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**RESOURCE MANAGEMENT IN SUSTAINABLE TOURISM:
A FACILITATOR FOR COMMUNITY EMPOWERING DEVELOPMENT IN LA VAINILLA,
OAXACA**

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**RESOURCE MANAGEMENT IN SUSTAINABLE TOURISM:
A FACILITATOR FOR COMMUNITY EMPOWERING DEVELOPMENT IN
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Summary

Resource management in tourism can contribute to the sustainable development and empowerment of rural communities by putting local knowledge and resources to work for ends of economic development. This work is about the case of La Vainilla, Oaxaca, Mexico, which is characterized by poverty and food insecurity, but has a means for further development in its ecotourism cooperative. The livelihood of families will be described holistically in order to display the entanglement of economic, ecological and social problems and to provide a foundation for the formulation of a proposal in the third part of this work which shall offer an opportunity for further development of sustainable tourism. A comparison of local potentials and existing tourism in the region will demonstrate that culinary tourism is a promising niche for La Vainilla. It will be exhibited how the implementation of organic gardens can be the basis for that kind of tourism and for the improvement of livelihoods of some families. The characteristics of organic gardens assure ecological and economic sustainability meanwhile the in-depth description of livelihoods is the foundation for an empowerment program which carries the potential to add social sustainability, meaning a better access to resources for the people who suffer the most from poverty and food insecurity. A detailed problem assessment at household scale exposes the community's stratification and allows for the identification of the poorest families, who should be in the focus of an empowerment program aiming at poverty alleviation. The major topic of resources management finds its expression in an implementation plan for organic gardens in the community and is complemented by observations of social organization which proved to be the decisive criteria for an empowerment program. The lack of social cohesion and cooperation is a reason why empowerment is needed and it is its biggest obstacle.

Key words: Empowerment, Tourism, Poverty, Food Security, Organic Gardens, Resources Management

Resumen

El manejo de recursos en turismo tiene la capacidad de contribuir al desarrollo sustentable y empoderamiento de comunidades rurales mientras emplee conocimiento y recursos locales para fines del desarrollo económico. Este trabajo describe el caso de la comunidad La Vainilla, ubicada en Oaxaca, Sur de México, la cual está caracterizada por pobreza e inseguridad alimentaria y que tiene oportunidades de desarrollo por medio de la cooperativa de ecoturismo. Se expone el sustento de las familias de la comunidad de una manera holística con el fin de trazar la interrelación de problemas económicos, ecológicos y sociales, y así crear una base suficiente para la tercera parte del trabajo que contiene la elaboración de una propuesta que ofrece una vía para un desarrollo turístico sustentable. Una comparación del potencial local y turismo existente en la región muestra que el turismo culinario es un nicho prometedor para La Vainilla. Se muestra como huertos orgánicos sirven de base para esa forma de turismo y el mejoramiento del sustento de unas familias. Las características de huertos orgánicos aseguran la sustentabilidad ecológica y económica mientras la descripción detallada del sustento proporciona la base para un programa de empoderamiento misma que tiene la capacidad de promover sustentabilidad social, que es el mejor acceso a recursos de las personas que sufren mayor pobreza e inseguridad alimentaria. Una profunda evaluación del problema a nivel hogar revela la estratificación de la comunidad y permite la identificación de las familias más pobres, en las cuales un programa de empoderamiento debe enfocarse. El tema central del manejo de recursos se expresa en un plan de realización del concepto de huertos orgánicos en la comunidad, y estará complementado por consideraciones acerca de la organización social, que es el criterio decisivo para el éxito de un posible programa de empoderamiento. La falta de cohesión social y cooperación es un motivo importante para tal programa y al mismo tiempo es su obstáculo más fuerte.

Palabras claves: Empoderamiento, Turismo, Pobreza, Seguridad Alimentaria, Huertos orgánicos, Manejo de Recursos

Zusammenfassung

Ressourcenmanagement in Tourismus kann zur nachhaltigen Entwicklung und Ermächtigung ländlicher Gemeinschaften beitragen, indem es lokal verfügbares Wissen und Ressourcen zur wirtschaftlichen Entwicklung einsetzt. Diese Arbeit beschreibt das Fallbeispiel der Gemeinde La Vainilla in Oaxaca, im Süden Mexikos, welche durch Armut und Nahrungsunsicherheit gekennzeichnet ist, und die durch die örtliche Ökotourismuskoooperation Möglichkeiten zur wirtschaftlichen Weiterentwicklung hat. Es werden die Verhältnisse der Familien der Gemeinde in ganzheitlicher Weise beschrieben, um lokale Problemzusammenhänge ökonomischer, ökologischer und sozialer Natur verständlich darzustellen und eine ausreichende Grundlage zu schaffen, um im dritten Teil der Arbeit einen Vorschlag zu formulieren, der eine Möglichkeit zur nachhaltigen Tourismusedwicklung bietet. Ein Vergleich von lokalem Potential und existierendem Tourismus in der Region verdeutlicht, dass kulinarischer Tourismus eine erfolgsversprechende Nische für La Vainilla ist. Es wird gezeigt wie die Errichtung organischer Gärten die Grundlage für diese Tourismusform und für die Verbesserung der Lebensverhältnisse einiger Familien sein kann. Die Eigenschaften organischer Gärten sorgen für ökologische und wirtschaftliche Nachhaltigkeit, während die detaillierte Beschreibung der Lebensumstände die Grundlage für eine Initiative bildet, die es vermag soziale Nachhaltigkeit zu erreichen, d.h. einen verbesserten Ressourcenzugang der Personen, die am schwersten unter Armut und Nahrungsunsicherheit leiden. Eine detaillierte Problemanalyse auf Haushaltsebene offenbart die Stratifizierung der Gemeinde und erlaubt eine Identifizierung der ärmsten Familien, die im Fokus einer Armuts bekämpfenden Initiative stehen sollten. Das zentrale Thema des Ressourcenmanagements findet seinen Ausdruck in einem Plan zur aktiven Umsetzung des Konzeptes der organischen Gärten in der Gemeinde, wird darüber hinaus ergänzt durch Betrachtungen der sozialen Organisation, die letztendlich das erfolgsentscheidende Kriterium für eine mögliche Initiative ist. Das Fehlen von Gemeinschaft und Zusammenarbeit ist Grund für eine Initiative und gleichzeitig ihr größtes Hindernis.

Schlüsselbegriffe: Ermächtigung, Tourismus, Armut, Nahrungssicherheit, Organische Gärten, Ressourcenmanagement

Chapter one: Introduction

Making sustainable use of natural resources for economic ends in tourism contexts can contribute to empowerment of greater parts of rural communities. An in-depth analysis of the community La Vainilla in Oaxaca, Mexico, will serve as the basis for a proposal of how natural, local resources can be used sustainably for this end.

Tourism carries the potential to contribute to a kind of development which has lasting, positive effects for locals without threatening the natural longevity of local ecosystems. It can empower individuals, families and communities which engage in touristic activities, offering them an additional income source and better access to service networks. If implemented and operated in sustainable way tourism can “increasing one’s authority and control over the resources and decisions that affect one’s life” (World Bank, 2002). Tourism is a major industry in Mexico and contributes to the overall and local/regional development in many parts of the country. A critical, positive examination of its potential may carry implications for many communities which engage in tourism.

The case study is concerned with a small, rural community which is characterized by a low average income, poor infrastructure, high emigration rate and hot tropical climate with the majority of rain coming down in a relatively short period of time. Most families depend on few, unstable income sources, having an insufficient economic access to food which is compensated by agricultural activity. Many grow their own crops but lack greater agro-diversity which forces them to spend bigger parts of their income on additional food from the market. Improving alimentation and creating additional income sources would be the major goals of a potential empowerment program. The local ecotourism cooperative will be examined as a potential facilitator for the proposed empowerment, analyzing its current state and potentials for further development which could leave more people benefitting from it.

First empowerment will be defined to the extent that it becomes operational for this case study. Then it will be combined with the characteristics of tourism as a highly competitive sector and a potential engine for local/regional development with a special focus on resource management in tourism.

Showing peculiarities of empowerment through tourism in Mexico will serve as a base for the case study. The region will be characterized in general and in touristic terms in order to contextualize La Vainilla as a community of the coastal area of Oaxaca. The results from the conducted field research will be displayed, creating a holistic image of the community and allowing for interrelation of social, economic and resources management related aspects.

The work will be concluded by a proposal about how to use local resources sustainably, create an additional income through that activity and decrease food insecurity and poverty. It will include a final, detailed problem assessment, a resource management plan and a theoretical evaluation of an empowerment program which could be implemented within the community.

1.1 Research question

The general research question of this work is as follows:

How can local resources management in tourism contribute to a sustainable development of greater parts of the community?

1.2 General objective

The general objective is to analyze the possibilities of empowerment of the community La Vainilla through the sustainable use of resources with touristic potential which can enhance the economic productivity of locals.

1.3 Specific objectives

- To define empowerment through resource management and locate it within the discourse of sustainable development
- To critically examine ways in which tourism contributes to empowerment and sustainable development
- To reflect ways of empowerment through tourism in Mexico
- To characterize the region of coastal Oaxaca in general ecological, socio-economic and touristic terms
- To characterize the community La Vainilla in ecological, socio-economic and touristic terms
- To propose a touristic niche for La Vainilla which fits local and regional conditions and competition
- To propose a resources management plan with touristic ends which comprises natural and human resources, and fits the criteria of sustainable development and empowerment as elaborated before

1.4 Hypothesis

La Vainilla has the potential to attract tourists and can participate more actively in the local tourism market in a sustainable way. Long term resources management will enable locals to take advantage of the tourism market without compromising domestic resources use and living standards of locals but instead will contribute to a better use of existing resources and an empowered community.

1.5 Justification

Due to its wide application in different contexts the concept of empowerment differs considerably from one given case to another. Shedding light onto this diversity and then elaborate a proper definition which fits the case study shall contribute to ongoing discussions and demonstrate a inductive way of formulating details of a broader concept. Locate these results within the discourses of social sustainability and sustainability itself will furthermore emphasize the importance of the social aspect which too often is overshadowed by the economic and ecological pillars of sustainability.

Tourism is an economy which can be seen as a solution for less developed regions (Cabrera, 2008) or as a way of how international money enters local ground and tears it apart for the benefit of a few (Barkin, 2000). It shall be shown which kind of planning and organization of tourist services can lead to sustainable development in a rural scenario. Highlighting potential benefits and risks of that development is needed in order to clarify the role of tourism as an agent for local and/or regional development which is a very controversial topic in literature. Furthermore the issues of resources used in tourism and higher pressure over resources caused through tourism will be discussed. The work aims at showing a way of how to empower parts of a given community through its participation in tourism.

Fighting poverty is essential to the concept of empowerment (World Bank, 2002) as well as for tourism as an engine of local/regional development (Byerlee, Diao, & Jackson, 2005). This work thereby is a case study of how poverty can be reduced in a given case under specific conditions. Furthermore it looks at Mexican, rural communities, which host most of the country's poor and lack chances for economic development. Proposing possible solutions for the problems found in La Vainilla is also about ways of creating additional income sources in poor, rural contexts in Mexico.

First Part – Theory

In the following three chapters the theoretical framework of this work will be displayed. It starts with the overall topic, empowerment, continues with tourism, as a potential engine for empowerment, and finishes with the resulting approach of this work and the methodology which was applied during field research and elaboration of the written work.

Empowerment is an often used term and will be clarified in chapter two, exposing actual variety in its application and specifications which are fruitful in the given case. The subject will be shown as embedded within the discourse of sustainable development. Its relation to social aspects of sustainability and resource management will further specify the empowerment concept which will be used within this work.

Chapter three will demonstrate what potentials and problems come with the tourism industry. A general introduction to this set of economic activities, its variety, impacts and dimensions, will be followed by a critical reflection in order to contrast official ambitions with negative examples. It will be discussed how tourism can be sustainable, how it may (dis-)empower communities and what role resource management plays in this industry which too often is called the industry without chimneys (Lee, 2011).

Resulting from the previous chapters the theoretical approach will be elaborated in chapter four. It will position the empowerment and tourism considerations in a wider scientific context and display the general conceptualization of this thesis.

A selected discussion of research designs and methods will serve as a foundation for the final display of the field research methods as well as the information processing in the written work. The methodology is part of chapter four.

Chapter two: Empowerment - People and resources in the long run

The chapter gives an overview of empowerment as a part of the sustainability discourse and as a concept with many potential aspects. After locating it within the broader scientific and historic frame proper definitions of empowerment will be elaborated, following critical discussions of the concept. Empowerment is treated as a two-step: at first the problem assessment which passes through various stages, and secondly the empowerment program which aims at bringing changes about which shall fight the identified problems. The chapter ends with a summary and a data demand overview.

2.1 Sustainable Development

The concept of sustainable development goes a long way back to the 1970s when the Club of Rome published its “Limits to growth” (1972) and thereby initiated concerns over a potential global collapse, which were the first signs of a new approach towards economic development which later on culminated in the concept of sustainable development. The report foresaw the breakdown of our social and economic system due to overexploitation of natural resources (Meadows, Meadows, & Randers, 2004). With the call for urgent changes this document contributed to international efforts which aimed at formulating a new strategy and create a more profound understanding of the links between economic, social and environmental processes. The Stockholm United Nations Conference on the Human Environment followed the very same year and can be marked as the first milestone in terms of environmental policies and actions. The United Nations Environment Programme was founded and follow up conferences were held, trying to come up with alternatives to the predicted global collapse. In 1987 business as usual found its counterpart in “Sustainable Development”, which put the spotlight on long term management of resources instead of short term profits. Overexploitation can be avoided when economic development “meets the needs of the present without compromising the ability of future generations to meet their own needs.” (United Nations World Commission on Environment and Development, 1987, S. 16). Five years later the concept of sustainable development was the essential criteria for the elaboration of the *Agenda 21*, which was an action plan for changing development as usual towards sustainability (United Nations Division for Sustainable Development, 1992).

Sustainable development comprises three aspects: economic, environmental and social. Only if and when three-dimensional benefits result from development it can be labeled as sustainable, meaning that it generates profits, does not overexploit resources and contributes to social equity. As this concept is very broad and can differ from a given case to another, it was corrupted quickly and serves for every purpose nowadays. Virtually every business claims to be sustainable these days, as the public discourse, especially in Western Europe and Northern America, demands such statements.

Several indicators have been set up in order to measure environmental impacts of economic development, protecting natural resources in the long run, but less attention has been paid to the social aspect of sustainable development.

2.2 Social Sustainability

Throughout the evolution of the concept of sustainable development the social side to it was ignored, underestimated or considered only indirectly (Colantonio, 2009; Foladori, 2002). While environmental concerns found their way into the discourse quickly, social sustainability came late and off to a bad start. It was pictured as an attachment and threat to environmental sustainability: the poor and powerless made use of their resources in an unsustainable way and their demographic growth was rampant. Poverty was seen as a cause for environmental degradation and needed to be fought, not for the sake of the people but the environment.

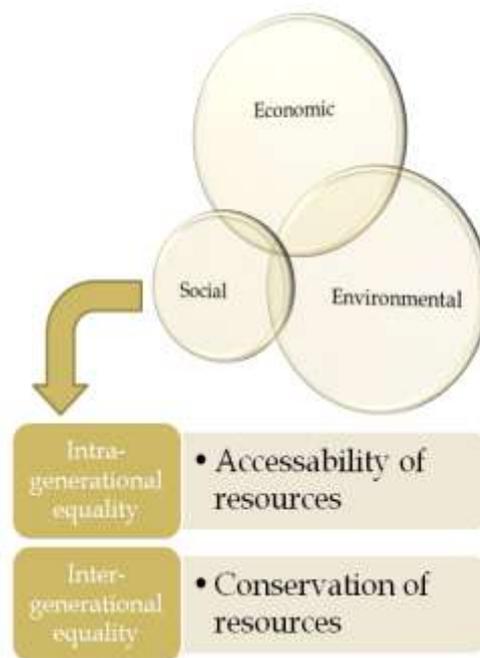


Figure 1: Social Sustainability in Resource Management according to (Meadows, Meadows, & Randers, 2004) and (Foladori, 2002), Elaboration by Author

The reasons for this misconception were threefold: Mankind was described as one entity, the man-nature relation was understood as a technical one and criticism of capitalism did not enter the main discourse (Foladori, 1999). Human societies were simplified when their environmental impact was discussed in the beginning, social stratification, unequal means of production and access to resources were ignored. Once that changed the poor were seen as a threat and the solution was considered to be of technical nature. Thus the looming overexploitation of natural resources should be avoided by technical improvements, meanwhile social relations inherent to production modes remained unquestioned. Specific local solutions to problems were ignored as well as the capitalism related production modes and social relations which result in poverty and unsustainability (Foladori & Tommasino, 2000).

The definitions of social sustainability differ according to the authors' point of view but poverty, demographic growth, weak social participation and related issues can be considered the most

important obstacles to social sustainability. Themes like education, health and safety can be ranked secondary (Colantonio, 2009). In fact the discourse is not part of the main stream sustainability discussion and thereby remains mainly in the background, focusing on criticizing public and academic ignorance. Actually social sustainability was a crucial issue from the very beginning but tended to be ignored or overseen by decision-makers. Intra- and inter-generational equality was portrayed as an ultimate goal in *Limits to growth* (Meadows, Meadows, & Randers, 2004) but technical understanding of human-environment relations favored other means to reach the aim of conserving natural resources for future generations. Figure 1 shows these aspects as well as the traditionally weak role of the social aspect in sustainability.

