towards a management plan is made by a group of four parties including MINAET and CEMEDE. The local rules and collective choice are positive on

implementing sustainable ecotourism, it is allowed by the law and it is also possible within the present conditions.

The social environment consists of the norms, values and traditions, the ideas on the problem in the area and ecotourism and its costs and benefits, communication and interaction and the illegal activities. These variables lead to an analysis of the social environment.

The result of this analysis is that the inhabitants are aware that there is a problem in the area and that there is the need for a change in income. They are positive towards the implementation of ecotourism and think it is beneficial for the communities. Nevertheless, their knowledge on ecotourism is limited. On top of that, there is no insight in possible costs and benefits of sustainable ecotourism. Within the community there is common understanding, the inhabitants agree on the possibilities of implementing ecotourism. Besides, there is a common ignorance for several projects as well. At last, there are some illegal activities in the area that destroys the biodiversity. These activities are not done to harm the biodiversity but in order to gather food.

The natural environment includes ecosystems and land protection, the opportunity of land use, the changes in the area and the vulnerability context.

The analysis of the natural environment leads to the following conclusions. There are two protected areas in the area and the main ecosystem of the area is tropical dry forest. Most of the land is private owned property and sizes of properties vary, nevertheless, most people own small pieces of land. The land is mostly used for own consumption, however, lots of land is sold to foreign people lately. This means that most land is now used for extensive production that leads to water decrease. Another problem is the cutting of trees in order to make more room for agriculture.

##### 5. To what extent do these characteristics determine the opportunities and constraints of implementing ecotourism in the Rio Tempisque Basin?

The current institutional environment is positive in order to implement ecotourism. It is managerially and politically possible to implement ecotourism. The fact that experts are working on a management plan is positive as well. This plan is very suitable to support the implementation of ecotourism. An obstacle in the institutional situation is that there is a shortage on monitoring illegal activities in the research area.

The social environment can be seen positive as well. People are willing to change their way of income and they agree on the necessity of changing their livelihood. Besides, people are positive towards using ecotourism. A difficulty in the social situation is the lack of knowledge on ecotourism. Besides, there is a 'common ignorance' on support from the outside.

The two protected areas in the research area are an example of the current natural environment. These protected areas are a good opportunity for the implementation of ecotourism. The decreasing of the water level is an opportunity as well. People see these changes and that makes them interested in changing their way of income. A complexity in the current natural situation is the fact that there are no clear boundaries of land use. This will possibly lead to disagreement on land use concerning the inhabitants. Together with this people started selling their soil to foreigners. This means that a decreasing number of people own soil. The hunting of people is also a negative aspect of the current natural situation. Nature is destroyed in order to be able to hunt.

6. In what way can ecotourism be a solution for the problem in the Rio Tempisque Basin and comparable problems in other areas?

Ecotourism can be a solution when it is environmentally, economically and socially responsible. This way the livelihood of the local inhabitants will increase and the biodiversity will be conserved. Ecotourism needs to respect the social and cultural traditions in the research area. The activities have to be small scale and the inhabitants need to work within local reserves and parks. The best way to do this is to develop a high-quality management plan. And of course, ecotourism needs to be attractive to tourists. Another criterion that has to be taken into account is that in order to be able to implement ecotourism it is necessary for the inhabitants to have knowledge on the subject. Without knowledge the implementation will be difficult.

However, ecotourism as mentioned here is not sustainable ecotourism and will possibly not provide a livelihood for the local communities and conserve the biodiversity. For that reason, there are two criteria that need to be taken into account while implementing ecotourism. These criteria are that the biodiversity needs to be conserved or even improved. And with that, the local communities need to be able to stay in the area and have an income.

#### **6.1.2 The answer to the main research question**

*How, and to what extent do the local institutions and livelihoods determine the opportunities and constraints for the development of ecotourism in the Rio Tempisque Basin?*

The opportunities of working with ecotourism in the research area are that it is managerially and politically possible to implement ecotourism. Second, the inhabitants are willing and able to work with ecotourism and there is no barrier for the use of ecotourism when looking at the current social and cultural traditions. Besides, the common sense in the community is positive. People are willing and used to work in cooperation. The reducing of landowners is not a problem, since ecotourism can be performed in other ways as well. The existence of two protected areas is an opportunity as well, since it is a good start to invite tourists and there is employment. A last opportunity for the research area is that the implementation of ecotourism will reduce the hunting.

The constraints of working with ecotourism in the research area are the lack of knowledge on ecotourism and the 'common ignorance' on ecotourism. People are not familiar with ecotourism, therefore it is necessary that they take action in getting to know ecotourism. This action is inadequate in the current situation. Another constraint is the missing of an overview of costs and benefits and the financial value of an ecosystem. The third and last constraint of ecotourism in the research area is the necessity of involving the people in the existing protection project. Right now inhabitants are hardly involved in the protected areas. Ecotourism itself is not able to make this involvement possible. The collaboration of the protected areas and the inhabitants is essential.

Nevertheless, the management plan that is being developed in the research area currently can be helpful for all these constraints. Within the plan several constraints can be illuminated. It will contain the definition and use of ecotourism, advice on the monitoring of illegal activities, a definition on the value of an ecosystem, and clear boundaries in land use.



It can be said that the objective of this research: *Contribute to the two-sided problem of the Rio Tempisque Basin providing a livelihood for the local communities and the conservation of the biodiversity with clarifying the opportunities and constraints of working with sustainable ecotourism*, is achieved.

## **6.2 Recommendations**

With insight in the opportunities and constraints a clear advice can be given to the experts that are working on the management plan currently. These are the employees of CEMEDE, MINAET, por Siempre and the local inhabitants of the three communities.

Since the research shows that the implementation of ecotourism in the research area leads to several opportunities and no more than a few constraints the advice is to implement sustainable ecotourism. The fact that the experts are working with a management plan make the constraints possible opportunities. The management plan can be seen as the ideal foundation for implementing sustainable ecotourism.

The first constraint is the lack of knowledge. The management plan can contain several opportunities to get the knowledge brought to attention of the inhabitants. The lack of knowledge is mainly on what sustainable ecotourism is. To make people aware of this the management plan needs to contain courses with information on what ecotourism is. This can be prepared with literature studies and reviews from examples of ecotourism like ATEC for example. The people get to see how ecotourism works and what the benefits are. The 'common ignorance' that is currently a problem can possible be captured with this. Once people see success stories on working with ecotourism this will be a stimulus for the inhabitants to take action in getting the necessary knowledge. Besides, working on the management plan with the direct involvement of the local people is a new way of working. It may well be needed to take some time before people are accustomed.

The second constraint is the missing of an overview of costs and benefits and the financial value of an ecosystem. To capture this, the management plan should contain a directive. This directive can be developed with the help of other ecotourism organisations. ATEC in Puerto Viejo is an ideal place to get reviews, experiences and, perhaps, some help.

The third and last constraint is the necessity of involving people in the existing protected areas. The use of ecotourism will not be a solution to the fact that people are not involved right now, since this is due to human decision-making. Nevertheless, the concerned experts can try to arrange this desired involvement. Once people see that cooperation will lead to benefits they become willing to cooperate (Ostrom, 1990). This involvement can be arranged best by personal contact. This is what made ATEC a large organisation and it makes that people react serious to the plan.

## **6.3 Reflection**

This subparagraph contains a theoretical and methodical reflection and recommendations on sequel research.

### *Theoretical and methodical reflection*

A critical reflection can be made concerning the used IRC theory. The theory connects well with the research as shown in chapter 3 of this document. Nevertheless, the theory is rather vague and is not explained in detail on how to operationalise. For the researcher it is hard to find guidelines and indicators with which the research can be done. However, the vagueness of the theory leaves more room for the researcher to interpret the theory in its own way and make an own conceptual and analytical model combined with a second theory.

The use of the two theories, IRC theory and SLA, turned out to be a good combination. The IRC theory alone would not cover all aspects concerning the research. It gives explanations for the institutional and environmental issues but there is no focus on the social, the actor part. This deficiency is overcome by using SLA since SLA does focus on the actor aspect.

This research contained several research tools. This mixture of quantitative and qualitative turned out to be a good combination. Mostly, the results of the quantitative and qualitative research covered each other which makes the reliability of the research high.

Nevertheless, the number of questionnaires that is used could have been more. That way, a more valid view of the inhabitants could have been given. Besides, the use of in-depth interviews with inhabitants would have been very useful in order to gather insight in the local communities.

Additional, control of the Spanish language would have been helpful for the validity of this research. With the control of the language more in-depth interviews could have been managed. Besides, the outcome and results of the interviews would have been more reliable. In this research native Spanish and Dutch speaking people had to speak and explain in English or an interpreter had to be used. This may have led to difficulties in explaining the reality and to possible misunderstandings. As well, the control of the language would facilitate contact with the right people. Language might have been a problem with finding the right people and with the willingness of the right people to participate.

### *Generalisability*

It can be said that the research question of the research is achieved. It is made understandable what the opportunities and constraints are of using ecotourism as a solution to the problem in the research area. These opportunities and constraints are specific for the research area since the current situation of this explicit research area is confronted with the criteria of sustainable ecotourism. This means, there is no outcome for other areas with similar problems. The opportunities and constraints of this research will give insight in similar situations, however, it cannot be reproduced without investigating the specific research area.

Still, the problem in the Rio Tempisque problem is a problem that can occur in other areas as well. There are several constraints that can be similar in other areas. As an example, the lack of knowledge is a problem that occurs very often. People are not familiar with ecotourism. This lack of knowledge may lead to problems in other areas as well. Besides, lack of knowledge in general can be a problem. Whenever researchers deal with a problem and try to solve this, the lack of knowledge needs to be taken into account.

### *Recommendations for sequel research*

Since the opportunities and constraints of this research will give insight in similar situations but it cannot be reproduced without investigating the specific research area it might be interesting to investigate whether a different area leads to similar opportunities and constraints.

Next to the opportunities of implementing ecotourism the research has led to some constraints. These three constraints are 1) the lack of knowledge on ecotourism and the 'common ignorance' on ecotourism, 2) the missing of an overview of costs and benefits and the financial value of an ecosystem and 3) the necessity of involving the people in the existing protection project. These constraints are treated and displayed as an opportunity where possible. Nevertheless, some constraints may still lead to problems while implementing ecotourism or afterwards once working with ecotourism. Therefore, it might be an interesting sequel research how to treat or remove these constraints if there is the willingness to implement ecotourism.

This research showed that it is possible to combine the two theories IRC and SLA. Nevertheless, further research on this combination is useful since the combination is new and still adjustable in order to pave the way for a possible integral theory. Such a new theory is desirable since in many parts of the world environmental problems and poor people are related. Sustainable solutions can often only be expected from interventions in both structure and agency in these areas. With the integral use of the concepts of both IRC and SLA these links can be investigated more extensively and profound, so that a better science can hopefully contribute to a better world.