Nowadays the social aspects of development are taken into account and established as a goal *per se* but criticism remains as fundamental issues such as capitalistic production modes are not really pulled into the spotlight when talking about sustainable development.

2.3 The basic concept of empowerment

The term empowerment comprises a huge variety of approaches which have basic features in common but differ considerably in their specific goals. The concept is deployed in political, socio-cultural, economic, gender and health & education related contexts. The overall definition of empowerment allows for such an ample usage and calls for further clarification in the process of defining the term so it can be applicable for this case study. Starting with a general definition is whatsoever necessary in order to create an understanding of this concept.

“In its broadest sense, empowerment is the expansion of freedom of choice and action. It means increasing one’s authority and control over the resources and decisions that affect one’s life.” (World Bank, 2002, S. 11)

The increase in authority points to the first crucial objective when working about empowerment: define who needs and/or wants more authority and control over resources and decisions. In order to increase authority one must find the lack of power first. Normally people who face a severe restriction of their authority (in terms as described above) share two significant characteristics: Voicelessness and powerlessness are shared by all poor and legitimate their call for more freedom of choice and action (World Bank, 2002). Poverty always justifies empowerment, although not all empowerment efforts must be aimed at eliminating poverty. Alleviation of poverty is therefore always a form of empowerment. This work is concerned with empowerment of the poor – as will be shown further on – and therefore the theoretical reflections will follow that path.

In order to identify the poor and their need for empowerment one has to examine their assets and capabilities. Assets are material, physical or financial, including land, housing, livestock, savings etc. Capabilities are inherent to persons and enable them to make use of their assets, this includes good health, education etc. (World Bank, 2002). The results of such a problem assessment serve as a basis for determining in which way and by which means people shall be empowered.

The process of empowering the voice- and powerless needs to comprise four core elements, according to the World Bank (2002):

- Access to information
- Inclusion and participation
- Accountability
- Local organizational capacity

This approach reflects an institutional point of view, referring mainly to national and regional policy making but has certain value for this work. Accountability of officials, employers or service providers will not be of relevance in the first place in this case study as the focus is more on the community than on institutions working or collaborating with the community. Internal accountability, between families or individuals, is of interest at a certain point but will be labeled reliability as this reflects more clearly the unofficial nature of local social relations. It is about local ways of building trust and possibly monitoring each other (Ostrom, 1990).

Information access is essential to any empowerment as more information is an increase in capabilities in the form of amplifying one's knowledge and thereby possible ways of making use of available assets, it leads to less dependence and enhances one's authority. Participation is the process by which persons try to establish their influence and thereby improve their control over resources and decisions. It also comprises physical presence of the concerned during the empowerment process which results from the proper promoting and designing of the process. Only if people see the use of participating in an event they will join it. Informing potential participants about events and informing them in the right way plays a crucial role in the process of empowerment. Organization is essential for any participation in an empowerment program as all persons involved need to clarify how to work together during the program and after it is finished. Despite that organization is important to multiply positive effects of capabilities and assets within a group and between different groups. This becomes even more important in times of crisis when mutual help results from organization and leaves everybody less vulnerable and with more possibilities to withstand shocks and setbacks. Better organization is always an increase in social capital and therefore desirable.

2.4 Empowerment approaches and aspects

As the concept of empowerment is very broad and comprises many different approaches a selected overview must be given. The following considerations are complementary to the above display of the general concept and acknowledge the need for further details due to the fact that the case study is concerned with development in a specific rural community. A comprehensive theoretical approach for this work will be defined in chapter 2.5.2.

One crucial feature for empowerment processes was missing in the World Bank description which is due to its policy perspective. Taking a more people-centered point of view results in the obvious importance of intrinsic motivation of the people involved (Avelino, 2009). Only if the involved persons have the honest desire to change things empowerment has a chance. If plans are implemented by outsiders and the persons to be empowered try to live up to external requirements the long term success of such measures becomes highly doubtful.

The concept of community empowerment comes with some details which result from its specific nature. Above all it calls for a differentiating view on community as a composed unit which should not be simplified as a homogenous entity but rather be analyzed as a heterogeneous group with a

variety of interests and abilities (Laverack & Wallerstein, 2001). This point highlights the importance of participation: as every part of the community has its strengths and weaknesses the researcher has to formulate a flexible concept which allows for the incorporation of persons with different assets and capabilities in order to allow a broad social participation. Thereby different groups can complement each other and contribute best to the overall development of the community. Leadership is an aspect which has to be analyzed as community inherent power relations cannot be ignored when trying to mobilize people and make them reflect their organization forms, its strengths and weaknesses. In the end the participants have to organize themselves, their interests and find ways by which they can reach goals they have in common. The involved facilitator who can be an active researcher or a social worker/activist cannot do more than formulate proposals which may be useful to the community. The usefulness of such proposals depends on the insight gained while working with the community, and especially a good understanding of local power relations contributes to proposing organizational forms which are more likely to be accepted.

Another crucial aspect is control over change. As empowerment is about changes in assets and/or capabilities it has to be made sure that the people involved are and later on remain in control of these changes (Scheyvens, 2005). Local changes may involve outsiders who enrich the process with their knowledge and/or capital but it also poses a threat to the existing system and its function. External influence may be greater than estimated in the beginning and overpower local efforts to steer development. The outcome would be disempowerment as the result would leave residents with changes that may look positive – like a higher economic activity – but do not lead to the desired improvement – better living standards through higher income. Besides such avoidance of negative counter effects the exercised control over changes brings benefits in the forms of better organization and an increase in self-esteem as the community is pushed to organize itself in the process of controlling the effected changes (empowerment) and gains confidence while doing so. Thus future development within the community will be approached in a more professional way once respective experience was gained and thereby control over the empowerment process and its outcome determines not only the success of a given project but increases the community's ability to cope with changes in the long run.

Along with control comes another aspect which determines the quality of empowerment: flexibility and independence. Empowerment gives people a chance to accomplish more in a given context but once this context changes the successful changes may be put in jeopardy, therefore empowerment should aim at giving people a flexible base of means to improve their situation and not become dependent on one source of well-being (Barkin, 2005; Laverack, 2001). In order to decrease the danger of dependence on externalities various connections to the exterior may be serving as a net of possibilities or the involved can consider ways of how to disconnect some of their activities from external processes and systems, for example from the international economy and its price fluctuations (Barkin, 2005). This would lead to more autonomy (from which results more control) but leaves other opportunities out. Hence the proposed form of empowerment must be taken into account also as a way of relating the community with its exterior and interior. To which extent one or both kinds seem benefiting depends on the nature and interest of the community and its parts.

A more complete set of criteria for the design of an empowerment program comprises the following aspects which should be considered when assessing the situation and elaborating a program plan (Snetro-plewman, 2007; Laverack, 2001; Laverack & Wallerstein, 2001):

- (1) participation
- (2) leadership
- (3) resource mobilization
- (4) problem assessment
- (5) links with others
- (6) organizational structures
- (7) critical consciousness
- (8) the role of outside agents
- (9) program management

Participation needs motivation and is a condition for every bottom-up empowerment approach but contains a certain contradiction. As the process aims at improving the situation of the voiceless it needs to hear their call for empowerment. The most marginalized groups normally do not participate easily in social programs but persons with better education and more freedom of choice do (Laverack & Labonte, 2000). Facilitating participation of the most marginalized becomes a task of the program organizer in order to overcome this empowerment participation dilemma.

Leadership becomes more important the further the program goes. At the level of small groups leadership should show up in order to assure responsibility and serve as a basis for effective organization of different parts of the community which is an improvement in organizational structures and which is important as it strengthens the community's role when creating links to others (Snetro-plewman, 2007).

Resource mobilization is a condition for empowerment, an indicator of available skills and organization, and a goal in itself which shall be accomplished by the program (Laverack, 2001).

Already at the stage of designing an empowerment program locals shall participate in formulating the problems they face, and later on also in managing the actual process (Laverack & Labonte, 2000), only that way a real control over the process and its outcome can be accomplished. This leaves the outside agent with the role of a facilitator, avoiding dominance and giving space the community can use to develop its own ways of empowerment (Laverack, 2001).

A critical consciousness results from good access to information and participation. As locals gain a profound understanding of the underlying issues of the program they become able to reflect their actions and locate themselves within changing contexts. This allows for flexibility when facing future changes and challenges (Barkin, 2000; Laverack, 2001).

Each of the mentioned aspects is of varying importance according to the phases of empowerment processes. A given empowerment program realized by an outside agent within a community normally aims at taking development to the next stage. A full empowerment which gets to the very last phase would need various programs and takes a lot of time. The first phase is individual empowerment and the last level to be reached is the community taking political action (Laverack, 2001) like shown in figure 2, or the community engaging the government in an effort to strengthen itself in its own ways (King & Cruickshank, 2010). As it will become clear in this work, all phases share certain characteristics and therefore are considered to be interlinked.



Figure 2: Empowerment levels according to Laverack (2001)

Summing up empowerment one can differentiate between problem assessment, process and outcome. While the first determines who should be empowered in which way, the second is about methods and characteristics of methods through which empowerment shall be accomplished, and the third is concerned with the changes brought about. As this work comprises only analysis and the formulation of a proposal – which has to consider characteristics of the empowerment processes – the actual outcome cannot be described but its desired characteristics will be considered in the proposal.

2.5 Defining empowerment

At this point it becomes necessary to clarify which empowerment approach this work will apply in order to formulate specific objectives and ways to measure it during field research. The following specifications are due to first field trips and served as reference for the in-depth research conducted in 2012. According to results from informal interviews and first data collection the appropriate empowerment approach for this case was defined, taking into account the characteristics of the place, its inhabitants and the previous identification of problems they are facing, that is: causes for few/ insufficient assets and capabilities. Figure 3 exposes the results graphically. Making the community part of the problem assessment process is one criterion for creating a useful analysis that serves the elaboration of an empowerment program (Laverack & Labonte, 2000). In the following it will be defined in which terms the in-depth problem assessment will be carried out later on.

Note that the general concept of empowerment can be applied to a vast variety of academic topics – such as gender equality, education, health care, citizenship, political organization, cultural revitalization, human rights etc. (World Bank, 2002) – therefore the following selection was a necessary first step in order to clarify the empowerment focus taken throughout the work (theoretical differentiation) and to guarantee its appropriateness for field research and data collection.

2.5.1 Defining the problem assessment: Food security, poverty and social organization

The assets and capabilities which are examined belong to the following empowerment categories: food security, economy and social capital.

“Food security exists when all people, at all times, have physical and economic access to sufficient safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life.” (EC-FAO, 2008)

Being active and healthy is obviously important and maybe the most crucial capability of all as it is the basis for good development and an indicator for self-sovereignty. Food insecurity is an expression

of urgent necessity for empowerment; hunger and malnutrition are underlying causes for poverty (EC-FAO, 2008). In the long run the interrelation between poverty and food insecurity leads to a poor physical and cognitive development and thereby decreases people’s capabilities and chances for improving their situation. Also short term but regularly food insecurity such as seasonal deficit of nutrition has lasting impacts on personal development especially for young children. Realizing one’s full potential is only possible when food insecurity is eliminated. Access to food and the quality of the actual diet are the indicators through which food security can be assessed.



Figure 3: Defined problem assessment, elaborated by author

In the context of this work economic empowerment can be translated into poverty alleviation which is directly linked to food security and general well-being. It is in itself a topic of empowerment and is part of food insecurity. People suffering from food insecurity are poor in most cases and the poor are also the most exposed to the threats of hunger and malnutrition. In the given context both aspects play an important role as poverty in its overall effects and especially in its contribution to food insecurity is investigated. Poverty is a lack of assets and/or capabilities in economic terms and results in the non-purchase of food or other items which leads to urgent, desperate efforts aiming at obtaining the necessary items for one’s well-being. It is the direct expression of missing control and authority over resources and decisions as the situation in which the poor are forced to act for their own good puts them in a weak negotiation position, does not allow them to invest in long term benefits and choose from a variety of options. The need for economic empowerment is reflected through the income-labor situation, the possession of goods and the way these goods are put to work for one’s well-being (Alsop & Heinsohn, 2005). Economic empowerment which is to be socially sustainable has also to take care of just distribution of revenues when various stakeholders are involved (Scheyvens, 1999).

Social capital is a vast topic which is about social relationships and the glue that holds it together (World Bank, 2011) and can be specified for our case as follows: Interrelation and –action between the community and the eco-tourism cooperative is of interest to this work as the potential for broad participation in economic development (tourism) shall be analyzed. The relation of empowerment and tourism (cooperative) will be displayed in chapter three. Besides that communal cooperation as

an expression of sense of community and ways of helping each other out, for example with intensive labor tasks, will be looked upon as an indicator for social strength (or weakness) which has to be considered when designing the proposal which aims at increasing collaboration (Laverack, 2001).

The following definition is of holistic nature, allowing the investigation of various factors that contribute to the identified problems which comprises various aspects at different levels as shown in figure 4. It does not take one path to explain the entire situation but looks at a variety of components which make up the actual scenario. By doing so this work applies the livelihood approach which offers a broader foundation for the incorporation of contextual settings and various driving forces (Krantz, 2001). It has the potential to generate a more profound understanding and thereby formulate solutions which are apt for the given case. Livelihood analysis involves natural, social, human, financial and physical (build) capital (FAO, 2006). The first one comprises access to natural resources but not necessarily the ownership over these resources. The second one refers to internal and external organization and relations, thus including social cohesion. Human capital is about health, skills and knowledge, going beyond the mere concept of capabilities. Financial capital relates to capacities of investment whereby it is a facilitating factor but not a direct expression of economic well-being. Physical capital is mainly a contextual factor as it comprises infrastructure which enables business to flourish but despite that serves many purposes.



Figure 4: Problem interlinkages, Elaboration by author

The resulting definition for this work is:

The empowerment problem assessment takes into consideration the distribution of natural, social, human, financial and physical capital as far as it determines food security and economic well-being. It identifies (groups of) persons who are in need for empowerment.

2.5.2 Defining empowerment program criteria

The results from the in-depth problem assessment will serve as a foundation for the elaboration of the proposal which aims at decreasing poverty, food insecurity and increasing social cohesion in terms of cooperation in tourism development. The third part of this work is about a potential way of reaching these goals. At this point the characteristics of such a proposal shall be displayed. The following definition and program design results from the above discussion of different empowerment approaches, regrouping related aspects due to their interlinkage and thereby enabling easier judgment regarding the prospects for the successful implementation of a potential empowerment program.

The definition of empowerment program within this work is as follows:

The empowerment program aims at the expansion of different forms of capital forms which allows for food security and alleviation of poverty. It has to be fueled and controlled by the community.

In order to fulfill its mission the empowerment program needs some foundation to build on and has to be able to create certain changes. Due to the characteristics of a given case the pre-conditions and goals of a program vary accordingly. All the factors can be integrated in three main categories. Aspects are whatsoever interdependent and cannot be separated in reality.

2.5.2.1 Participation and internal organization

This category comprises organization within the group, the motivated participation of the involved, leadership among them and reliability of cooperation. All these aspects are tightly connected and can influence each other significantly. It is about the existence and quality of social relations. Some of these aspects can be analyzed during field research, such as social organization and leadership, meanwhile others can only be estimated, such as motivation, participation and reliability.

2.5.2.2 Knowledge and resources mobilization

All material and intellectual input is considered under this category. It comprises available and accessible information about the concerned topics and thus is the base for an enhancement of capabilities of the involved. Problem assessment and a critical consciousness are also based on a profound understanding of the situation people are living in and of ways which may improve their well-being. This enables a flexible steering of development by locals who can adapt to changes and be in control of important processes and decisions. Resource mobilization is a pre-condition for any empowerment program and its goal at the same time. The outside agent tries to improve local mobilization if resources and at the same time he needs locals to mobilize resources in the first place in order to get the program started and things moving.

2.5.2.3 External organization

This category comprises all aspects related to the interactions of the participating group and outsiders, which may be other organizations, individuals, communities or the empowerment program agent. Links to others are very important as further resources can be accessed and efforts may be multiplied through larger cooperation. Maintaining control over changes and development is not only based on knowledge but also on proper handling of outside influences, during the program

as well as afterwards when working together with others. How a group confronts an outside agent who realizes an empowerment program is also essential for the final outcome and is linked to leadership and internal organization.

2.6 Sustainable resource management and empowerment

The role of resources within the empowerment framework was already mentioned in the previous section and shall be completed by some basic considerations which shall amplify the understanding of how sustainable resource management should be understood in the given theoretical context.

Resources are assets and thus have to be included in the empowerment analysis. Their mobilization is essential for any development, especially in the case of rural communities making use of their natural capital (Laverack & Wallerstein, 2001). They are assets as they are possessed by someone who makes use of them or they are accessed without being owned. More resources or better access to them are potentials for empowerment. Better ways of making use of them are other potentials and comprise what was labeled enhancement of capabilities which in this case is the actual management of resources and possible processing for economic ends.

Social sustainability in resource management is about intra- and intergenerational equality (Meadows, Meadows, & Randers, 2004), meaning that resources can be accessed by the poor and thereby become the basis for their potential empowerment (Scheyvens, 1999), and that resources are used according to their availability and regeneration rate, which conserves them for future generations. The second point also contains the environmental sustainability for resource management. In order to assess the sustainability of resource management the access to and the carrying capacity of the environment has to be taken into consideration. In addition the actual use of resource has to be examined. If the resource is used, unused, over- or under-exploited determines how management of the respective resources has to change.

The relationship between an empowered community and its sustainable use of resources is mutual in terms of causality. If one causes the other or if one process includes the other or if both sides emerge together depends on the given case and the perspective of the analyst. Generally one may ask: Does an empowered community tends to use resources in a sustainable way or does the sustainable use of resources tends to empower the community? While an empowered community has more freedom of choice as it not plagued by poverty and the resulting urgency of fast responses to actual needs, it can more easily afford to invest in the long term benefits of resource management (Damene, 2008). Communities which face a situation in which resources are scarce may – due to the necessity of the scenario – improve their internal and external organization regarding resource management and thereby become empowered (Barkin, 2000).

2.7 Empowerment Summary and data demand

In the end it shall be summarized where empowerment is to be positioned within the discourse of sustainability and what data demand results from the given definitions. Figure 5 displays the related topics and levels in a graphic form.

The concept of sustainability criticizes business as usual and aims at long term responsibility of present day development in order to conserve natural resources which are the foundation of human activities. To do so economic, environmental and social aspects need to be considered holistically as they are inevitable tangled up in reality. Social sustainability is about adequate access to resources and just distribution of benefits. An empowerment problem assessment looks at people who are suffering from inequality in resource management (access and benefits). Their assets and capabilities are examined and their current situation is socially contextualized, looking for obstacles and possibilities of collaboration. The gathered data serves as a basis for the elaboration of a proposal which will aim at designing an empowerment program in the given context. The role of information, participation, organization, motivation, control and diversification of possibilities are essential for this proposal and have to be investigated as part of the analysis, not so much as an expression of powerlessness but of conditions which determine the nature of a potential empowerment process. As first insights of the actual situation of the community and its members were gained in previous field trips the terms in which the problem assessment will be conducted were already formulated as: food security, poverty and social capital. All three are connected and call for a holistic approach of the proposal as three different topics are part of one entangled problem complex.



Figure 5: Case study topics and discourses, elaborated by author

Table 1 shows the resulting data demand in an overview form. It contains indicators related to the problem assessment, comprising assets and capabilities. Field research results will show which data was available and useful in the given context. The most determinant factors for the problem assessment will be highlighted in chapter nine.

Economy	Food security	Social cohesion
<ul style="list-style-type: none"> • income • income sources • frequency (seasonality) of income • reliability of income • major expenditures • frequency of expenditures 	<ul style="list-style-type: none"> • define food insecurity: chronic, transitory or seasonal • crops planted • consumption of crops • sold crops • food items bought • storage of crops • diet • natural fresh water sources and availability (domestic consumption) • irrigation water sources and availability • portion of purchased fresh water • consumption of fresh water 	<ul style="list-style-type: none"> • persons working/helping out in ecotourism cooperative constantly and temporarily • communal social events • social networks
<p style="text-align: center;">Table 1: Empowerment data demand, elaboration by author, based on (EC-FAO, 2008) (Scheyvens, 1999) (World Bank, 2002)</p>		

Chapter III: Tourism – potentials and problems

This chapter starts with an explanation of the general potential of tourism as a contributor to development, continues with describing its diversity, then displays its commitment to overall sustainability, to social sustainability and empowerment in particular, and the importance of resource management. All these aspects are looked upon critically; negative examples are mentioned to show threats resulting from unsustainable tourism management, so indicators can be formulated in order to measure tourism's contribution to empowerment.

3.1 Tourism introduction

“Tourism is a social, cultural and economic phenomenon which entails the movement of people to countries or places outside their usual environment for personal or business/professional purposes. These people are called visitors (...) and tourism has to do with their activities, some of which imply tourism expenditure. As such, tourism has implications on the economy, on the natural and built environment, on the local population at the destination and on the tourists themselves.” (UNWTO, 2012)

This official definition serves well the purpose of creating a general understanding, while further aspects of tourism are related to specific kinds of this phenomenon and will be described later on when differentiating various tourism forms. First of all its importance and dimensions shall be demonstrated in order to clarify what role tourism plays globally.

Tourism is the fourth most important export industry worldwide, reaching numbers of nearly one billion tourists, which account for an overall amount of 919 billion US\$ in tourism receipts in 2010 (UNWTO, 2011). It makes up for an estimated 7 % of the overall number of jobs worldwide, for 9.2% of global GDP and serves as a facilitator for the development of other sectors, from agriculture to telecommunication (UNWTO, 2012; World Economic Forum, 2011). Especially in remote areas which lack alternative options for economic development, tourism is often seen as the best way of increasing local or regional economy (Pulido Fernandez & Solis Carrion, 2008). Coastal zones are very likely to experience such a scenario, as they often come with natural resources such as biodiversity which make up for the attractiveness of a place but lack other resources (Vorlaufer, 1996). Figure 6 highlights the overall positive development of the tourism industry, including forecasts.

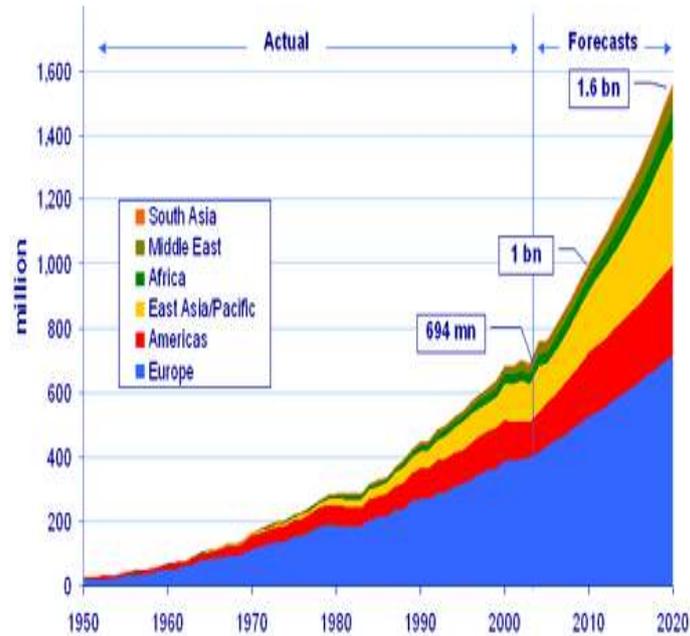


Figure 6: International Tourist Arrivals by Region (million), (UNWTO, 2010)

Tourism is a constantly growing economy but experiences setbacks when global economic trends are negative, like in 2008/09 when the financial crisis struck, and is regionally highly affected by natural disasters like tsunamis and by diseases like swine flu. Despite that the general outlook is very positive when looking at its development over the last six decades.

These considerations and data display the potential role of tourism as a contributor to economic development. How tourism may impact an area negatively will be discussed later when taking tourism's sustainability into account.

3.2 Tourism categories

Tourism can take various forms as it comprises all movement of persons due to their personal or professional intentions. Categories or forms of tourism vary from one author to another, each making his own choice of how to group several tourism forms under one or another category. Comparing literature shows that categories are mainly based on the variety of tourist demands. What the visitor wants or has to do at his destination determines how the respective tourism form is labeled. As preferences and intentions are mostly manifold it is normal that a given tourist participates in more than one form of tourism. A businessman attending a meeting and afterwards visiting the opera is driven by professional and personal motivation. The value of categorizing different forms of tourism lies in its profiling within a competitive context (and in making it manageable in a scientific context). That is needed to meet the customer's demand which in this business is decisive for success. What kind of tourism is offered in a given place depends mainly on the place's touristic resources, competition and the variety of tourist demand (World Economic Forum, 2011; Carbonell, 2008).

Table 2 does not claim to be complete but rather to display some basic differentiations of tourism offers meeting distinctive demand. Tourists and touristic offers tend to cross categories all the time.

Professional/business purpose		Personal purpose		
Active business tourism	Qualification tourism	Cultural tourism	Nature tourism	Leisure tourism
Fairs Conventions Meetings	Research Seminars Congresses	Culinary Heritage Cities	Ecotourism Adventure Wildlife	Sunny beach Shopping Sport events

Table 2: Tourism typology, elaboration by author, based on (Dettmer, 2000; Travel industry, 2009)

Different kinds of tourism will be important when analyzing the regional tourism context in coastal Oaxaca in chapter six. The respective tourist demand in this region will be displayed due to field research and secondary data analysis results. It will serve as a foundation to find La Vainilla’s regional “niche”, its way to more actively participate in tourism by meeting specific tourist demands and by designing offers which fit it.

3.3 Tourism and Sustainability

In the past decades sustainability became a central theme in tourism business with lots of declarations of commitment, agendas and programs resulting. The United Nations World Tourism Organization publishes bulletins about sustainability in tourism on a regular basis, highlighting its contributions to protect biodiversity, to limit climate change, to foster education, to reduce poverty and to contribute to mutual understanding and cultural exchange through its tourism ethics (UNWTO, 2012).

UNWTO defines sustainable tourism as, “tourism that takes full account of its current and future economic, social and environmental impacts, addressing the needs of visitors, the industry, the environment and host communities” (2011). This characterization points to the fact that all forms of tourism can be sustainable, not only a few which focus on a certain demand by eco-tourists. It therefore is an operational mode but not a tourism form or category. As tourism is a major global economy it shares an equally global responsibility and besides that it has a sector specific interest in maintaining its resources, which are the natural and socio-cultural resources of host communities. These resources are the attractions which give each destination its touristic value and are the foundation of the generated revenues. Unsustainable practices threaten the future of host communities and the tourism economy as well (Bartlett, 2007).

Especially in rural areas which lack economic alternatives tourism is seen as a potential engine of regional development when locals are in control of the proposed development but which can be threatened by governmental and big investment interests (Cabrera, 2008; Scheyvens, 2005). Often tourism fails to provide benefits to a broader range of communities due to the creation of exclusive enclaves which concentrate and absorb regional development (Brenner & Aguilar, 2002; Vorlaufer, 1996). Regions like coastal areas often face environmental and social degradation due to large scale tourism development, which sees an expanded infrastructure and dramatic real estate development

pushing local efforts aside and favoring bigger investments (Honey & Krantz, 2007). Five-Star-Hotels may be provided with more than sufficient and generous water supply which results in a lavishly usage of this resource (Barkin & Paillés, 2000). These examples demonstrate that nowadays sustainability may be well established within the official tourism development discourse but its practice is often everything but sustainable. Critical consideration of the means by which tourism development is designed to reach its goals is always necessary. Therefore criteria for sustainability in tourism were developed by a variety of authors and institutions, some focus on specific aspects such as regional hotel business (Brenner, 1999), others aim at taking the entire situation into account (Instituto Universitario de Geografía Universidad de Alicante, 2001; Job, 1996).

The United Nations World Tourism Organization published a guidebook on sustainability indicators for tourism destinations which is a good general framework. It starts with highlighting the importance of adapting the proposed indicators for each destination as the variety of tourism destinations is so vast that the resulting indicators must be able to cover all possible variations. The actual set of indicators is huge, therefore the authors decided to create baseline issues and respective baseline indicators which comprise the most important aspects (2004).

Satisfaction	Revenues	Resource Management	Control
<ul style="list-style-type: none"> • Local satisfaction with tourism • Effects of tourism on communities • Sustaining tourist satisfaction 	<ul style="list-style-type: none"> • Tourism seasonality • Economic benefits of tourism 	<ul style="list-style-type: none"> • Water availability and conservation • Drinking water quality • Sewage treatment • Solid waste management • Energy management 	<ul style="list-style-type: none"> • Development control • Controlling use intensity

Table 3: Tourism Sustainability indicators, (UNWTO, 2004); categories above are added by the author

As this work is focusing on ways to empower a community through tourism development a closer look at tourism’s contribution to social sustainability will be taken, while more detailed information on environmental and economic sustainability will be displayed later on when the respective criteria in Mexico are described as well as the practices of the eco-tourism cooperative in La Vainilla.

3.4 Tourism, social sustainability and empowerment

Regarding social sustainability the UNWTO defines its goal as “social equity and cohesion” (2011), which were already discussed in chapter II. As tourism creates opportunities for local communities through direct or indirect employment it avoids their migration towards cities and adds quality to their lives while staying in place. Special focus is laid on the poor as the UNWTO tries to enhance the number of jobs given especially and intentionally to them (2011). In 2010 a total of 49 local projects are supported by the UNWTO, other UN bodies and governmental institutions, aiming at reducing poverty through tourism development (UNWTO, 2011).

Empowerment through tourism involves all 4 UNWTO baseline issues categories: revenues, control, resource management and satisfaction. Alleviation of poverty by means of tourism includes a fair

distribution of revenues (intra-generational equity through economic benefits) and a certain stability of income (seasonality). Control is important in any empowerment approach as the beneficiaries must be able to direct the desired development (development control) and they must be able to limit exploitation of resources (inter-generational equity through control of use intensity). Satisfaction of tourists is an expression of economic success and an indicator for long term policy. Satisfaction of host communities and effects of tourism on their lives are pointing to the socio-cultural impacts that tourists bring about. Limiting and steering them is another form of control and is necessary if the community should be the real beneficiary of tourism (UNWTO, 2004). (see 3.5 Tourism and Resource Management)

At this point it must be mentioned that the UNWTO guidebook does include empowerment as a specific topic but in a way which is of no use to this work as it only considers information about sustainable tourism as a source of empowerment. This results from the argumentation that a sense of ownership and responsibility is the desired goal, and which is reached by awareness and participation, both are thought to originate from information about sustainable tourism, its concept and benefits (UNWTO, 2004, S. 83). Other indicators do serve for certain purposes of this work as they measure how tourism affects assets and capabilities of host communities.

After it was mentioned how tourism as a global industry can contribute to economic development, thereby offering means of fighting poverty, which can result in less food insecurity, and how its multiplier effect can positively impact agricultural production, the exact opposite shall be mentioned as well. Tourism can help fighting poverty and food insecurity, and thereby empower people, but it has the same negative potential. Food security may be threatened due to rising food prices in touristic destinations; the overall available food for locals may decrease due to increasing touristic demand and gastronomic offers may ignore local production but prefer more exquisite, exotic food and thus dilute local farmer's position (Scheyvens, 2002). As the creation of jobs is surely a contribution to economic development, the quality of jobs, the related income and control over development are critical points to the potential benefits. The majority of jobs in tourism are low qualification jobs resulting in little paychecks while professionals are often outsiders (Vorlaufer, 1996). This means jobs are accessible to almost everybody but enhanced knowledge has to be accumulated by locals in order to remain in control at the point when tourism operations become more professional. A different task in areas with little educational infrastructure, which are often economically weak areas, which see tourism as the major potential for development. Badly paid local employees who feel alienated from their home which is flooded by tourists, who see life as becoming less affordable with every day and outsiders managing the real business, that is disempowerment through tourism.

3.5 Tourism and resource management

This work is focusing on what role resources and its management play in tourism considering its potential contribution to community empowerment. This means intra- and intergenerational equity in access to touristic resources. It involves various types of resources and different groups which should have a fair access. Within the community different households have different access to resources and tourists as a group have different access than locals do. The variety of resources concerned results from different uses. Table 4 displays basic differences between resources, their utilization in tourism and gives some examples. Resources may fulfill more than one function.

Consumptive	Esthetic	Activities	Infrastructure	Transport
Water Food Energy	Landscape beauty Culture	Wildlife (watching) Lagoon (boats tour)	Construction material Land	Fuel
<p>Table 4: Resources in tourism, Elaboration by author, based on (Millennium Ecosystem Assessment Board, 2005; Honey & Krantz, 2007; Brenner, 1999; Bartlett, 2007)</p>				

Tourism’s commitment to manage the respective resources in a sustainable way differs considerably. Resources with esthetic value are normally taken for granted, so tourism is “free-riding” on their benefits, not sharing income with local land stewards who maintain these resources (Groot, 2011). Activities conducted by tourists are often linked to esthetic functions but normally involve some financial benefit for locals, like payment for a guide or an entrance fee. Sustainable tourist activities are characterized by a limited amount of tourists allowed (carrying capacity) and by certain ethical conduct (minimum impact attitude). Infrastructure and transportation have huge impacts locally, regionally and globally. Sustainable housing and alternative energy sources for transport are two ways to reduce negative implications which come with these parts of tourism (UNWTO, 2011).

Special attention has to be paid to consumptive resources as tourists and locals consume them simultaneously. The threat lies in a growing demand on the tourist’s side which makes it more difficult for locals to purchase basic goods for their everyday life. The result is an unequal access to resources, or disempowerment through tourism. Water and energy are included in the UNWTO baseline issues but food is not (2004). That is due to the fact that tourism is rarely seen as a threat to food security, although rising costs of living are seen as part of the phenomenon.

Community empowerment through resource management in tourism is concerned with groups of people having access to resources which are sold to tourists which may either be consumptive or activity related resources.

3.6 Tourism: Summary and data demand

In this chapter it was displayed that tourism is a major global industry which can bring economic development to poor regions. What tourism is and does, depends very much on the form of tourism in each case as practices vary considerably and therefore their impact as well. Baseline issues for evaluating the sustainability of a given tourism form are always the same, although the respective indicators may vary. Tourism’s ways to contribute to empowerment result manifold.

The role of tourism in this work is threefold, it has to be analyzed:

1. What is the actual tourist demand and offer in Coastal Oaxaca?
2. What is the actual tourist demand and offer in the community La Vainilla?
3. How can La Vainilla improve its touristic offer and thereby contribute to its own empowerment?

All aspects have to take into consideration the sustainability of tourism operations, both the actual ones (point two) and the potential one (point three).

In this work tourism is taken as a possible means for community empowerment in La Vainilla, so it must be analyzed due to its potential contribution to improve social cohesion, to reduce poverty and food insecurity. This involves the present eco-tourism cooperative (see chapter 7.10) and the additional touristic activity which will be proposed (see third part).