## References

- Adato M., Meinzen-Dick R., (2002). *Assessing the impact of Agricultural research on poverty using the sustainable livelihoods framework*. Washington D.C.; International Food Policy Research Institute.
- Anderson, E.R., Cherrington, E.A., Flores, A.I., Perez, J.B., Carrillo R., and E. Sempris. 2008. *“Potential Impacts of Climate Change on Biodiversity in Central America, Mexico, and the Dominican Republic.”* CATHALAC / USAID. Panama City, Panama. 105 pp.
- Baxter P., and Jack S., (2008). Qualitative Case Study Methodology: study design and implementation for novice researchers, in *The Qualitative Report*, 13(4): 544-559.
- Bosma J., (2012). *Payments for ecosystem services (PES) in Costa Rica. PES to create a sustainable livelihood and to conserve the wetlands*. Nijmegen; Radboud University.
- Cater, E. (1993). Ecotourism in the Third World: Problems for sustainable tourism development. *Tourism Management* 14(2), pp. 85-90.
- Cater, E., and Lowman, G. (Eds.) (1994). *Ecotourism: A sustainable option?* Chichester: John Wiley and sons.
- Crotty M. (1998). *The foundation of social research, meaning and perspective in the research process*. Los Angeles, London, New Delhi, Singapore, Washington DC; SAGE publications
- Daniels A.E., Cumming G.S., (2008). Conversion or conservation? Understanding wetlands change in Northwest Costa Rica. *Ecological application*, vol 18. pp. 49-63.
- Devers K.J., (1999). How will we know “good” qualitative research when we see it? Beginning the dialogue in health services research. *Health Services Research* 34(5) Part II: pp. 1155-1187.
- Dom L., (2005). *Het nut van Giddens’ structuratietheorie voor empirisch onderzoek in de sociale wetenschappen*. *Mens en maatschappij*, jaargang 80, nr 1.
- Drumm A., Moore A., (2005). *An introduction to ecotourism planning*. Second edition volume 1. Virginia: the Nature Conservancy.
- Farrington J., Carney D., Ashley C., Turton C., (1999). Sustainable livelihoods in practice: early applications of concepts in rural areas. *Natural resource perspectives*, 42, ODI).
- Gable, Guy G., (1994). Integrating case study and survey research methods: an example in information systems. *European Journal of Information Systems* 3: pp. 112-126.
- Giddens A., (1984). *The constitution of society: outline of the theory of structuration*. University of California Press; Berkeley and Los Angeles.

Giddens A., (1991). *Modernity and Self-Identity: Self and Society in the Late Modern Age*. Stanford University Press; United States, Stanford.

Gifford jr. A., (2005). *The role of culture and meaning in rational choice*.

Golafshani N., (2003). Understanding reliability and validity in qualitative research. *The Qualitative Report*, Volume 8, pp 597-607

González A. M. R., Belemvire A., and Saulière S., (2011). *Climate change and women farmers in Burkina Faso. Impact and adaptation policies and practices*. Intermón Oxfam.

Hey D. L., and Philippi N. S., (1995). Flood reduction through wetland restoration: The upper Mississippi River Basin as a case history. *Restoration Ecology* 3, issue 1, pp 4-17.

Hindmoor A., (2010). *Rational Choice*. Hampshire and New York: Palgrave MacMillan

IFAD (n.d.). *The Sustainable Livelihoods Approach*. Found on September 1<sup>st</sup>, 2011, on: <http://www.ifad.org/sla/index.htm>

INEC, Centro de Información, ASIDE (2000). *Poblacion total de los segmentos seleccionados por: sexo. Segun: edad quinquenal*. Costa Rica: Loría A. M.

Intermon-Oxfam (2008). *The Sustainable Livelihoods Approach*. Barcelona.

Jacobs D., (1993). Het structurisme als synthese voor handelings- en systeemtheorie? *Tijdschrift voor sociologie*, jaargang 14, pp 335-360.

Jimenez R.J.A., González J.E., Mateo-Vega M.A. J., (2001). *Perspectives for the integrated management of the Tempisque River Basin, Costa Rica*.

Jonker J., and Pennink B.J. (2004). *De kern van methodologie*. Assen; Koninklijke van Gorkum B.V.

Krantz L., (2001). *The Sustainable Livelihood Approach to Poverty Reduction*. An Introduction. Swedish International Development Cooperation Agency.

Murcia C., (n.d.). *Human, ecosystems, and wildlife interactions in the Tempisque-Bebedero watershed (NW Costa Rica): an integrated landscape approach*. Received on February 2<sup>nd</sup>, 2011, via Ben Warner.

Ostrom E. (1990). *Governing the commons, the evolution of institutions for collective action*. Cambridge: Cambridge University Press.

Ostrom E., (1997). A behavioral approach to the rational choice theory of collective action: presidential address, American political science association. *The political science review*, 92 (1998), pp. 1-22.

Ostrom E., (2000). Collective Action and the Evolution of Social Norms. *The Journal of Economic Perspectives*, Vol. 14, No. 3,. pp. 137-158.

Ostrom E., (2007). *Institutional Rational Choice. An assessment of the institutional analysis and development framework*. In Sabatier P.A. *Theories of the policy process* (pp. 21-64). Colorado: Westview Press.

Ostrom E., (2011). Rational choice theory and institutional analysis: toward complementarity. *The American political science review*, 85 (2011), pp. 237-243.

Questionnaire: Bosma J. & Wiegiers S., perception and interpretation of local communities on ecotourism and Payment for Ecosystem Service, Pozo de Agua, Puerto Humo & Rosario, 21-05-2011 till 07-07-2011.

Scheyvens R., (1999). *Ecotourism and the empowerment of local communities*. New Zealand; Massey University.

Serrat O., (2008). The sustainable Livelihood Approach. *Knowledge solutions*, 15. Found on October 14<sup>th</sup>, on: <http://www.adb.org/Documents/Information/Knowledge-Solutions/Sustainable-Livelihoods-Approach.pdf>.

Verschuren P. and Doorewaard H., (2000). *Het ontwerpen van een onderzoek*. Utrecht: Uitgeverij Lemma BV.

Vennix J., (2006). *Theorie en praktijk van empirisch onderzoek*. Harlow: Pearson Education Limited.