The resulting data demand overview for analyzing tourism is as follows in table 5. Note that the questions result from the above discussions and that their utility for this case will be evaluated later on. The specific nature of the case study may lead to alterations of the theory based table.

For Coastal Oaxaca	For La Vainilla	For the proposal
<ul style="list-style-type: none"> • Which different tourism forms are present? • La Vainilla’s cooperative is located in which category? Does it considerably differ from the rest? • How many competitors are in the same category and how do they compare with La Vainilla? 	<ul style="list-style-type: none"> • Who participates in the tourism cooperative? (social cohesion) • Who has access to touristic resources? • Who benefits economically? • How does the cooperative comply with sustainability indicators? • How is food security affected? 	<ul style="list-style-type: none"> • Who could participate in proposed tourism activity? • Who would have access to the respective touristic resources? • Who would benefit economically? • How does the proposed activity comply with sustainability indicators? • How would food security be affected?
<p>Table 5: Tourism data demand, elaborated by author, based on (UNWTO, 2004; Dettmer, 2000)</p>		

The sustainability indicators are related to the above mentioned UNWTO baseline issues and the Mexican norm for eco-tourism cooperatives nmx-aa-133-scfi-2006 (SEMARNAT, 2006) which will be considered later on. Income related aspects are included in that norm but are mentioned here in order to emphasize them. Aspects related to food security are considerably simple and rare in tourism sustainability concepts but are of huge importance for this work and will become more relevant within the third part, where the respective aspects will be given more attention.

Table 6 shows how tourism can alter empowerment related factors which were discussed before. Note the general character of that synthesis which uses the main pillars of livelihood descriptions and four major factors of tourism which have considerable impacts and are related to the above mentioned sustainability criteria.

Tourism development	Employment	Visitors	Regional development	Resource consumption
Empowerment of locals				
Natural capital	Facilitating	Shared use of resources	More competition	Higher pressure
Social capital	May challenge traditional structures	Enhanced self-esteem or alienation	Loss of control Alienation	-
Human capital	Enhanced capabilities	Enhanced soft skills	Better social services	Threatened access to resources and resulting health problems
Financial capital	Income	-	More credits but overwhelming external investments	-
Built capital	-	Higher usage	Better infrastructure	-

Table 6: Synthesizing tourism and empowerment, elaboration by author

Chapter four: Approach and Methodology

The chapter comprises two parts: the theoretical approach resulting from the previous chapters and the methodology which was applied during field research. Chapter four therefore serves as the connection between conceptual foundation and appliance in field setting.

4.1 Theoretical approach, conceptualization for thesis

The ultimate goal of this thesis is to formulate a proposal which shall carry the possibility of community empowerment. This means it is concerned with designing a process which brings about positive change for the people concerned. From that purpose results the necessity of analyzing the actual situation of the community and its parts, and to display the processes which led to the actual state. Only by understanding how the community adapted to its social and natural environment in the past allows for a proposal which fits the historical characteristics of the case study. One cannot formulate a promising proposal when not knowing about case specific factors which influenced the outcome of past processes.

The actual situation of the inhabitants of La Vainilla is taken as the outcome of previous processes, both internal and external. Internal changes have to be considered as the community is not an entity but a heterogeneous, dynamic complex (Laverack & Wallerstein, 2001). External changes have to be outlined in their effect on local conditions which allows to understand the situation of La Vainilla and makes it possible to compare its case with other cases of rural communities in Mexico. Both dimensions are interrelated, mainly in the way that external change causes internal change (Steward J. H., 1972; Steward, Steward, & Murphy, 1977).

How a community adapts to changes in its social and natural environment (internal and external) is typically examined by cultural ecologists. This school of anthropology dates back to the post world war II era, when John Haynes Steward published his "Theory of Culture Change: The Methodology of Multilinear Evolution" in 1955. Details of the original concept are mostly outdated today but the general approach still finds many researchers willing to adopt it to present day situations and processes. That is possible because Steward applied his theory to all kinds of societies: hunters and gatherers, farmers, nomads etc. (Steward, 1972).

For this case study the external influences can be divided in three classes: global, national and local. The first two and their interplay will be displayed in chapter five, while local external influence will be portrayed in chapter six. The description of La Vainilla in chapter seven will reveal internal (past) processes which result in its actual situation.

All these aspects come with a special focus on tourism as it is the chosen means of empowerment for the community, meaning that engagement in tourism is seen as a way to adapt to the socio-economic environment by making use of the local natural environment and social conditions.

4.2 Methodology: Designs of research project

A variety of different kinds of research designs can be differentiated in scientific literature and at this point a brief overview shall be given in order to be able to demonstrate later on what the overall objectives are and how they can be accomplished by the chosen design.

First of all it has to be outlined how qualitative and quantitative research design aim at different outcomes. Qualitative research can be described as an in-depth description and a search for new ideas and concepts while it often does not provide objective and comparable data as it strongly involves subjective interpretations. This comparable data is generated by quantitative research which looks to determine all variables involved and run tests in order to affirm a given theory or not. It may also be descriptive when samples of large groups, such as the population of a state, are described in demographic terms. Compared to descriptions in qualitative studies this method does not provide profound understanding of why things are the way they are, but only gives general statistic information. The well-defined limits and constituents of quantitative research make for its comparability while qualitative research generates understanding and highlights the uniqueness of a given case. (Lowhorn, 2007; Flick, von Kardoff, & Steinke, 2000)

4.2.1 Designs of qualitative research project

Qualitative research design can take various forms, among them: case studies, comparisons, analyses of systems or processes (Flick, von Kardoff, & Steinke, 2000). A case study may be focusing on a community and certain aspects of it, depending on the research question. It is a design which normally involves closer contact with the case, its concerned and affected people. The historical uniqueness of the investigated case is displayed in order to generate a profound understanding for the actual and past situations and processes. The description of the case can be very thick in order to provide the reader an intimate view into the investigated case, as if he or she would have been in the field as well (Geertz, 1973). With these advantages comes the poor ability of case studies to serve for generalization, as the resulting descriptions and explanations are very specific.

Comparisons involve at least two cases which are investigated with the same focus. The descriptions include processes and situations which lead to different outcomes so the difference between the investigated cases and be explained. Normally comparisons are not as deep as case studies as the researcher has to divide his attention and resources between the given cases. Comparability and contribution to theory evolvement may easier be accomplished than through case studies but happen to be more general and less solid due to missing profound examination.

System or process analyses are focusing on constituents, their development and interaction. The more detailed the analysis is the less detailed it gets regarding secondary factors which contribute to the investigated issue. Causality is at the very heart of these research designs, lacking a profound holistic description of the overall factors.

4.2.2 Designs of quantitative research project

Quantitative research designs are experimental validation of a given theory or statistical research. Comparability is very high as these methods are thought to be objectively valid, that means that a second investigation which follows the same methods and examines the same variables should come to the same results. So interpretation and the personality of the researcher play no role as the procedure is considered as having a technical nature which leaves no doubt about the results. Experiments are characterized by the limitation of variables and the environment. The effect of an independent variable on a dependent variable is investigated under supervised and controlled circumstances, such as a laboratory. Statistical research may be a census which examines a representative sample of the entire population and draws general conclusions on population trends. (Lowhorn, 2007; Trochim, 2006)

4.3 The applied research design

This brief overview clarifies that in the case of this work a case study is being realized. The goal is to create profound understanding of the concerned community, its situation in the regional (tourism) context, the way people manage their resources and the problems they are facing. Only the case study research design can deliver the necessary information, can draw a holistic picture of the complex and multi-dimensional situation of the inhabitants of La Vainilla. This includes the analyses of certain processes like the agro-economic adaption to changing circumstances, such as the green revolution, but these analyses are only a part of the whole scenario which is investigated. It is not a process analysis as the focus of this work lies on describing the case profoundly, involving all or almost all relevant processes, factors, situations and interests. The setting for the investigation is therefore very heterogeneous in terms of variables and is the opposite of a controlled laboratory work.

4.4 Methods overview

Research methods are divided into qualitative and quantitative ones. Both kinds will be displayed and discussed in order to provide a sound basis for the chosen methods of this work. A brief explanation of the concept of triangulation will round up these considerations.

4.4.1 Qualitative Methods

Various methods exist for qualitative research and according to the objectives of investigation, the available resources, quality of access to the field and the preferences of the researcher certain scientific tools are more promising than others. A short overview shall serve as a basis for the later on justification of the chosen methods which were applied in the field.

Interviews, observation, focus groups, mapping, literature review and field notes are only a few of the available methods used today but surely they are among the most popular ones (Mack, Woodsong, MacQueen, Guest, & Namey, *Qualitative Research Methods: A Data Collector's Field Guide*, 2005). Interviews are probably the most commonly used method in qualitative researches as they provide social participation in the process of investigation and enrich the results with data from the actors themselves. Getting the point of view of the involved and make their voices heard is fundamental in all researches involving social aspects. Various kinds of interviews exist; among them are biographical, historical, standardized, semi-structured and open interviews. The purpose of questioning and the interviewee are the factors determining which kind of interview is most apt in a given case. (Mack, Woodsong, MacQueen, Guest, & Namey, *In-Depth Interviews*, 2005)

Observation is a method which describes the researcher in his activity of identifying objectives, events, processes or alike which are of special interest as they are in the focus of investigation. Basically two forms of observation can be differentiated: direct and participant. Participant observation goes back to the revolutionary anthropologist Bronisław Malinowski (1884-1942) who stated that only by permanently direct contact the researcher can grasp the native point of view. That involves learning the local language, living actively within the community and stay there for at least half a year in order to dive deeply into local culture (Malinowski, 1922). Meanwhile direct observation refers to more distant observation which has the intention to categorize the settings and events while paying less attention to the way locals see the world around them. (Trochim, 2006)

Literature review is important at any level and phase of the work as theoretical framing and contextualizing of the work is needed. A critical revision of what has been written about the respective topic and the realization of how the own work can contribute to actual scientific discussions about the concerned issues are the main reasons why literature review is obligatory for any qualitative research. Despite that statistical data or information from any kind of institution is reviewed and incorporated in this work, providing data which serves for contextualizing more specific issues.

Field notes – or a field diary – are a very powerful method which mainly remains in the background when it comes to scientific writing but can play an important role while elaborating descriptions, explanations etc. It includes observations, thoughts, doubts, reflections and conclusions of the researcher while being in the field (Malinowski, 1922). It pays respect to the sometimes confusing complexity of on-site research and allows to collect data randomly even if it does not seem useful in the first place. As a complementary tool field notes are widely used in most qualitative researches and often take the form of a diary.

4.4.2 Quantitative Methods

Although this work has a qualitative research design some quantitative methods will be applied as they can complement other data or are most apt in certain cases. Surveys and secondary analysis of statistics are of interest to this work as they are used as a basis for more profound interviews and to analyze the general setting, especially in terms of tourism infrastructure. Surveys generate comparable and systematic data and can be applied in various forms, such as mailed questionnaires or personal standardized interviews. Statistical data, such as tourism arrival and revenue statistics, will be analyzed as this information is only accessible via data sets from governmental institutions which generate statistical overviews on topics of interest. It serves for contextualization and generalization but has the disadvantage of being hardly verifiable by the researcher. (Lowhorn, 2007; Trochim, 2006)

4.4.3 Triangulation

Looking at an object from two different angles enriches the understanding and may reveal other aspects which were not visible before. Applying different methods to the same object of investigation (or the same method on different objects) increases the validity of results and serves for even more profound descriptions and analyses. Several data sets on the same topic offer a more solid basis for conclusions than just one data set (Flick, von Kardoff, & Steinke, 2000). In this case methodological triangulation will be applied: one topic will be approached by various means.

4.5 Methods to be applied

Table 7 demonstrates the variety of methods which will be applied in the field, for what purpose they are applied and what data demand they are meeting.

	Method	Information Source	Objective of Method	Meets data demand from research objective						
				Empowerment			Tourism		Resource management	
				Economy	Food Security	Community	La Vainilla	Region	Water	Agriculture
Qualitative	Semi-structured Interviews	Locals	dietary diversity							
		Locals, expert	agriculture							
		Locals, expert	resource management							
		Locals, expert	tourism							
		Locals	Income							
	Open interviews	Locals	resource management							
		Locals	tourism							
	Historical interviews	Locals	demography							
		Locals	agrodiversity							
		Locals	labor division							
	Biographical interviews	Locals	economics							
		Locals	community							
		Locals	agrodiversity							
	Direct observation	Researcher	resource management							
		Researcher	agrodiversity							
Researcher		tourism								
Field notes	Researcher	context								
Literature review	Literature	Theory								
Quantitative	Survey	Locals	social structure							
		Locals	Income sources							
		Locals	Culture							
	Secondary data (regional data)	Literature, expert	tourism							
		Literature	climate							
Literature		economy								

Figure 7: Methodology overview table, elaborated by author

The survey form is an adaption of two research indicator concepts proposed by the World Bank (2002) and the UNWTO (2004). While the first provides means to measure income, consumption and social capital, the second relates these issues to tourism. Basic questions regarding agricultural production were added by the author.

Historical and bibliographical interviews follow guidelines proposed by Flick (2000) and Mack (2005), aiming at creating an adequate atmosphere for interviews with a narrative nature. Open interviews

follow the same guidelines but see more influence on the interviewer side as certain topics – which resulted important due to findings in survey data – will be focused on.

Semi-structured interviews are based on the outcome of the survey and aim at a more profound understanding of relevant issues. They will be realized with key informants within the community and experts from NGOs working in this region on issues of eco-tourism, nature conservation (HumedalesOaxaca, 2010) and organic farming (ECOSTA, 2009).

The dietary diversity interviews were using the respective format, elaborated by the United Nations Food and Agriculture Organization and the European Union (FAO and EU, 2011). It was enriched through the incorporation of the water consumption category which is displayed in relation with the living space analysis.

Living space was analyzed in a basic way, making use of a simple chain. Sizing houses and showing spatial relations of resources management was the main intention in order to provide insights of livelihood quality.

An audio recorder, a digital camera and a note book were the three tools which were put to use when realizing interviews and observations.

Secondary data consists of maps, scientific literature and statistics. The sources vary according to the subject. Secondary data for regional tourism is obtained from a local NGO working in the field of community and nature tourism in coastal Oaxaca (HumedalesOaxaca, 2010) and from Oaxaca's tourism secretary (Oaxaca, 2011). Economic data of the region will be obtained from Mexico's national statistics institute (INEGI, 2012). Regional and local climate data is provided by the municipality of Santa Maria Tonameca (2010) and the National Commission for knowledge and use of biodiversity (CONABIO, 2001).

Poverty and food security data for Mexico is provided by The National Council for Evaluation of Social Development Policy. National and international tourism data is provided by the United Nations World Tourism Organization and additionally by the Mexican Tourism Secretary.

Maps of Mexico's southwestern coast are taken from the project "Propuesta de ordenamiento ecológico de la actividad turística en la costa sur-occidental del pacífico mexicano con base en la asimilación económica del territorio" (financing CONACyT SEP 2007/81601).

The elaboration of river basin maps of the case study region was done in December 2011 in Cologne, Germany, during the "River Basin Management" course, offered at the ITT department of the University of Applied Sciences.

The formulation of a proposal of further touristic activity involved the participation of the members of the local ecotourism cooperative (Laverack, 2001). This participatory approach was complemented by a competition analysis (see below).

4.5 Data analysis

The survey data will be presented in a Microsoft Excel table, split up into various tables according to thematic coherence, and will serve for creating various categories which shall help in stratifying the community according to their relative income, their cultural background and social capital. Contingency tables will display each category, its frequency and relevant interrelation with other categories (Ratcliff, 2011).

Semi-structured and open interviews will be analyzed in an interpretative way. Statistical interpretation was found to be irrelevant due to difficulties encountered while realizing open and semi-structured interviews. Too often responses were fruitful only after several requests from the interviewer. The resulting problem was the contrast between interviews which had the interviewee respond freely and in length while other interviews on the same topic remained insufficient regarding their depth as interviewees only gave affirmative or negative answers, which were of use for the investigation but did not allowed for a discourse centered analysis.

Interview pieces which are of greater importance and hard to incorporate in the described forms will be presented in text format (quotes) in order to give locals a voice and highlight their perception regarding central issues.

Results from historical and biographical interviews will be visualized by chronological and causal flow charts, presenting major changes and events (Ratcliff, 2011).

Data resulting from direct observation will be displayed as descriptions, if possible completed with photos or schematic drawings.

The expert literature will be analyzed and compared in order to formulate critical reflections on previous studies and thereby concretize research questions and indicators (McCaston, 2011).

Secondary data will be analyzed in terms of its appropriateness for the proposed topics, the source's credentials, its quality and intentionality (McCaston, 2011).

The formulation of a proposal of further touristic activity involved a competition analysis which complements the participatory approach. The concept is based on the competitiveness approach of Porter (1998) and was adapted to the specific nature of the tourism sector by Crouch and Ritchie (1999).

4.6 Expected outcome and utility of data

The intention of applying so many different methods is to be able to describe the community La Vainilla in a holistic and comprehensive way. The survey data will serve for an overall description which allows for comparing the socio-economic situation in La Vainilla with general characteristics of rural communities in Mexico and Oaxaca. An inventory of assets and capabilities of households of the community will be the form of displaying this information.

The in-depth data will explain the interlinkage of factors leading to the actual situation and the dimensionality of resulting problems (poverty, food insecurity). The assessment of the need for empowerment and tourism's potential to contribute to solving problems will provide the necessary information needed to formulate a proposal aiming at empowering parts of the community through participation in tourism.

Thus the interrelation of the involved topics – empowerment, tourism and resource management – can be portrayed properly and a proposal which takes the complete situation into account can be elaborated.

Second Part – Diagnosis

After discussing and clarifying the theoretical foundation of that work the results of literature and field research will be displayed in the second part. The sequence is determined by the scales of the contexts which are relevant for the case study. La Vainilla is a rural community in coastal Oaxaca, Mexico, and embedding it in national and regional scenarios is needed for various reasons.

First of all Mexico and especially its rural population will be described in terms of poverty and food insecurity. The role of tourism as an economy and possible engine for regional growth will be displayed in a critical manner. As this work involves the formulation of a proposal the legal compliance with the same must be guaranteed. This will be done at the end of chapter five as well as the presentation of the summary of the most important legal frame, the ecotourism norm.

Secondly the regional tourism scenario will be exposed in order to be able to locate La Vainilla within this competitive context and to identify a possible additional activity in the regional tourism market. The description is divided into two parts: the two tourism centers of the region are characterized and afterwards the smaller community scale tourism projects of the region are compared, including La Vainilla.

Thirdly the community La Vainilla will be displayed, in economic, social and ecological dimensions. Special attention was paid to aspects of resources management. The description closes with the ecotourism cooperative and its role within the community.

Finally a detailed problem assessment will be carried out in order to identify the most marginalized families within the community, their level of poverty and food insecurity. Also general characteristics of La Vainilla will be compared to general features of Mexican rural communities in order to see if the given case is comparable to other similar cases.

Chapter five: Mexico

This chapter will set the big scale frame for the following case study. La Vainilla is a small rural community in Southern Mexico and as such it is influenced by the national situation. The economy of the country and the role of smaller communities will be displayed in their interplay as well as the situation regarding food security and poverty. The importance of tourism in Mexico will be demonstrated in order to highlight its potential as a contributor to economic development. How tourism can contribute to empowerment will be analyzed critically, giving examples of successful and failed attempts. The legal framework for resource management in Mexico and especially for eco-tourism cooperatives which comply with the national norm nmx-aa-133-scfi-2006 will be analyzed as it must be clear that all action proposed is within the legal framework and on the other hand it shall be shown how laws enable or constrain resource management in rural communities such as La Vainilla.

5.1 Mexico: large scale problem assessment

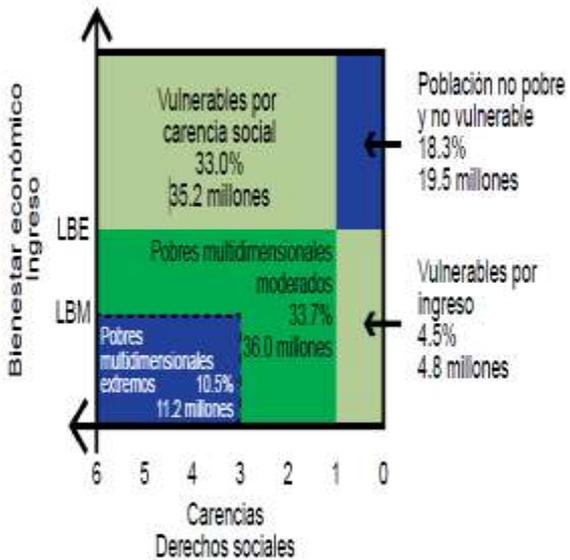
In this part the overall situation in terms of poverty and food insecurity shall be outlined in order to create a general understanding of the need for empowerment in Mexico. Thereby the results of the field research in La Vainilla can be related and compared to a wider scenario. This also allows for a broader relevance of the findings, provided that the case of La Vainilla displays characteristics that are typical for Mexican rural communities. The historic background will be the basis for explaining the actual situation by highlighting important past processes which caused nowadays problems. Such a contextualization is also needed when formulating a proposal of how to overcome or reduce present problems.

5.1.1 The dimensions of poverty and food insecurity (in rural areas)

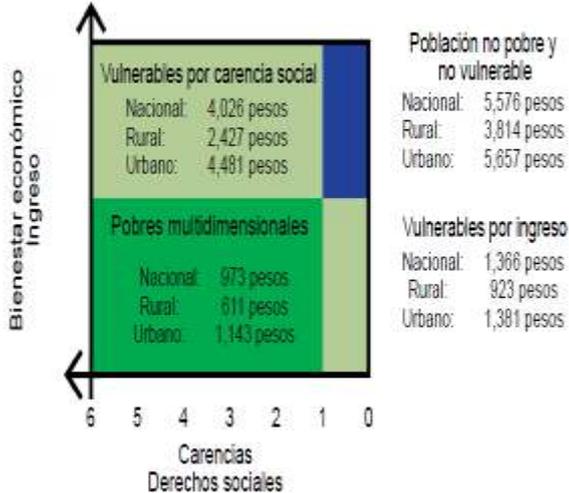
Mexico has a continental surface of 1959247 square kilometers, had 112 million inhabitants and a GDP of 8.3 billion Mexican Pesos in 2010 (INEGI, 2012). It lies south of the United States of America and shares borders with Guatemala and Belize in its South. To the West lies the Pacific Ocean, while the Gulf of Mexico and the Caribbean limit the country to the East.

Poverty in Mexico is measured by the National Council for Evaluation of Social Development Policy (CONEVAL: Consejo Nacional de Evaluación de la Política de Desarrollo Social). It regularly publishes reports on the national dimensions of poverty as a multidimensional phenomenon. According to CONEVAL 44.2% of Mexicans were multidimensional poor in 2008, which then amounted for a total number of 47.2 million persons (2011). Multidimensional poverty is the absence of at least one way to exercise one's right for social development and if one's income is insufficient for the acquisition of goods and services that are needed in order to satisfy one's necessities. These rights for social development comprise education, health services, social security, living space, basic domestic services and alimentation (CONEVAL, 2011). As this work is focused on poverty alleviation and reduction of food insecurity it will take the respective indicators into consideration while others remain of secondary importance. The monetary income needed to satisfy one's necessities is calculated in many ways, differentiating between urban and rural areas, various forms of vulnerability and pre-determined scales of economic well-being. One scale comprises the income's

potential to satisfy all necessities (economic well-being) and another scale defines the income needed in order to purchase the goods of the basic food basket (minimum economic well-being). Everybody who falls into the second category (struggling to purchase the basic food basket) is considered extremely poor. In 2008 10.5% of Mexicans, which equals 11.2 million persons, were facing that situation (CONEVAL, 2011) like shown in figure 8. The basic food basket comprises cereals, grains and seeds, fruits and vegetables, meat products, grocery articles, domestic and cleaning articles (SEDECO, 2011). For 2008 the calculated monetary resources needed monthly to buy the respective goods was about 1770 Mexican Pesos and was 1864 Mexican Pesos in January 2012 (SEDECO, 2012). All the items and prices are considered for one family (SEDECO, 2012). The latest data available shows that the average Mexican family consisted of 4.3 members in 2007 (INEGI, 2007). It results the problem of differing family sizes and a fixed price for the basic food basket. Despite that it must be mentioned that this approach is mainly designed for urban contexts, not taking into account agricultural production but only purchasing capacities.



Fuente: estimaciones del CONEVAL con base en el MCS-ENIGH 2008.



Fuente: elaboración del CONEVAL con base en el MCS-ENIGH 2008.

Figure 8: Multidimensional poverty in Mexico 2008, (CONEVAL, 2011) Figure 9: Monthly income per head in Mexico 2008, (CONEVAL, 2011)

Additionally to the above mentioned data it has to be added that indigenous people are hit very hard by poverty in Mexico. 75.7% of all indigenous are multidimensional poor and 39.2% are extremely poor (CONEVAL, 2011).

In general rural areas in Mexico are poorer than urban areas (World Bank, 2005; CONEVAL, 2011) as figure 9 shows. For 2008 the average income in urban areas was 3279 Mexican Pesos and only 1321 Mexican Pesos in rural areas. The poor's average income differed accordingly from 1143 to 611

Mexican Pesos per capita (CONEVAL, 2011). This means that in average all rural population in Mexico is unable to satisfy their basic needs (basic food basket) through monetary income.

Food insecurity is a severe and actual problem in Mexico and considered as such (Arellano, 2012). As it became clear in the previous paragraphs poverty and food insecurity are interlinked in Mexico and consequently the same institution is in charge for measuring both phenomena. In distinct publications CONEVAL delivers data on the situation regarding food security, although not as frequently as for poverty. In the very first it can be stated that children and pregnant women in rural areas are the ones suffering most from food insecurity. The results are based on representative samples (44.500 households were examined), which measure weight and height in comparison to the international average and examine blood samples in order to display the nutritious conditions of the researched (CONEVAL, 2010).

The investigation created additional criteria in order to categorize results. Geographically the country was divided into North, Center and South, and demographically between rural and urban areas. As Mexico has a big share of indigenous population, they are considered in an extra category, which allows comparing their situation with fellow Mexicans. Historically results special attention paid to children and pregnant women which in previous studies were found to be very vulnerable (CONEVAL, 2010). An overview of the differing results for the mentioned categories is given in table 7.

Food Insecurity	Region	Locality	Ethnicity	Children	Gender
Highest	South	Rural	Indigenous	1 to 2 years	Pregnant women
High	Central	Semi-rural		3 to 4 years	Female
Less severe	North	Urban	Non-indigenous	5 to 11 years	All gender

Table 7: Food insecurity in Mexico, elaborated by author, based on (CONEVAL, 2010)

In Mexico 5% of the population suffer from a weight deficit, 12.7% from a height deficit and 1.6% from emaciation (extreme weight and muscle loss). Malnutrition in terms of micronutrients was examined for children and women and showed devastating results in almost all five categories like figure 10 shows which visualizes the lack of respective micronutrients. Anemia was diagnosed for women and children and was found to be present in 20% of examined cases. At the same time obesity and overweight are widely spread health problems in Mexico. Indigenous people, children and women are hit harder than any other group by the mentioned alimentation and nutrition related problems (CONEVAL, 2010).

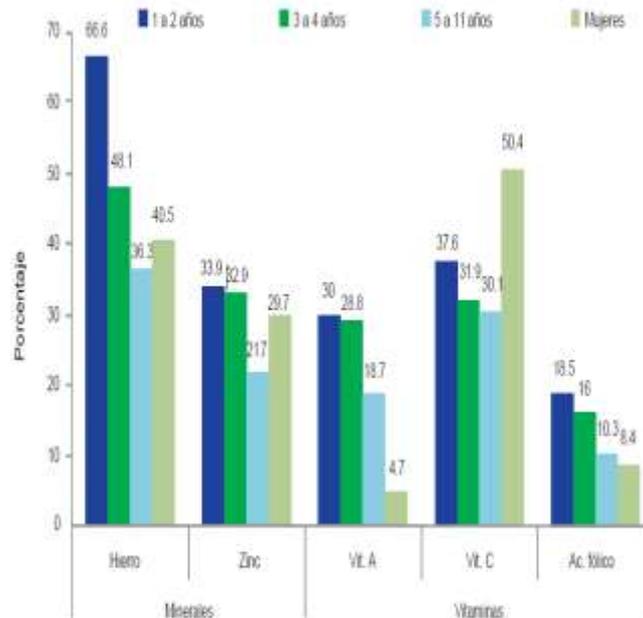


Figure 10: Prevalence of micronutrients Mexico 1999, (CONEVAL, 2010)

The overall situation of Mexico's rural population also finds its expression in the high ratio of emigration towards the United States of America. The World Bank calculated a total of 11.6 Million persons using the Mexico-USA migration corridor, which makes it by far the biggest one worldwide. Consequently Mexico is listed as the country with most emigrants. A total of 11.9 Million Mexicans were supposed to leave their country in 2010. Sending money back home equally became a crucial way of supporting family back in Mexico. For the same year a total amount of 22.6 Billion (US dollar) in remittance was estimated for the southern neighbor of the USA (World Bank, 2011).

The Mexican standards for measuring poverty and food security are useful guidelines for this work as they provide exact data and classifications. Nonetheless not all can be taken as parameters due to restricted time and resource availability of the concerned field research. Additionally the characteristics of rural populations and their irregular income/work situation (which has its effect on food security) also results in difficulties in creating exact numeric data.

Regardless of restrictions the Mexican average income for (poor) rural population as well as the value of the basic food basket are useful landmarks when evaluating the situation in La Vainilla. Micronutrients may not be exactly measured by taking blood samples but an adapted "dietary diversity" questionnaire gives a good idea of the availability of the respective food sources. Despite that the displayed data of the general situation in Mexico serves the purposes of a larger frame for the local-scale diagnosis which will follow in chapter seven.

5.1.2 Historic background (for rural areas)

When the territory which today is Mexico was conquered by the Spanish Empire, its indigenous inhabitants became subject to oppression, both in physical and psychological ways. As a result they became the marginalized people in a society governed by Europeans and mestizos. This situation had

its impact on their economic well-being and alimentation. Still today their situation is critical in terms of poverty and food insecurity (see above) but also regarding their rights as citizens of Mexico which ought to participate in economic development and get their share of the benefits of it (Velázquez Roccatti, 2012). The historic development in Mexico has left its mark on diets throughout the country. Not only did the Spaniards introduce different crops and dishes but also questioned indigenous alimentation in an (in-) direct way. The Conquistadores ate bread while native Mexicans had based their diet on corn tortillas over hundreds of years (González Jácome, 2007). As the former were the new rulers implementing their religion and values they were contesting traditional life styles.

As food is expressing one's culture (Lévi-Strauss, 1983) and class (Goody, 1982) many indigenous changed their diet voluntarily as they wanted to become part of the new society and leave behind their traditions. Still today a trend towards processed and packaged food is witnessed among indigenous who strive to leave their role at the margins of modern Mexican society (Bertran Vilà, 2004). Besides self-induced changes, rural communities in Mexico, both indigenous and non-indigenous, were affected by large scale processes which changed the overall economy of the country and thereby caused a shift in domestic production units (González Jácome, 2008). Once rural communities cultivated a huge diversity of crops, medical and aromatic plants in their gardens or *milpa* (traditional diverse agrosystem with corn at its heart) but that variety got lost in most places over centuries and especially in the last decades when traditional labor units were split up (González Jácome, 2008). Originally the whole family was the labor unit but with commercialization, free trade, industrialization and green revolution this unit became subject to changes, often leaving the women at home while the men leave in search for work. The labor intense agrodiversity could not be maintained that way and lower productivity, monocultures and poorer diets resulted as the system of self-sufficiency broke down. What undoubtedly remains is the traditional core of alimentation in rural areas: corn tortillas, beans and chili (González Jácome, 2007; Bertran Vilà, 2004). Though very nutritious this basic diet lacks variety and may result in poor physical and cognitive development as certain micronutrients are missing.

Poverty in rural Mexico is likewise a product of big-scale processes in the past. Present day farmers who are working their fields with their own human labor force and little (or no) technical equipment are threatened by the aftermath of the green revolution and political decisions taken in accordance with the US government and economy.

The green revolution was favoring big producers and thereby pushed the average small farmer further to the margin as he cannot compete with producers who make extensive use of technology and possess large fields, which resulted in their increased poverty and frequently in emigration (Barkin, 2002). Mass production based on the latest technology, chemical pesticides and selected seeds, was aimed at by the Mexican government, thereby copying the agricultural model of the USA, which was essentially involved in Mexico's green revolution. As such huge changes of production mode need equally big investment small rural farmers remained aloof this development, being unable to obtain the necessary credits (Pichardo González, 2006). Political decisions that opened the country up to free trade and thereby exposed farmers to a more competitive international (mainly US dominated) market contributed strongly to the further marginalization of small producers in rural areas (Barkin, 2006). The best known case is the highly subsidized US corn that destroyed the economic basis of many Mexican farmers, legitimated in 1994 by NAFTA, the North American Free Trade Agreement (Relinger, 2010; Coote, 1995).

5.2 Tourism in Mexico

Tourism was and still is a major industry in Mexico, accounting for 9% of national GDP and more than 7.5 million jobs. In 2010 the Mexican government invested a total of 6.6 billion Pesos in the tourism sector (SECTUR, 2011). Since decades tourism flourishes and international tourist arrivals and receipts rise equally (see graph). The only severe economic setback for the sector was experienced as the aftermath of the global financial crisis in 2008. According to the latest data Mexico ranks 10th in worldwide tourism, attracting more than 22 million international visitors and making almost 12 billion US\$ in receipts (UNWTO, 2011) like shown in figure 11. Domestic tourism was estimated at 79.7 million tourists for the period between January and June 2010 only (SECTUR, 2011) but data about revenues is missing.