Zahariadis N., (2007). *The Multiple Streams Framework. Structure, limitations, prospects*. In Sabatier P.A. *Theories of the policy process* (pp. 21-64). Colorado: Westview Press.

## Annex 1 Interviews

Name	Organisation	Subjects	Date
Rafael Ramirez	Organisation for Tropical Studies	Biodiversity, local community and ecotourism	10/04/2011
Jorge Mattarrita	Local boat owner	Area and local communities	15/04/2011 and 20/06/2011
Norma Rodriguez Garro	MINAET	Biodiversity, area and ecotourism	07/05/2011
Santos Molina Ruiz	Instituto Costarricense de Turismo	Area, biodiversity, local community and ecotourism	02/05/2011
Jose Angel Jimenez and Ana Saray Briceno Cardenas	MINAET	Area and ecotourism	03/05/2011
Juan Bravo	National University of Costa Rica	Area, water, biodiversity, ecotourism	13/05/2011
Hernan Urieta	Inhabitant Puerto Humo	Knowledge on and willingness to work with ecotourism	15/05/2011
Adolfo Salinas	CEMEDE	Boundaries of the area	01/07/2011
Rigoberto Rodriguez Quiros	CEMEDE	Management plan	22/07/2011
Laura Palomo	ATEC, ecotourism organisation	Ecotourism	12/06/2011

## Annex 2 Indicators, interviews and questions

Dimension	Source	Questions
<b>Institutional environment</b>		
Rules and property rights	Questionnaire	<p>Is it politically possible to implement ecotourism (is it allowed by the law)?</p> <ul style="list-style-type: none"> <li>• Yes</li> <li>• No</li> </ul>
	Interviews and literature*	<ol style="list-style-type: none"> <li>1. Do the communities have an own municipality or is it connected to Nicoya?</li> <li>2. Is there something like a development plan, which gives a destination for the ground in the area?</li> <li>3. Are there many illegal activities in the area (fires, hunting)?</li> <li>4. What does the local authority to prevent these illegal activities (like fires)?</li> <li>5. Is it possible to implement ecotourism in the Rio Tempisque Basin?</li> <li>6. What possibilities are there for ecotourism in the area? <ol style="list-style-type: none"> <li>a. And what type of ecotourism (hotels, boat rides, hiking, horseback riding, guided animal watching tours, canopy tours, and nature).</li> </ol> </li> </ol>
<b>Social environment</b>		
Norms and values	Questionnaire	<p>Which option is the most valuable for you?</p> <ul style="list-style-type: none"> <li>• Income</li> <li>• Biodiversity</li> <li>• Family</li> <li>• The community</li> </ul> <p>Are you willing to work with ecotourism to change your way of life/income?</p> <ul style="list-style-type: none"> <li>• Yes</li> <li>• No</li> </ul> <p>Is it socially possible to implement ecotourism? Does it fit in the norms of the community?</p> <ul style="list-style-type: none"> <li>• Yes</li> <li>• No</li> </ul>
	Interviews	<ol style="list-style-type: none"> <li>1. What are the norms and values of the community?</li> <li>2. Is ecotourism accepted by the people in the community?</li> <li>3. Do you think the local communities are willing to implement ecotourism?</li> </ol>
Common	Questionnaire	What is the most important source of income in your community



knowledge		<p>at present?</p> <ul style="list-style-type: none"> <li>• Tourism</li> <li>• Ecotourism</li> <li>• Payments for Ecosystem Services</li> <li>• Agriculture</li> <li>• Cattle</li> <li>• Fishery</li> <li>• Forest</li> <li>• Other</li> </ul>
Livelihoods	Questionnaire	<p>What is your source of income at the moment?</p> <ul style="list-style-type: none"> <li>• Tourism</li> <li>• Ecotourism</li> <li>• Payments for Ecosystems Services</li> <li>• Agriculture</li> <li>• Cattle</li> <li>• Fishery</li> <li>• Forest</li> <li>• No income or other</li> </ul> <p>How is your work organised?</p> <ul style="list-style-type: none"> <li>• Chief without employees</li> <li>• Chief with employees</li> <li>• Employee</li> <li>• Unemployed</li> <li>• Other</li> </ul> <p>Are you already working with ecotourism?</p> <ul style="list-style-type: none"> <li>• Yes</li> <li>• No</li> </ul>
	Interviews and literature	<ol style="list-style-type: none"> <li>1. What is the size of the population of the three communities?</li> <li>2. What is the main economy of the area?</li> <li>3. What will be the impact of ecotourism on the local communities?</li> </ol>
<b>Natural environment</b>		
Ownership	Questionnaire	<p>Is it managerial possible to implement ecotourism (Are you the owner of the land, do you have enough knowledge and the capacity?</p> <ul style="list-style-type: none"> <li>• Yes</li> <li>• No</li> </ul> <p>Is it financial possible to implement ecotourism?</p> <ul style="list-style-type: none"> <li>• Yes</li> <li>• No</li> </ul>
	Interviews	<ol style="list-style-type: none"> <li>1. How big is the average size of the property per family? (Lots of people with little areas, or a few people with big</li> </ol>