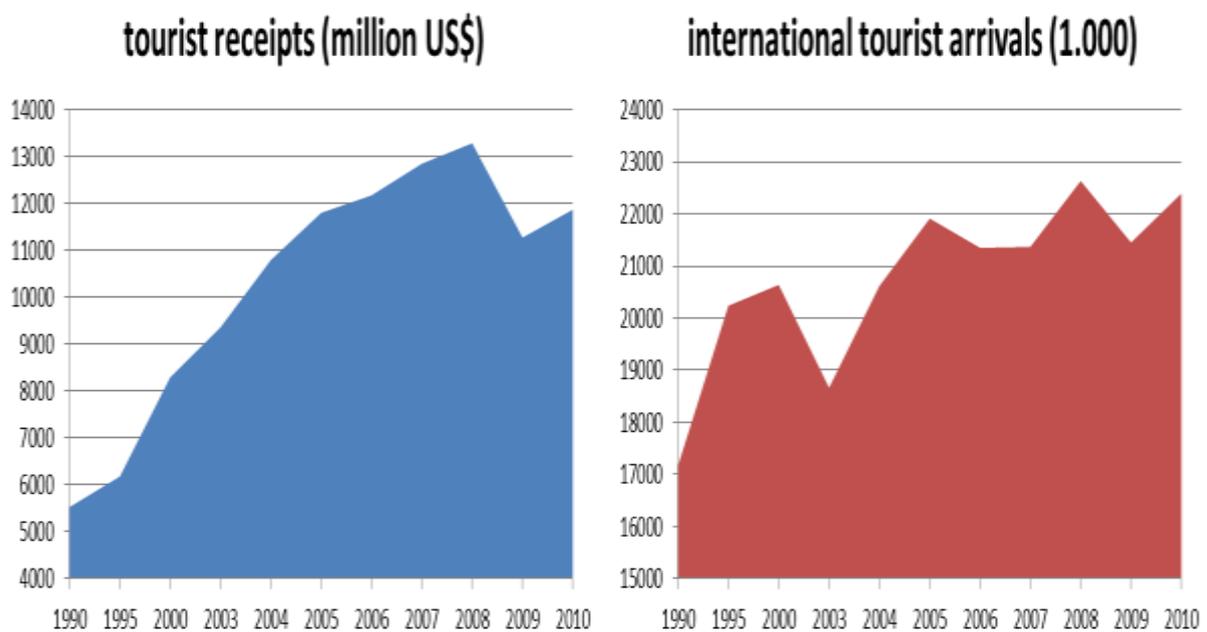


Figure 11: Mexico tourism development, elaborated by author, data from (UNWTO, 2006; UNWTO, 2012)

The tourism ministry measured tourist arrivals in 2008 in various locations and thereby gives a good impression of how tourism is distributed in Mexico. First of all destinations were divided in beaches and cities, the former accounting for 43.5% and the later for the remaining 56.5% of total tourist arrivals (Data Tur, 2009). The most important destinations are listed in table 8. Note that Mexico City was not included.

Top beaches	visitors	Top cities	visitors
Acapulco	5.5 million	Guadalajara	2.4 million
Riviera Maya	2.6 million	Monterrey	2 million
Veracruz/Boca del Rio	2 million	Puebla	1.2 million
Puerto Vallarta	1.4 million	Merida and Tijuana	1 million each
Manzanillo and Los Cabos	1.3 million each	León	0.9 million

Table 8: Mexico tourism top destinations, (Data Tur, 2009)

Tourism has its own federal ministry and two important institutions which are essentially given the task to promote Mexico as a touristic destination (CPTM) and to realize large-scale projects (FONATUR) like portrayed in figure 12. Beach and sun tourism is very important as the previous data demonstrated but despite that Mexico relies heavily on its natural and cultural diversity. Pre-Columbian archaeological sites, colonial architecture and art, as well as actual culture of indigenous groups are attracting visitors and are promoted officially (CPTM, 2011). The country has a total of 27 listed cultural world heritage sites (UNESCO, 2012). The huge biodiversity and beautiful landscapes are an essential basis for the mentioned beach and sun tourism but also for eco-, nature- and adventure-tourism which are becoming central to touristic promotion (CPTM, 2011). Since November 16th 2010 Mexican cuisine is part of the UNESCO list of intangible cultural heritage as it is regarded unique, due to its huge variety, social dimension and rich history (UNESCO, 2012). 10 culinary routes throughout the country were designed by the promotion council in order to foster this kind of tourism (Rutas Gastronómicas, 2011). Large-scale projects like *Cancún* and *Los Cabos* are realized every few years or decades by financial means of FONATUR which is also responsible for maintenance, construction and port operation (as cruise ships account for a good part of tourism revenues) (FONATUR, 2012).



Figure 12: Mexican tourism institutions, Elaboration by author, based on (SECTUR, 2011)

Though the tourism sector is of national importance the respective ministry is not well financed on a regular basis. The SECTUR budget for 2011 was only of 5 billion Mexican Pesos which equals 0.14% of the national budget. 2.3 billion of it were redirected to CPTM and the FONATUR bodies (Secretaría

de Hacienda y Crédito Público, 2012). Due to special projects FONATUR may receive increased amounts of money in order to realize the mentioned large-scale enterprises.

5.3 Forms of (dis-)empowerment through tourism in Mexico

As it was mentioned earlier tourism has a great potential as a contributor to economic development but carries several threats to the places where it is implemented. In chapter three examples of how tourism development may lead to disempowerment of local population were already given. At this point a few more examples shall be given, related directly to the field of interest. The missing of examples or data will also be highlighted in order to demonstrate what forms of (dis-) empowerment through tourism are normally not taken into consideration or are hard to measure and/or describe.

Empowerment through tourism in Mexico is normally described in economic terms. Remote, small villages which lack alternatives for development may thrive on touristic activities and thereby maintain themselves. A good example is *Real de Catorce*, a former mining town in the state of San Luis Potosí. Since the 18th century its economy depended singly on metals, especially silver. In the 20th century mines were closed and most people left the place, which more and more turned into a ghost town (Sánchez García, 2008). In 2001 the Mexican tourism board incorporated *Real de Catorce* in its *Pueblos Mágicos* program which boosted its popularity (Pueblos Mágicos, 2011). Today it is full of hotels, restaurants and handicraft stands, offering employment for locals and yearly migrating *Huicholes* indigenous groups who are spiritually bound to the area (Méndez, 2008) and found a convincing market place in *Real de Catorce* where they can sell some of their finest and most popular handicraft.

How tourism affects food security is normally not considered, at least not in a positive way. As with all natural resources tourists tend to increase pressure over them. Sustainable tourism tries to control that pressure by calculating carrying capacities. However detailed data about monitored resource usage (especially food) in tourism in Mexico could not be found.

The situation regarding social cohesion is similar. Normally (standard/mass tourism) not considered, this aspect is targeted by sustainable tourism concepts, especially by communitarian tourism ideas. The difficulty lies within measuring social cohesion and demonstrating an improvement over time. But descriptive examples of how a community or larger parts of such engage in tourism, organize themselves and take decisions on a common basis are available. One example is the controlled harvest of the *Cuchamá* worm which is the basis for culinary tourism in *Zapotitlan Salinas*. It was agreed upon limited techniques of exploitation by all actors involved as they came together to exchange knowledge and discuss the communitarian management of this vital touristic resource (Velazquez Soto, 2009).

General examples for disempowerment through tourism in terms of economic well-being were given in chapter three, mentioning cases of how big investments tends to push aside local efforts, how rising real estate prices drive out locals and how tourism causes a general rise in prices. All these problems apply for Mexico (in fact most examples that were given respond to Mexican cases) but an additional more subtle case shall be displayed shortly as it reveals another type of economic disempowerment. The Monarch Butterfly Biosphere Reserve is a UNESCO World Heritage Site since 2008 (UNESCO, 2012) and attracts around 150.000 visitors per year (WWF, 2009). But as the butterflies only migrate in autumn tourists do as well. The result is an extreme seasonality of

tourism: tourist arrivals and therefore receipts are concentrated in a few weeks (Brenner, 2006). It results a problematic situation throughout the rest of the year without considerable revenues from tourism business. Therefore locals became very dependent on this annual phenomenon and economic development remains sporadic.

As mentioned food security is normally not measured when the impact of tourism is to be analyzed but an investigation of how unsustainable resource management can lead to dramatic long terms effects for a rural community in the state of San Luis Potosí is given for the case of *Ojo Caliente*. The place became a bathing resort in the 1950s and agriculture was diminishing ever since as more and more residents became active in tourism but when ground water was overexploited tourist arrivals declined and local economy was devastated. In the end a few spas remained but all of them are managed by outsiders and most locals left the place in search for labor (Marquez Mireles & Olivera Hernandez, 2008).

Examples of how tourism negatively affects social organization were mentioned in chapter three and all are valid for the Mexican case.

These examples show how promotion, social organization, tourism management, power relations and resource management can have positive or negative effects on host communities. They thereby complete the display of the Janus-faced character of tourism and the large scale frame for the case study.

5.4 Empowerment through resource management in tourism: the legal framework in Mexico

The following legal aspects are the most relevant for this work as it proposes a change in resources management. The proposal is conform to all respective laws and norms. The following laws and norms are federal ones which are applied within the entire country. An interview with an official from the Municipality showed that no regional or local specifications are in place and that only the national legal framework is followed (Lopez Canseco, 2011).

This work is trying to make a contribution to concepts and intentions of sustainable tourism development in Mexico. It thereby is conform to the Mexican General Tourism Law: it looks to determine mechanisms for the conservation, improvement, protection, promotion and use of the national touristic resources and attractions, while preserving the natural and cultural heritage and the ecological equilibrium according to the respective laws (Ley General de Turismo, 2009, S. 2), it tries to find ways of optimal use of natural resources, respect the sociocultural authenticity of host communities and assuring the viability of economic activities (Ley General de Turismo, 2009, S. 3), it aims at showing possible ways of fomenting tourism in Mexico by proposing new touristic development in a place that represents a touristic potential due to its natural and cultural characteristics (Ley General de Turismo, 2009, S. 16) and it provides insights about how service providers can responsibly participate in the management of natural, archeological, historical and cultural resources (Ley General de Turismo, 2009, S. 19).

As natural resources are of major importance in this work all respective considerations are conform with the Mexican General Law of Ecological Equilibrium and Environment Protection: preservation and sustainable use of water is seen as the responsibility of its users and of anybody realizing works

or activities which are affecting these resources (LEY GENERAL DEL EQUILIBRIO ECOLÓGICO Y LA PROTECCIÓN AL AMBIENTE, 2007, S. 37), the proposed use of soil will be respecting its natural vocation and avoid an alteration of the ecosystem equilibrium, maintain its physical integrity and its productive capacity (LEY GENERAL DEL EQUILIBRIO ECOLÓGICO Y LA PROTECCIÓN AL AMBIENTE, 2007, S. 39).

The field research carried out for this thesis was done in cooperation with the community and ecotourism cooperative in La Vainilla, Oaxaca. The ecotourism cooperative is recognized as such according to SEMARNAT norm NMX-AA-133-SCFI-2006, therefore explicit observation and analysis of compliance with the officially stated requirements was not conducted due to the fact that certification assures compliance. But despite that the effectiveness and potential implications of paragraph 5.6.3 will be examined. The paragraph reads as follows:

“A formal compromise and collaboration program with members of local communities is to be established in order to adjust mechanisms of supply and production of materials at a local level, prioritizing sustainable organic products” (SEMARNAT, 2006, S. 15).

The importance of that part of the norm will be highlighted in the last chapter, discussing implications of the findings. In La Vainilla no formal compromise or collaboration program exists, the potential benefits of it will be discussed later on.

As the ecotourism norm is the most relevant legal reference for this work a brief and general overview must be given at this point.

5.4.1 Ecotourism norm NMX-AA-133-SCFI-2006

As the ecotourism cooperative in La Vainilla is certified it complies with the standards of the respective norm “REQUIREMENTS AND REGULATIONS OF SUSTAINABILITY IN ECOTURISM” (NMX-AA-133-SCFI-2006).

The certification is given to cooperatives that are actively conserving their natural and cultural heritage. The norm thereby follows the UNWTO recommendation that each country should elaborate a legal framework for certified sustainable tourism (SEMARNAT, 2006). It defines ecotourism as follows:

“3.14 Ecotourism: Is the type of tourism which is environmentally responsible and consistent in relatively non-disturbing travelling and visiting natural areas, with the aim of enjoying, valuing and studying the natural attractions of these areas; it applies the same way for any kind of cultural manifestation may it be past or present which can be found in these areas, through a process which brings about conservation, has a low environmental and cultural impact, and induces an active involvement y socio-economic benefits of locals.” (SEMARNAT, 2006, S. 4)

The norm has a huge variety of indicators which are measured, including usage of alternative energy sources, treatment of residual water etc. General aspects, activities and installations are evaluated leaving a count of percentage points acquired. The cooperative must gain 80% in the field of general aspects, 70% in installations and another 80% in activities. General aspects include documents, planning, organization, communal participation etc. The other two categories are divided as shown in table 9 (SEMARNAT, 2006, S. 46):

Installations		Activities	
Water	30	Interpretation	12
Wild life	30	Paths	11
Energy	4	Education	15
Visual impact	8	Signposting	9
Solid waste	15	Wild life	17
Product purchase	13	Aquatic ecosystems	11
		Conservation contribution initiatives	12
		Cultural impact	13
	100		100

Table 9: Ecotourism norm - factor values, (SEMARNAT, 2006)

Paragraph 5.6.3, which was classified as considerably important for this work, falls into the category of product purchase which has a total value of 13% for the installations qualification. It comprises four different aspects which combine for the overall value. Paragraph 5.6.3 accounts for only 3% in the installations category, not complying with it is therefore almost without effect.

5.5 Tourism in Mexico: Summary and specified data demand

It was shown that poverty and food insecurity are common problems in Mexico, especially in Southern rural areas with indigenous population. The historic processes causing that situation were outlined and it thereby becomes fruitful for this work to clarify in how far the case of La Vainilla fits the overall and historic description. Furthermore the importance of tourism as a major economy in Mexico was demonstrated and allows for the positioning of the study area within a national context. How tourism can contribute positively or negatively to community empowerment was outlined exemplary for Mexico. The conformity of this work with actual Mexican laws and norms was described.

From the country specific methods of analyzing poverty, food security, situation of rural communities in a historic background and the impact of tourism results a data demand which takes into account the particular nature of the point of view from which these aspects are treated within the country, and at the same time the results of this work become more important as they take on classifications which allow for comparison with other cases in Mexico. The answers to the questions – which are situated within the table 10 – may increase the momentousness of this work.

Specific data demand		
Empowerment	Poverty	<ul style="list-style-type: none"> • Are inhabitants poor, extremely poor, multidimensional poor? • Are indigenous people worse off than non-indigenous people?
	Food Security	<ul style="list-style-type: none"> • Can they afford the basic food basket? • (Is the former criteria useful in this case?) • Are indigenous people worse off than non-indigenous people?
Historic background		<ul style="list-style-type: none"> • Diet: are corn tortillas, beans and chili the basis of alimentation? • The work unit consists of the whole family? • Was agro diversity lost? • Can farmers compete on local markets? • How technology and investment based is the agricultural production? • How high is the emigration rate?
Tourism		<ul style="list-style-type: none"> • How can the region and La Vainilla be located within the national tourism context?
<p>Table 10: Specific data demand for Mexican cases, elaborated by author, based on (CONEVAL, 2011; González Jácome, 2007)</p>		

Chapter six: Coastal Oaxaca

La Vainilla is situated at the Pacific coast in Southern Oaxaca. The following chapter has two purposes, the first is to characterize the region in general terms and specify the situation regarding poverty and food security, the second consists in defining regional tourism, its offer, demand and development. By realizing such contextualization the interaction between the community of La Vainilla and its surrounding can be understood better, and it allows for the location of the community’s touristic offer within a competitive scenario. Both aspects are essential for the later formulation of a proposal of how to enhance touristic development.

The region described as Coastal Oaxaca stretches from Las Bahías de Huatulco in the east over Puerto Escondido to Las Lagunas de Chacahua in the west. Further to the east comes the Istmo de Tehuantepec and further west the broader Pinotepa region, both seeing less tourists than the region which is delimited as the area of interest.

According to administrative boundaries the area consists of the following municipalities shown in GIS map 1: Santa Maria Huatulco, San Pedro Pochutla, Santa Maria Tonameca, Santa Maria Colotepec, San Pedro Mixtepec and Villa de Tututepec de Melchor Ocampo. All of which are marked green in the map.



GIS Maps 1: Coastal municipalities of Mexico’s Southwest, PROPUESTA DE ORDENAMIENTO ECOLÓGICO DE LA ACTIVIDAD TURÍSTICA EN LA COSTA SUR-OCCIDENTAL DEL PACÍFICO MEXICANO CON BASE EN LA ASIMILACIÓN ECONÓMICA DEL TERRITORIO, (Reyes Pérez, O. et al, 2010), green highlighting by author

6.1 General characteristics

6.1.1 Climate, topology, ecosystems and biodiversity

The area is classified as Awo according to the Köppen-Geiger climate categories (CONABIO, 1998), which translate into: equatorial and dry winter (Carinthian Institute for Climate Protection, 2011) or wet and dry tropical climate with the coolest month having an average temperatures above 18 °C and distinct dry season of at least one month with less than 6 cm rainfall (US Forest Service, 2012). Precipitation is limited to 3 – 4 month and the average amount varies between 600 and 800 mm per year (Ortiz Pérez & De La Lanza Espino, 2006).

Puerto Escondido and Las Bahias de Huatulco have weather stations but unfortunately precipitation in mm is not measured there. Over the past twenty years no significant climate change in terms of varying temperatures or rainy days was observed. Table 11 shows climate data for 2011. More detailed data will be displayed for La Vainilla in chapter seven.