		<p>areas and what is the division?)</p> <ol style="list-style-type: none"> <li>What type of area is the area around Puerto Humo, Rosario, Pozo de Agua and Angeles? (Is it private property, public or protected?)</li> <li>Are there ecotourist organizations in the Rio Tempisque Area? <ol style="list-style-type: none"> <li>What kind of organizations?</li> <li>Are there also tourist organizations (non-eco)?</li> </ol> </li> <li>Is there tourism in the Rio Tempisque Basin?</li> <li>Is there ecotourism in the Rio Tempisque Basin? <ol style="list-style-type: none"> <li>What type of ecotourism?</li> <li>How many?</li> <li>Can you give some examples?</li> </ol> </li> <li>Is it possible to implement ecotourism in the Rio Tempisque Basin?</li> <li>What possibilities are there for ecotourism in the area? <ol style="list-style-type: none"> <li>And what type of ecotourism (hotels, boat rides, hiking, horseback riding, guided animal watching tours, canopy tours, and nature).</li> </ol> </li> </ol>
Ecosystems	Interviews and literature	<ol style="list-style-type: none"> <li>What kind of ecosystems are there in the region?</li> <li>What is the situation of the biodiversity in the region at this moment?</li> <li>Where do local communities get the water from, for cattle, households and other activities?</li> <li>What will be the impact of ecotourism on the biodiversity?</li> </ol>
Changes	Questionnaire	<p>Have you seen effects of climate change?</p> <ul style="list-style-type: none"> <li>Yes</li> <li>No</li> </ul> <p>Fill in the extent of noticed changes.</p> <p>Rain:</p> <ul style="list-style-type: none"> <li>Much more rain</li> <li>More rain</li> <li>No change</li> <li>Less rain</li> <li>Much less rain</li> </ul> <p>Temperature:</p> <ul style="list-style-type: none"> <li>Much warmer</li> <li>Warmer</li> <li>No change</li> <li>Colder</li> <li>Much colder</li> </ul> <p>Soil:</p> <ul style="list-style-type: none"> <li>Much dryer</li> </ul>

		<ul style="list-style-type: none"> <li>• Dry</li> <li>• No change</li> <li>• Wetter</li> <li>• Much wetter</li> </ul> <p>Do you think you have to change your income because of climate change?</p> <ul style="list-style-type: none"> <li>• Yes</li> <li>• No</li> </ul> <p>Have you seen changes in the area because of human impact (agriculture, cattle, fishery, hunting)?</p> <ul style="list-style-type: none"> <li>• Yes</li> <li>• No</li> </ul> <p>Do you think you have to change your work in the future because of the human impact?</p> <ul style="list-style-type: none"> <li>• Yes</li> <li>• No</li> </ul>
	Interviews and literature	<ol style="list-style-type: none"> <li>1. Is there proof of changes over the last few years? <ul style="list-style-type: none"> <li>• Change because of climate change?</li> <li>• Change because of human impact?</li> <li>• What kind of changes?</li> </ul> </li> <li>2. Are there visible changes in the biodiversity?</li> <li>3. Will there be problems in the future because of climate change?</li> <li>4. Do you think it is necessary to provide another way of income/land use for the local communities? <ul style="list-style-type: none"> <li>• In what way?</li> </ul> </li> </ol>
<b>Action arena</b>		
Participants	Interviews	<ol style="list-style-type: none"> <li>1. Is the Rio Tempisque visited much by tourists? Do you have data about this?</li> </ol>
Position and knowledge	Questionnaire	<p>If you have to change your livelihood, which alternative do you prefer?</p> <ul style="list-style-type: none"> <li>• Tourism</li> <li>• Ecotourism</li> <li>• Payments for Ecosystem Services</li> <li>• Agriculture</li> <li>• Cattle</li> <li>• Fishery</li> <li>• Other</li> </ul> <p>Are you familiar with ecotourism?</p> <ul style="list-style-type: none"> <li>• Yes</li> <li>• No</li> </ul>

		<p>What is your opinion about ecotourism?</p> <ul style="list-style-type: none"> <li>• Positive</li> <li>• Neutral</li> <li>• Negative</li> </ul>
	Interviews and literature	<p>5. Are people familiar with ecotourism and how are people informed about it?</p> <p>6. Do the local communities care about the biodiversity in the region?</p> <p>7. Are they working on the protection of the biodiversity? (How?)</p> <p>8. Do you think the people are willing to work with ecotourism?</p>
Costs and benefits	Questionnaire	<p>For how much income are you willing to work with ecotourism?</p> <ul style="list-style-type: none"> <li>• Less than present</li> <li>• The same as present</li> <li>• More than present</li> </ul>
<b>Sustainable ecotourism</b>		
Knowledge	Interviews and literature	<p>1. What is the definition of effective and valuable ecotourism?</p> <p>2. In what way can ecotourism be helpful for the biodiversity?</p> <p>3. In what way can ecotourism be helpful for the local communities?</p> <p>4. What is the Programa Bandera Azul (BAE) exactly about?</p> <p>5. Is BAE also possible in the area of the Rio Tempisque (not in the coastal areas)?</p> <p>6. Is there an organization about the BAE in Costa Rica that I can contact?</p> <p>7. What is the difference between ecotourism and 'regular' tourism?</p> <p>8. What are the pros and cons of ecotourism?</p> <p>9. What are the concerns on ecotourism in Costa Rica?</p> <p>10. What are the chances of ecotourism in Costa Rica?</p> <p>11. In what way can ecotourism be helpful for the biodiversity?</p> <p>12. In what way can ecotourism be helpful for the local communities?</p> <p>13. Is ecotourism possible everywhere, or are there limitations?</p> <p>14. In what way is ecotourism in Talamanca managed?</p> <p style="padding-left: 40px;">a. Who is involved (communities, organizations, ministry etc)?</p> <p style="padding-left: 40px;">b. How did you start this ecotourism?</p>

		<p>c. What is written in the management plan?</p> <p>d. What is necessary to be successful?</p> <p>15. What are the benefits of ATEC for the biodiversity?</p> <p>16. What are the benefits of ATEC for the local communities?</p> <p>17. Do you work with Bleu flag or Certification of sustainability?</p> <p>18. What visitation rates are necessary in order to gather a useful income for the local communities?</p> <p>19. What is the opinion of surrounded organizations on your ecotourism (ministry, tourist organizations, SINAC)?</p>
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\*Note: The interviews and the questionnaire are used in the same section for the reason that the questions asked, are closely related or even the same.

## Annex 3 English questionnaire

Survey form

Nr.

### Introduction

We are students of “social and political science of the environment” at the University of Nijmegen in the Netherlands. We are doing research on the possibility for payments for ecosystem services (PSA) and ecotourism to adapt to climate change in this area. To complete our research we are collecting data from the Rio Tempisque Basin.

The aim of this survey is to get insights in the perceptions and interpretations of the local communities on the ecological changes in this area, and the opinion of using payments for ecosystem services and ecotourism as a solution for the changes in natural resources and land use. Generally, the questions will be about these natural resources, ecosystem services and your opinion about this.

All information given by the respondent will be used anonymously and protected in any way.

---

### Personal information:

Full name of the respondent:.....

Nickname:.....

Age:.....

Village:.....

Date:.....

### Read this carefully

#### Biodiversity

All the animals and vegetation together.

#### Payments for ecosystem services

Payments for ecosystem services are payments for a landowner to protect the nature for being damaged. The landowner gets money if he or she provides some services: protection of the biodiversity, Carbon storage, watershed protection or the protection of scenic beauty.

#### Ecotourism

Ecotourism in this research does not only focus on the environment and the economical benefits of the country or the tourism organizations, it also involves local communities. The benefits of the ecotourism are returned to the local communities and they are compensated for their loss in resources because of the acquisition by, for example, wildlife parks. Within ecotourism there is appreciation for the needs, concerns and welfare of the host population in the short and long term.

Question		Answers
Try to fill in the 24 questions as accurate as possible. Read the question and answer in the given rank.		
Income		
1.	What is <u>your</u> source of income at the moment?	Tourism Ecotourism Payments for ecosystem services Agriculture What kind of agriculture? ..... Cattle Fishery Forest Not in this area No income Other .....
2.	What is the most important source of income for <u>your community</u> at present?	Tourism Ecotourism Payments for ecosystem services Agriculture What kind of agriculture? ..... Cattle Fishery Forest Not in this area Other .....
3.	How is <u>your</u> work organised?	Chief, without employees (select below) Agricultural Other company Chief, with employees Employee Unemployed No work Other.....
4.	Which option is most valuable for you? Income Biodiversity Agriculture Family Your community Tourism	<i>Rank the given options, the most important choice in option 1, the least important choice in option 6.</i> ..... ..... ..... ..... ..... .....

Changes in the area and biodiversity		
5.	Have you seen effects of <u>climate change</u> ?	Yes (Go to question 6) No (Go to question 7)
6.	Fill in the extent of noticed changes	
	Rain -2 Much more rain -1 more rain 0 no change +1 less rain +2 much less rain	Temperature rise -2 much more warm -1 more warm 0 no change +1 more cold +2 much more cold
6.		Dry soil -2 much more dry -1 more dry 0 no change +1 more wet +2 much more wet
7.	Do you think that you have to change your work in the future because of the <u>changes of the climate</u> ?	Yes No
8.	Have you seen changes in the area because of <u>human impact</u> (agriculture, cattle, fishery, hunting)?	Yes, which changes? ..... ..... No
9.	Do you think that you have to change your work in the future because of the <u>human impact</u> ?	Yes No
10.	A) Are you already changing your way of life/ income because of <u>climate change or human impact</u> ?  B) How?	A) Yes (Go to question B) No (Go to question 11)  B) Tourism Ecotourism Payments for ecosystem services Agriculture Cattle Fishery Forest Not in this area Other



11.	<p>A) Are you willing to change your way of life/income?</p> <p>B) What is the main reason that you want to change?          To protect the <u>biodiversity</u> (all the animals and vegetation)?          To gather income          To protect the existence of your community</p>	<p>Yes (Go to question B)          No (Go to question 12)</p> <p><i>Rank the given options, the most important choice in option 1, the least important choice in option 3.</i></p> <p>.....          .....          .....</p>
12.	<p>If there is a need for change, which alternative income will you prefer?</p>	<p>Tourism          Ecotourism          Payments for ecosystem services          Agriculture          Cattle          Fishery          Forest          Not in this area          Other.....</p>
<p>Payment for Ecosystem Services (PES) (Explanation of PES on page 1 of this survey)</p>		
13.	<p>A) Are you familiar with PES?</p> <p>B) Are you already implementing PES?</p> <p>C) Which % of you income is coming from PES?</p>	<p>A)          Yes (Go to question B)          No (Go to question 14)</p> <p>B)          Yes (Go to question C)          No (Go to question 14)</p> <p>C)          .....%</p>
14.	<p>What is your opinion about PES?</p>	<p>Positive          Negative          Neutral</p>
15.	<p>What do you think of the influence of PES on biodiversity?</p>	<p>Biodiversity will decrease          Biodiversity will stay the same          Biodiversity will increase</p>
16.	<p>What do you think of the influence of PES on the community?</p>	<p>Positive influence          No influence          Negative influence</p>

17.	<p>A) Are you willing to implement PES?</p> <p>B) For how much income are you willing to implement PES?</p>	<p>A) Yes (Go to question B) No (Go to question 17)</p> <p>B) Less than present The same as present More than present</p>
18.	Is it possible for you to implement PES?	<p>Managerial (Is it possible within the present conditions: are you the owner of land, knowledge, capacity?) Yes No</p> <p>Financial Yes No</p> <p>Social (Does it fit in the norms of the community?) Yes No</p> <p>Political (Is it allowed by the law?) Yes No</p>
Ecotourism		
19.	Which of the following options do you think ecotourism is?	<p>Environmentally responsible</p> <p>Economically responsible for tourist organizations</p> <p>Beneficial for the local community</p> <p>All three</p>
(Read the explanation of ecotourism on page 1 of this survey)		
20.	<p>A) Are you familiar with ecotourism?</p> <p>B) Are you already working with ecotourism?</p> <p>C) Which % of you income is coming from ecotourism?</p>	<p>A) Yes (Go to question B) No (Go to question 20)</p> <p>B) Yes (Go to question C) No (Go to question 20)</p> <p>C) .....%</p>