	Puerto Escondido 2011 (TuTiempo, 2012)	Las Bahias de Huatulco 2011 (TuTiempo, 2012)
Annual average temperature	27.5 °C	27.7 °C
Maximum annual average	29.3 °C	31.1 °C
Minimum annual average	23.5 °C	22.3 °C
Total of rainy days per year	49	58

Table 11: Climate data for Coastal Oaxaca, (TuTiempo, 2012)

According to hydrology classification the region is labeled Coast of Oaxaca (Puerto Angel) [*Región Hidrológica Costa de Oaxaca (Puerto Angel)*] or just RH21 (INEGI, 2010). Rivers flow north to south, as they originate in the *Sierra Sur de Oaxaca*, a mountainous region which sees its foothills stretching towards the Pacific Ocean in the South. Elevation near the coast is generally low with Puerto Escondido measured officially at 88 meters above sea level and Las Bahias de Huatulco with 143 meters (TuTiempo, 2012).

The dominant forest types in this region are: deciduous and semi-deciduous tropical forest, evergreen and medium evergreen tropical forest. The later ones are more present in hilly sites with higher precipitation while deciduous forests prevail in the dryer areas closer to the coast (Reyes Pérez, O. et al, 2010). Mangrove forests are situated at the very coast and deserve special attention as they are of huge ecological and socio-economic value for this region (HumedalesOaxaca, 2010). Mangroves are a highly productive forest type storing a lot of carbon dioxide and are natural habitats to birds, crocodiles and snakes (Warne, 2011), being home to many medical plants, nursery ground for several aquatic populations, such as shrimps, crustaceans, Mollusca and different kinds of fish (Spalding, Kainuma, & Collins, 2010). Mangroves grow in saline inter-tidal coastal habitats to which they adopted perfectly as they are able to overcome the problems of anoxia, high salinity and frequent tidal inundation. They contribute to the maintenance of water quality as they filter pollutants, especially heavy metals, and detain sediments (Rosati, Prospero, Latham, & Kainuma,

2010). They protect the coast against the effects of tsunami waves, floods, cyclones and land erosion (Kathiresan, 2006). Nonetheless mangrove forests are threatened worldwide, especially by expanding shrimp farming and commercial forest clearing (WWF, 2012). Mexico is no exception to this (Greenpeace, 2008). Efforts in Coastal Oaxaca try to counteract this trend by reforestation which is done with the help of governmental institutions (CONAFOR, 2009), non-governmental organizations and the private sector (HumedalesOaxaca, 2010). Four different mangroves are present in this region: the red mangrove (*Rhizophora mangle*), the white mangrove (*Laguncularia racemosa*), the black mangrove (*Avicennia germinans*) and the false mangrove (*Conocarpus erectus*) (HumedalesOaxaca, 2010).

Coastal Oaxaca is part of the Mesoamerican “biodiversity hotspot”, which is considered the world’s second most diverse region in terms of plant and vertebrate animal species (Myers, Mittermeier, Mittermeier, & da Fonseca, 2000). According to WWF Oaxaca, especially its southern shores, is a hotspot losing its biodiversity at a troublesome pace (WWF, 2012). Some of the threatened species are of big interest for the tourism sector as they serve as attractions for tourists. Birdwatchers travel to the region to see species like the Lilac-crowned Parrot (*Amazona finschi*) and the White-Tailed Hummingbird (*Eupherusa poliocerca*), both endemic and listed as vulnerable (IUCN, 2011).

All the four sea turtle species which can be found on the shores of coastal Oaxaca are in need of protection. The Hawksbill sea turtle (*Eretmochelys imbricata*) and the Leatherback sea turtle (*Dermochelys coriácea*) are both critically endangered, while the green sea turtle (*Chelonia agassizii*) is listed as endangered and the Olive Ridley sea turtle (*Lepidochelys olivácea*) as vulnerable (IUCN, 2011).

Both species groups serve as attractions as they are part of the local biodiversity which makes this place so unique and are in the very focus of some activities offered by eco-tourism cooperatives. Nine out of twelve cooperatives offer bird watching and at least at two beaches tourist can help to free baby Leatherback sea turtles (HumedalesOaxaca, 2010).

Iguanas and crocodiles are two further natural resources which serve as touristic attractions although of minor importance. The common green Iguana (*Iguana iguana*) and the common spiny-tailed Iguana (*Ctenosaura similis*) are very common in this region and are bred in Iguana stations (Sanchez Rios, 2011). The present crocodile species is the American crocodile (*Crocodylus acutus*) and is listed as vulnerable (IUCN, 2011).

The region has two national parks, namely El Parque Nacional Lagunas de Chacahua and Parque Nacional Huatulco, which were created in 1937 (with a total surface of 14187ha) and 1998 (with a total surface of 11890ha) respectively (CONANP a. , 2011). The beach strip called “Playa Tilapia” was declared a federal protected area because it is the breeding ground for the endangered sea turtle species found in that region and has an extension of 30 hectares (CONANP b. , 2011). The mangroves are protected by the General Law of Ecological Equilibrium and Environmental Protection (Ley General del Equilibrio Ecológico y la Protección al Ambiente) but deforestation is still an ongoing process.

6.1.2 Economy, population and infrastructure

The region is characterized by its rurality and poverty, only the two tourism hubs Puerto Escondido and Las Bahias de Huatulco are exceptional to that. The majority of people have a low income, poor education and very few means to improve their situation. Emigration towards bigger cities and the USA in search for employment are resulting as well as a high unemployment rate (Gutiérrez & Suárez, 2003; Marquez Mireles & al, 2011).

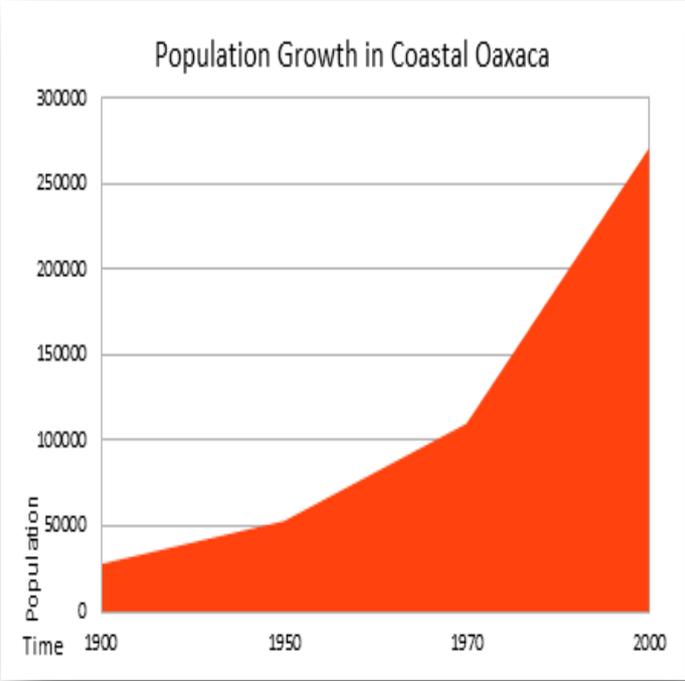


Figure 13: Population growth coastal Oaxaca, elaborated by author, data from Gutiérrez and Suárez (2003)

Population growth varies between 1 and more than 2% (Reyes Pérez, O. et al, 2010); it was higher throughout the past decades, especially in the 1990s when tourism development took up pace (Gutiérrez & Suárez, 2003). Figure 13 considers the wider region of coastal Oaxaca, not only the area of interest of this work. The major indigenous populations consist of Zapoteco, Mixteco and Chatino speakers (CDI, 2000). The municipality with the highest portion of indigenous inhabitant is Santa Maria Tonameca, meanwhile the hinterland of the coastal strip sees generally more indigenous population in the Sierra Sur (CDI, 2006).

The municipalities which make up for the area of interest show the demographic characteristics as portrayed in table 12:

Municipality	Total population 2005	Men	Women	Population growth 2000-2005
Santa Maria Huatulco	33194	16061	17133	3.16
San Pedro Pochutla	38798	18957	19841	0.95
Santa Maria Tonameca	21223	10265	10958	0.96
Santa Maria Colotepec	19223	9572	9651	1.18
San Pedro Mixtepec	33682	16151	17531	0.73
Villa de Tututepec de Melchor Ocampo	40767	19617	21150	-0.90
Total	186887	90623	96264	1,013 (Average)

Table 12: Municipalities population, (Marquez Mireles & al, 2011)

Economic productivity is very low, only the municipality of San Pedro Pochutla has a considerable output, almost entirely based on agricultural production. Agriculture is the main economic activity within the whole region. Temporary agriculture is dominant as the climate allows for irrigation only in exceptional cases. Pastures are found in the western part of the region, mainly in Villa de Tututepec de Melchor Ocampo (Reyes Pérez, O. et al, 2010). Soils are mainly classified as Leptosols and Regosols, both weakly developed mineral soils (FAO, 2006). Cambisols and Phaeozems exist to a lesser degree in the western part of the region (Reyes Pérez, O. et al, 2010).

Puerto Escondido and Las Bahias de Huatulco have airports, the later one also employs a harbor for cruise liners. Table 13 displays the amount of flights and passengers for these two cities.

	Puerto Escondido 2010	Las Bahias de Huatulco 2010
Flights	434	1.947
Flight passengers	21.916	165.855
Cruise liners	0	84
Cruise liner passengers	0	133.857

Table 13: Arrivals Coastal Oaxaca, (STYDE, 2011)

The remaining infrastructure consists mainly in the national Mexican highway 200 which goes along the coast line and is the main route for everybody coming from Acapulco which is well connected with Mexico City. The highway passes through Puerto Escondido and Las Bahias de Huatulco.

Agriculture is the main economic activity in the region although natural conditions (climate and soils) are not allowing for a high productivity. Tourism is already an alternative and on the rise (as will be demonstrated in chapter 6.2).

6.1.3 Poverty and food security

It does not exist data about poverty and food security for the six municipalities which make up the area of interest. Still an approximation can be accomplished by using other indirect indicators and overall data which corresponds to the entire state of Oaxaca.

62 % of Oaxaca’s population was considered multidimensional poor in 2008, which ranks fourth in Mexico, after Chiapas, Guerrero and Puebla, and accounts for a total of 2.2 million persons (CONEVAL, 2011, S. 13). 27.6 % of the population suffers from extreme while only 9.4 % are categorized as not poor and not vulnerable (CONEVAL, 2011, S. 30). 28.8 % of Oaxaca’s inhabitants do not have adequate access to alimentation (CONEVAL, 2011, S. 61). Regarding food security Oaxaca is to be found in Mexico’s South which was classified as the most severely hit region within the country (CONEVAL, 2010).

When looking at the grade of socio-economic marginalization in table 14 the considered municipalities represent the following classifications:

Grade of socio-economic marginalization	Municipalities
Medium	Santa María Huatulco, San Pedro Mixtepec
High	San Pedro Pochutla, Santa María Colotepec, Villa de Tututepec
Very high	Santa María Tonameca
<i>Table 14: Municipalities marginalization, (Marquez Mireles & al, 2011)</i>	

As this and previous data show the region can be considered poor as it sees very little economic activity, is suffering from socio-economic marginalization and offers no considerable sights which would allow to consider it anyhow better off than the rest of the state which is among Mexico’s poorest and most food insecure.

6.2 Tourism in Coastal Oaxaca

Regional Tourism can be divided into three investigative units as the two major tourism hubs of the region, Puerto Escondido and Las Bahias de Huatulco, are the places which host the vast majority of tourists, meanwhile smaller ecotourism cooperatives have fewer capacities and very different offers. The last unit to be analyzed consists in remaining sites which do not fall into one of the two main categories; they complement the touristic scenario of Coastal Oaxaca.

6.2.1 Puerto Escondido and Las Bahias de Huatulco

As it was outlined before Las Bahias de Huatulco receives more tourists than Puerto Escondido does. The history of that place is contradictory and marked by issues which were mentioned earlier as being crucial to the success of sustainability in tourism. It was a rural area inhabited mainly by four indigenous groups which accounted for a population of roughly 70.000 but everything changed in 1984 when FONATUR was to realize a big scale tourism project in that region which resulted in the misappropriation of territory owned by locals. The former inhabitants were marginalized and their access to resources, especially water, was threatened as big tourism installations were favored in a

way that enabled lavish and uncontrolled use, especially of water resources (Barkin & Pailles, 2002). Today Las Bahias de Huatulco is portrayed as a most sustainable tourism destination in the Americas and its responsible resource management is measured regularly (EarthCheck, 2012). Its contribution to community well-being is whatsoever not measured but described vaguely.

The inflow of tourists is growing when considering the overall picture. Its hotels are mainly designed for economically better off persons, disposing of 13 hotels in the five star category, 20 with four stars and 19 with three stars. The size especially of the five star resorts is immense and therefore these 13 hotels make up for 75% of all five star rooms available in the state of Oaxaca (STYDE, 2011).

Puerto Escondido is very much the contrast in terms of comfort. More than half of the hotels have no classification at all and only one five star hotel is present (STYDE, 2011). While Las Bahias de Huatulco was a big governmental project, its counterpart is a small and medium size business effort.

The overall number of tourists hosted in hotel establishments in these two tourism centers developed as shown in figures 13 and 14. It demonstrates how the strongly supported Huatulco area tends to push aside the success of smaller Puerto Escondido. While the aftermath of the 2008 world financial crises hit tourism in Puerto Escondido considerably hard, it was not felt in Las Bahias de Huatulco.

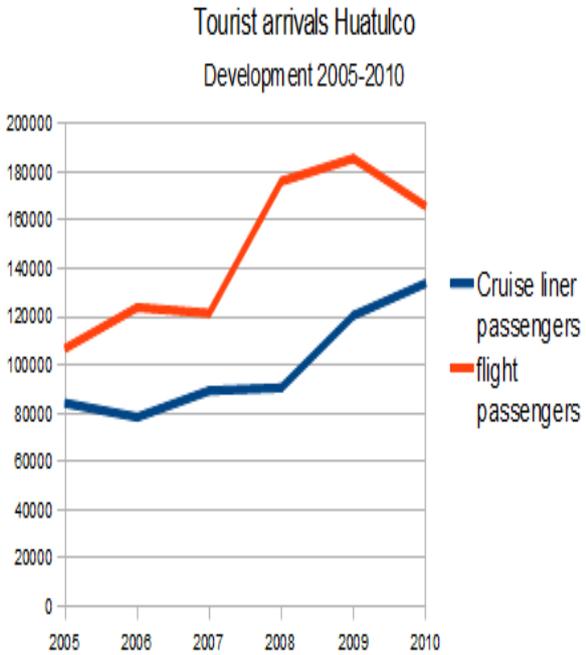


Figure 14: Tourist arrivals Huatulco, elaborated by author, based on (STYDE, 2011)

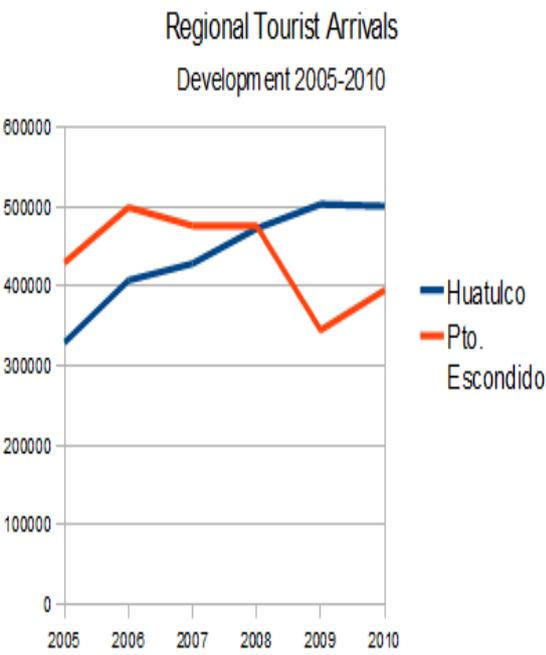


Figure 13: Regional tourist arrivals, elaborated by author, based on (STYDE, 2011)

The forms of tourism which are realized in these two places are based mainly on the regions natural capital. The Mexican Tourism Board and the tourism secretary of Oaxaca promote sun and beach tourism and the following activities shown in table 15:

	Puerto Escondido	Las Bahias de Huatulco
Sports	<ul style="list-style-type: none"> • Kayak • Diving • Fishing • Surfing • Rafting 	<ul style="list-style-type: none"> • Kayak • Diving • Fishing • Surfing • Rafting • Sailing • Rappelling • Golf • Extreme sports
Culture	<ul style="list-style-type: none"> • Festivals and traditions • (Art and handicraft) • (Cuisine) 	<ul style="list-style-type: none"> • Archeology • Art and handicraft • Cuisine • Festivals and traditions
Wellness	<ul style="list-style-type: none"> • Spa 	<ul style="list-style-type: none"> • Spa
Others	<ul style="list-style-type: none"> • Nightlife • Camping 	<ul style="list-style-type: none"> • Nightlife • Business tourism • Ecotourism

Table 15: Tourism activities promoted, (CPTM, 2011; STYDE, 2012)

The most remarkable differences can be found in the broader sports and cultural offer in Huatulco. An interview with a local tourism official and personal observation in Puerto Escondido revealed that “Art and handicraft” as well as “Cuisine” are part of the touristic offer although they are not mentioned in official national and state promotion (Riemann, 2012). It results that both places are very similar in their offer but according to earlier displayed data it can be estimated that both vary greatly in economic dimensions, as Huatulco attracts more visitors and many of them are able to spend big meanwhile Puerto Escondido can be considered an alternative and low budget destination.

Gina Machorro, who works as a tourism official in Puerto Escondido, related to the above topics in the following ways (2012):

Mainly plastic articles are sold, [but only] few real regional handicraft [...] there are seven organizations which have to be united in order to sell their handicraft.

There is handicraft [sold in Puerto Escondido], some, only some, very little from the coast. [...]

Handicraft sellers are from Guerrero. You have to show them [tourists] that there is local handicraft.