21.	What is your opinion about ecotourism?	Positive Negative Neutral
22.	What do you think of the influence of ecotourism on biodiversity?	Biodiversity will decrease Biodiversity will stay the same Biodiversity will increase
23.	What do you think of the influence of ecotourism on the community?	Positive influence No influence Negative influence
24.	A) Are you willing to work with ecotourism to change your way of life/income?  B) For how much income are you willing to work with ecotourism?	A) Yes (Go to question B) No (Go to question 23)  B) Less than present The same as present More than present
25.	Is it possible for you to work with ecotourism?	Financial Yes No  Social (Does it fit in the norms of the community?) Yes No  Political (Is it allowed by the law?) Yes No  Managerial (Is it possible within the present conditions?) Yes No
Solutions		
26.	Do you know another solution to adapt to the changes in the area?	No Yes, (fill in what solution you think of)..... ..... ..... .....

Thank you very much for filling in this survey. It is of great value for our research.

## Annex 4 Spanish questionnaire

Formulario de encuesta

Nr. Date.
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### Presentación

Somos dos estudiantes de ciencias sociales y políticas del medio ambiente en la Universidad de Nijmegen en los Países Bajos. Estamos haciendo una investigación sobre Pagos de Servicios Ambientales (PSA) y el ecoturismo y su adaptación al cambio climático en este ámbito. Para completar esta investigación estamos recogiendo datos en la Cuenca Rio Tempisque.

El objetivo de esta encuesta es obtener puntos de vista en las percepciones e interpretaciones de las comunidades locales sobre los cambios ecológicos en este ámbito y la opinión de la utilización de los Pagos de Servicios Ambientales (PAS) y el ecoturismo como una solución de los cambios en recursos naturales y uso de la tierra. En general, las preguntas serán acerca de estos recursos naturales, servicios de los ecosistemas naturales de los ecosistemas y su opinión acerca de esto.

Toda la información dada por el demandado se utilizará de forma anónima y protegida de cualquier manera.

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### Información personal:

Nombre + Apellidos: ..... Mujer/ Hombre

Edad:.....

Población:.....

Por favor, lea esto con cuidado

Biodiversidad

Todos los animales y la vegetación juntos.

### Cambio del clima

Se llama cambio climático a la modificación del clima con respecto al historial climático a una escala global o regional. Tales cambios se producen a muy diversas escalas de tiempo y sobre todos los parámetros climáticos: temperatura, precipitaciones, nubosidad etc.

Por favor, trate de completar las 24 preguntas lo más preciso posible. Lea la pregunta respuesta en el rango dado.	
<b>INCOME</b>	
1.	¿Cuál es su fuente de ingresos en este momento? Turismo Ecoturismo Pagos de Servicios Ambientales Agricultura ¿Cuál? ..... Ganadería Pesca Forestal No tengo ingresos Otro.....
2.	¿Cuál es la fuente más importante de ingresos para su comunidad en la actualidad? Turismo Ecoturismo Pagos de Servicios Ambientales Agricultura ¿Cuál? ..... Ganadería Pesca Forestal No tengo ingresos Otro.....
3.	¿Cómo está organizado su trabajo? Jefe, sin empleados Jefe, con empleados Empleado Desempleado Otro.....
4.	¿Clasifique las siguientes opciones según su importancia para usted. 1 es la más importante, 4 la menos importante? Ingresos ..... Biodiversidad ..... Familia ..... Su comunidad .....
<b>LOS CAMBIOS EN EL ÁREA Y LA BIODIVERSIDAD</b>	
5.	¿Usted ha visto los efectos <u>del cambio del clima</u> ? Sí (Sigue a la pregunta 6) No (Sigue a la pregunta 7)

	Según su percepción <b>cuál</b> ha sido el grande de cambia en las siguientes opciones.		
6.	<p>Las precipitaciones</p> <p>Ahora llueve mucho más</p> <p>Ahora llueve más</p> <p>No hay ningún cambio</p> <p>Ahora llueve menos</p> <p>Ahora llueve mucho menos</p>	<p>La temperatura</p> <p>Ahora es mucho más caliente</p> <p>Ahora es más caliente</p> <p>No hay ningún cambio</p> <p>Ahora es menos caliente</p> <p>Ahora es mucho menos caliente</p>	<p>Del suelo</p> <p>El suelo está mucho más seco</p> <p>El suelo está más seco</p> <p>No hay ningún cambio</p> <p>El suelo está más húmedo</p> <p>El suelo está mucho más húmedo</p>
7.	<p><b>¿Cree usted que su actividad/ trabajo se verá afectada debido al cambio climáticos?</b></p> <p>Sí</p> <p>No</p>		
8.	<p><b>¿Ha visto cambios en el área debido al impacto humano (agricultura, ganadería, pesca, caza)?</b></p> <p>Sí ¿Cuáles cambios? .....</p> <p>No</p>		
9.	<p><b>¿Cree usted que su actividad/ trabajo se verá afectada debido al impacto humano?</b></p> <p>Sí</p> <p>No</p>		
10.	<p>A) ¿Usted ya está cambiando su medio de vida a causa del cambio del clima o al impacto humano?</p> <p>Sí (Sigue a la pregunta B)</p> <p>No (Sigue a la pregunta 11)</p> <p>B) ¿Cómo? .....</p>		
11.	<p><b>¿Si hay una necesidad de cambio, que fuentes alternativas de ingresos preferiría?</b></p> <p>Turismo</p> <p>Ecoturismo</p> <p>Pagos de Servicios Ambientales</p> <p>Agricultura</p> <p>Ganadería</p> <p>Pesca</p> <p>Forestal</p> <p>Otro.....</p>		

## PAGOS DE SERVICIOS AMBIENTALES (PSA)

Pagos de Servicios Ambientales son pagos que reciben propietarios por proteger la naturaleza. El propietario recibe dinero cuando él o ella proporciona algunos servicios: protección de la biodiversidad, el almacenamiento de carbono, protección de cuencas hidrográficas o la protección de la belleza escénica.

Modalidades	Monto (\$) /ha
Protección de Bosque	64
Regeneración Natural	41
Reforestación	816
Sistemas Agroforestales (monto por árbol, las otras modalidades se pegan por hectárea)	1.3

12.	<p>A) ¿Está usted familiarizado con PSA?</p> <p>Sí (Sigue a la pregunta B)</p> <p>No (Sigue a la pregunta 13)</p> <p>B) ¿Está usted utilizando PSA actualmente?</p> <p>Sí (Sigue a la pregunta C)</p> <p>No (Sigue a la pregunta 13)</p> <p>C) ¿Qué porcentaje de sus ingresos proviene de PSA?</p> <p>_____ %</p>
13.	<p>¿Cuál es su opinión sobre PSA?</p> <p>Positivo</p> <p>Negativo</p> <p>Neutral</p>
14.	<p>¿Cuál es su opinión sobre la influencia de PSA sobre la biodiversidad?</p> <p>La biodiversidad disminuye</p> <p>La biodiversidad seguirá siendo igual</p> <p>La biodiversidad aumentará</p>
15.	<p>¿Cuál es su opinión sobre la influencia de PSA sobre la comunidad?</p> <p>Influencia positiva</p> <p>Ninguna influencia</p> <p>Influencia negativa</p>
16.	<p>A) ¿Quisieras trabajar con PSA?</p> <p>Sí</p> <p>No</p> <p>B) ¿Cuánto debería ganar con el PSA para que sea interesante para usted?</p> <p>Menos que la actualidad</p> <p>Lo mismo que en la actualidad</p>

17.	<p>¿Desde los siguientes puntos de vista (financiero, social, político, de gestión) cree usted que es posible la aplicación de PSA?</p> <p>Financiero</p> <p>Sí</p> <p>No</p> <p>Social (¿Se ajusta a las normas de la comunidad?)</p> <p>Sí</p> <p>No, porque.....</p> <p>Político (¿Está permitido por la ley?)</p> <p>Sí</p> <p>No</p> <p>De gestión (¿Es posible en las condiciones actuales: Eres el dueño de la tierra, el conocimiento, la capacidad?)</p> <p>Sí</p>
<b>ECOTURISMO</b>	
18.	<p>¿Cree usted que el ecoturismo es?</p> <p>Ambientalmente responsables</p> <p>Económicamente responsables de las organizaciones turísticas</p> <p>Beneficiosos para la comunidad local</p> <p>Los tres</p> <p>Ninguno</p>
<p>Ecoturismo en esta investigación, no sólo se centra en el medio ambiente y los beneficios económicos del país o de las organizaciones de turismo. También involucra a las comunidades locales. Los beneficios del ecoturismo son devueltos a las comunidades y estas son compensadas por sus pérdidas en los recursos. Dentro de ecoturismo basado en la comunidad hay satisfacción por las necesidades, preocupaciones y el bienestar de la población de acogida en el corto y largo plazo.</p>	
19.	<p>A) ¿Está usted trabajando con ecoturismo?</p> <p>Yes (Sigue a la pregunta B)</p> <p>No (Sigue a la pregunta 20)</p> <p>B) ¿Qué porcentaje de los ingresos que viene del ecoturismo?</p> <p>.....%</p>
20.	<p>¿Cuál es su opinión sobre el ecoturismo?</p> <p>Positivo</p> <p>Negativo</p> <p>Neutral</p>



21.	<p>¿Cuál es su opinión sobre la influencia del ecoturismo sobre la diversidad biológica?</p> <p>La biodiversidad disminuye</p> <p>La biodiversidad seguirá siendo igual</p> <p>La biodiversidad aumentará</p>
22.	<p>¿Cuál es su opinión sobre la influencia del ecoturismo sobre la comunidad?</p> <p>Influencia positiva</p> <p>Ninguna influencia</p> <p>Influencia negativa</p>
23.	<p>A) ¿Le gustaría trabajar con ecoturismo?</p> <p>Sí</p> <p>No</p> <p>B) ¿Cuánto debería ganar con el ecoturismo para que sea interesante para usted?</p> <p>Menos que la actualidad</p> <p>Lo mismo como la actualidad</p> <p>Más que la actualidad</p>
24.	<p>¿Desde los siguientes puntos de vista (financiero, social, político, de gestión) cree usted que es posible la aplicación del ecoturismo?</p> <p>Financiero</p> <p>Sí</p> <p>No</p> <p>Social (¿Se ajusta a las normas de la comunidad?)</p> <p>Sí</p> <p>No, porque.....</p> <p>Político (¿Está permitido por la ley?)</p> <p>Sí</p> <p>No</p> <p>De gestión (¿Es posible en las condiciones actuales: Eres el dueño de la tierra, el conocimiento, la capacidad?)</p> <p>Sí</p>
<b>SOLUCIONES</b>	
25.	<p>¿Usted conoce otra solución para adaptarse al cambio climático?</p> <p>No</p> <p>Sí, (Completar lo que usted piensa que sea la solución).....</p> <p>.....</p> <p>.....</p>

Muchas gracias por completar esta encuesta. Es de gran valor para nuestra investigación.