Local dishes are sold in village restaurants but here in the touristic zone they only sell sea food.

[...]

Due to ideology in the 1960s and 70s many hippies came looking for a place without much tourism, now we have a lot of cabanas, hotels and restaurants. Now we have family and adventure tourism...

6.2.2 Ecotourism cooperatives

Along the coast various ecotourism cooperatives exist, of which some are distributed on more than one community. In La Vainilla one of these cooperatives is situated and it is worked by members of the same community only. Local NGO *La Red de los Humedales de la Costa de Oaxaca* is helping all cooperatives in terms of organizing and coordinating efforts but in the end each one takes it’s one decisions (HumedalesOaxaca, 2010). See appendix #4 for their map of the region and the location of the cooperatives.

La Vainilla's touristic offer has to be compared to the other cooperatives in order to determine the competitive context for their economic development. Only by that it can be understood what kind of tourism the region drives on and based on such conclusions a proposal can be formulated which allows for further, promising development of La Vainilla's ecotourism cooperative. The proposal should fit the overall picture of regional tourism, meeting tourist's demand and find a still unoccupied niche within the existing tourism scheme of Coastal Oaxaca.

In table 16 the cooperatives are ordered geographically, starting with the most western one and finishing with the most eastern one. Thereby the relative distance to La Vainilla is displayed. All data mentioned in this table is based on information from *La Red de los Humedales de la Costa de Oaxaca*, governmental and private promotion online sites and first field visits. All sites realize their boat tours in mangrove lagoons.

Cooperative	Accommodation	Installations	Activities		
			Flora/Fauna	Culture	other
Las Lagunas de Chacahua	Numerous cabañas (>20) Camping	Restaurants Crocodile station	Boat tour Bicycle tour Bird watching Horseback tour		Beach Watch tower
Barra de Navidad	Cabañas Camping	Restaurant	Boat tour Bird watching Crocodiles		Beach
Escobilla	8 cabañas Camping	Restaurant Multipurpose room Iguana station	Bird watching Boats tour Turtle camp		Beach
La Vainilla	Camping	(Restaurant)	Bird watching Boats tour Crocodiles (Bicycle tour) (Hiking)		Beach
Ventanilla	Cabañas Camping	Restaurant	Bird watching Boats tour Turtle camp Horseback tour Crocodiles Bicycle tour Hiking		
Zapotengo	1 cabaña, Camping	Restaurant Kitchen	Bird watching Boats tour Hiking	Sweatlodge	Beaches Meditation Yoga
Tangolunda	Camping		Bird watching Hiking Bicycle tour		Beach Rafting Rappel

Table 16: Communities touristic offer, (Ecoturismo Oaxaca, 2012; Ecoturismo Certificado, 2011; La Ventanilla, 2010)

Compared to Puerto Escondido and Las Bahias de Huatulco, which have more sports and cultural activities to offer, the ecotourism cooperatives thrive almost entirely on the richness and attractiveness of local flora and fauna. They vary considerably in size (accommodation and further installations) while their offer is quite homogeneous. La Vainilla's cooperative looks comparably small and simple.

6.2.3 Further touristic places

Despite the mentioned tourism centers and ecotourism cooperatives some places attract a good number of tourists which is why they must be included in this overall description of tourism in Coastal Oaxaca. Mainly two sites are of interest, one due to the immense amount of tourists it attracts and the other because of its thematic closeness to ecotourism.

Santa Catarina Juquila had 839.915 visitors in 2010, which is almost as much as Puerto Escondido and Las Bahias de Huatulco combined, and hosts only 9 restaurants and 1 bar (STYDE, 2011). *Our Lady from Juquila* is 30 cm high statue of Mary, Jesus' mother, and is said to work miracles since the 17th century (Oaxaca Mio, 2000). She makes this remote, unspectacular village a major place of catholic pilgrimage in Mexico and is worshipped outside the country as well (La Virgen de Juquila LA, 2010). Though not located at the coastal strip of Oaxaca but further inland, around 40 km north of Puerto Escondido, this place is of importance for tourism in the coastal region as brings visitors to the region. As mentioned before tourists cross tourist categories all the time, therefore travelling to a religious artifact, praying for a miracle or personal well-being and afterwards enjoying the pleasant beaches and delicious seafood is no contradiction. Though it cannot be outlined how many pilgrims join the non-religious tourism, Santa Catarina Juquila is the third and actually biggest tourism hub of the region and deserves its place in this chapter.

Mazunte is located right next to La Ventanilla, one of the most professional ecotourism cooperatives of the region, and attracts many alternative travelers as well as nature lovers (Haas, 2011). It became popular not only because of its beautiful beaches but also due to the Mexican Turtle Center (Centro Mexicano de la Tortuga) which was established in 1994 and ever since attracted visitors and contributed to protection efforts (Puerto Angel, 2003). The respective sea turtle species were described in chapter 6.1.1.

Despite these two important additional sites the region has other iguana breeding stations, ranch houses, a brewery of traditional *Mezcal* liqueur and scenic small villages with antique churches (Riemann, 2011).

6.3 Summary

The region of Coastal Oaxaca has three tourism centers which attract more than 1.5 million tourists per year. Despite the three big ones several smaller places participate actively in tourism, some became established alternatives to mass tourism while others are limited to complement and enrich the offer in the tourism hubs. As became clear throughout the chapter all tourism in the area of interest thrives rather on natural resources as attractions than on cultural ones. Only Juquila in the hinterland breaks with that general characterization. All coastal sites base their offers on beaches

and/or mangrove lagoons. Landscape beauty and local biodiversity are giving value to these places while only in the cities some cultural value and an additional sports offer are added. The region is marked by poverty and a lack of economic alternatives with the agricultural sector being the biggest employer. Tourism is rising since decades but is concentrated mainly in Puerto Escondido and Las Bahias de Huatulco.

Chapter seven: La Vainilla

The actual chapter displays the results of field research conducted during various field trips, the first in January 2011 and the last in May 2012. It aims at describing the community La Vainilla in its socio-cultural, economic and environmental dimensions. Special attention is paid to aspects of resource management as it turned out to be a topic of utmost importance to understand the actual situation and problems of the community. The ecotourism cooperative is another crucial point to be considered as its social embedment and touristic offer are two main points of departure when formulating a proposal for touristic development which shall be able to empower parts of the community which are in need for it.

A community survey was realized and involved all households. Profound, qualitative research was carried out with a number of persons that were found to be more interested in the respective topics and their conduct allowed for further frequent contact while others of the community reacted more reluctant to the field researchers inquiries. The group of persons who participated in further interviews is called Focus Group.

The Focus Group consists of members of five households like shown in table 17. One household belongs to one of the local elders, Don Ernesto Garcia Ramirez, who serves as the ecotourism cooperatives president. Another household belongs to Teresa Garcia Hernandez, who runs the

Household	Members	Tourism involvement	Interview partners
Ernesto G.R.	4	President	2
Teresa G.H.	9	Operation	3
Elena G.H.	8	No	2
Ester R.V.	6	No	2
Maria J.L.	8	No	2

Table 17: Focus Group, elaborated by author (Riemann, 2011)

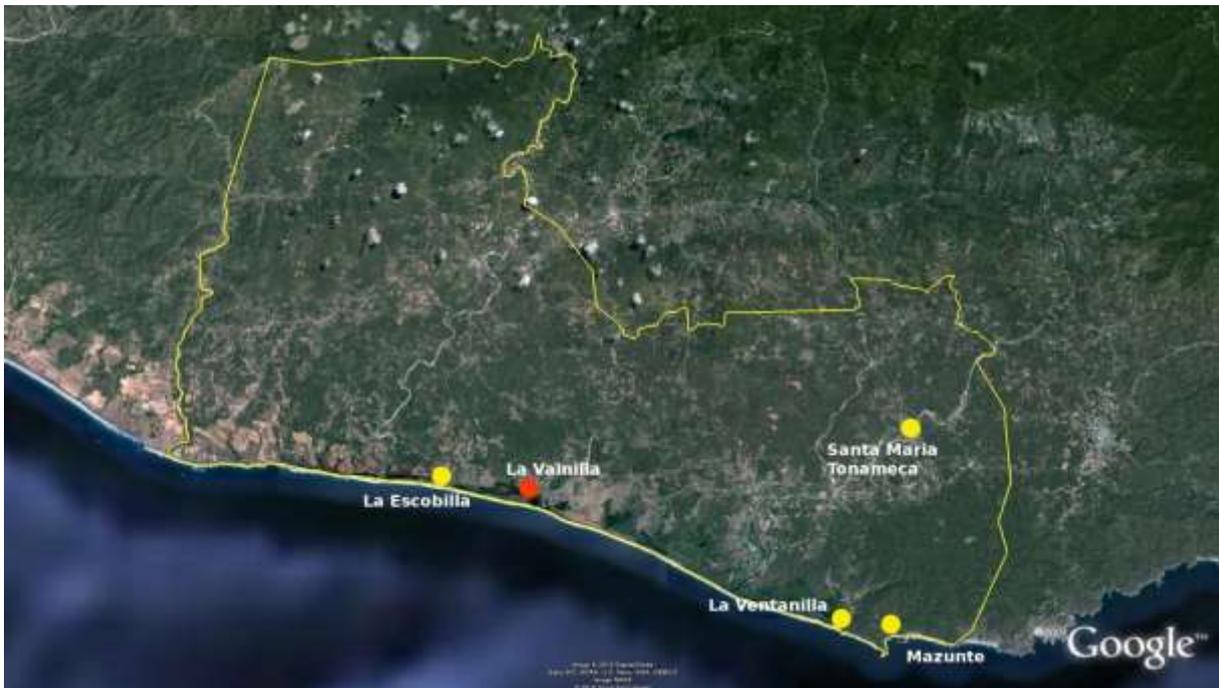
everyday business of the cooperative together with her daughters. The third household is headed by Elene Garcia Hernandez and her husband, both not related to the cooperative. Ester Ruiz Valencia and husband make up the fourth household and are not involved in tourism neither. Same applies for the household of Maria Juarez Luna and husband. Interviews were done with the parents/elders of each household with the children participating as they liked.

Exceptions are two daughters of Teresa Garcia Hernandez who are very engaged in the ecotourism cooperative (participating in additional workshops and working as guides) and are considered the respective experts. The Focus Group represents 35 persons (children included) and consists of 11 official interview partners.

7.1 The Municipality Santa Maria Tonameca

La Vainilla is situated in the South of Santa Maria Tonameca which is the respective municipality and also home to other touristic places mentioned earlier: La Escobilla, La Ventanilla and Mazunte which are all to be seen in GIS map 2. The city hall is located in a small town with the same name as the municipality. A municipal ecological inventory (*Ordenamiento Ecologico Municipal*) was elaborated till June 2010 (Municipalidad de Santa Maria Tonameca, 2010) but was seemingly not followed up

and finished due to political changes in the state which were so severe that they caused some uproar in the coastal area (CNN Mexico, 2010). But as this inventory is quite advanced and detailed it serves very well the purpose of providing data which could not be gathered by the field researcher.



GIS Maps 2: Santa Maria Tonameca Municipality, (Municipalidad de Santa Maria Tonameca, 2010)

7.2 The community's history, population and culture

The history of La Vainilla begins 1955 ,when the *Garcia Ramirez* family from the region known as *Miahuatlan*, which is located approximately 80 km north in the very same state of Oaxaca, first settled here as peasants. They were working for the owner of a nearby ranch called *Los Remedios* and were given the land as payment for their labor force. The name “La Vainilla” means small pod and became the site’s denomination because a big tree was standing on the ranch ground with small pods hanging from its branches. The tree was called “La Vainilla” and was big enough to provide shade for live-stock. The pods were filled with beans and once fallen down these pods fed the live-stock of the ranch owner. After the death of the parents their children became the landlords and divided the territory. The population increased over time with the majority of inhabitants being linked to the original *Garcia Ramirez* family (Garcia Ramirez, 2011).

Today the community has twenty households of which the inhabitants of sixteen are descendants or otherwise akin of the original *Garcia Ramirez* family (Riemann, La Vainilla Community Survey , 2011). Three of the remaining four households are interlinked by kinship as they are part of the *Valencia* family which arrived in La Vainilla some 15 to 20 years ago, migrating from *San Augustin Loxicha* where life was more difficult as the soil is less fertile (Valencia, 2011). All family members speak Zapoteco (Riemann, La Vainilla Community Survey , 2011), an indigenous language, and therefore are regarded as indigenous people according to Mexican classification (CDI, 2012). The twentieth household belongs to the local school teacher who moved to the community with her son four years ago due to her job assignment (Garcia Perez, 2011).

The twenty households combine for a total population of 94 inhabitants (Riemann, La Vainilla Community Survey , 2011), of which 75 belong to the *Garcia Ramirez* family, 17 to the *Valencia* family and two are categorized as others like shown in figure 15. Reportedly 17 persons emigrated, all to bigger Mexican cities or to the USA. 15 of them belong to the third generation of the *Garcia Ramirez* family in La Vainilla (Riemann, La Vainilla Community Survey , 2011).

All inhabitants participate in events and services of the local catholic chapel. It is located on top of a 44 meters high hill from which the area can be overseen. A priest attends the chapel on special occasions such as weddings. The patron saints of the community are the Three Kings from the East (*Reyes magos*) – Melchior, Caspar and Balthazar - and therefore the most important religious festivity is celebrated the 6th of January (Riemann, La Vainilla Community Survey , 2011). According to Christian belief on that day the three wise men arrived in Bethlehem, worshipped and praised the newly born king of the Jews, Jesus Christ (katholisch, 2012). Being of major importance for the global catholic community the remains of the three kings attract a vast amount of (religious) tourists in Cologne, Germany (Lauer, 2012). In the chapel in La Vainilla they are represented by three figures which stand above a picture of Mary, the mother of Jesus, and a crucified Christ (Riemann, 2011).

7.3 Social cohesion

Four ways of describing social cohesion were found useful during first field visits and interviews in which communal life was asked about. Festivities, labor help out, money lending and public spaces are good indicators for solidity in a small rural community where social organization is normally not institutionalized but based on informal interaction. The ecotourism cooperative is an exception and will be discussed later on.

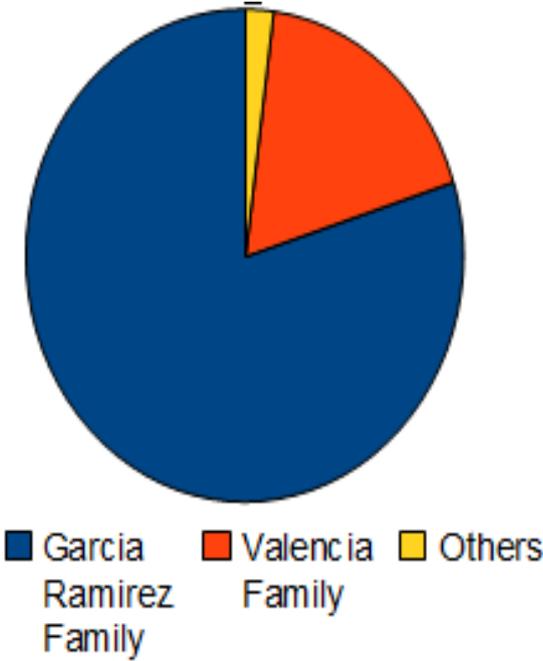


Figure 15: Kinship structure La Vainilla, elaborated by author, (Riemann, 2011)

All interviewees of the Focus Group agreed on the fact that only on three occasions the whole community comes together and celebrates common events. All three are of religious nature being the day of the patron saints of the community, January 6th, Easter and the Christmas *Posadas*. Church service is part of all three celebrations but only the *Posadas* involve a more lively interaction of inhabitants as the entire community makes trips to eight different households and thereby commemorate the journey of Maria and Joseph before arriving in Bethlehem. As they were in need for help the couple was offered shelter in various moments. Posada means lodging and shelter and this festivity is explicitly concerned with helping each other out and strengthening social bondage in a symbolic way. Despite the mentioned events it very rarely happens that the whole community unites and celebrates as a whole. Weddings, baptisms, birthdays, funerals and religious events of minor importance were described as occasions which are celebrated only in a smaller family circle (FocusGroup, 2011).

Labor help out is very uncommon in La Vainilla (FocusGroup, 2011). Intense and heavy work is mostly realized within families and may be supported by external peasants who are paid for their service. Examples are harvest season and house construction or maintenance (like renewal of palm leaf roof). Poorer households make every family member participate in order to save money. Only once an occasion of labor help out was mentioned in interviews which asked explicitly about that topic. Don Ernesto helped his son-in-law to put a new palm leaf roof on his house (Garcia Ramirez E. , 2011). All interviewees were consistently describing the situation in the same way that helping out with hard work is anything but common (FocusGroup, 2011).

Lending money is a frequent practice in La Vainilla, it is done between close family members, somewhat distant relatives and between locals and outsiders. Interest is not charged when money is borrowed by a close family member. Distant relatives have to pay back low interest rates and between 10 and 20 % interest is charged by outsiders (Garcia Ramirez, 2011). The latter option is obviously the worst one and only drawn on when other opportunities are missing. It could not be estimated how often money, no matter in what way, is borrowed.

Public spaces are very rare in La Vainilla and most of the time they are not used for any kind of reunion (Garcia Ramirez A. , 2011). The chapel is a site open for everybody but restricted in its use, and encounters there are determined by religious activities. The local soccer field is used as such and provides regular opportunities for people to come together. The hut of the ecotourism cooperative is used for reunions as well as the school building but both places provide space only for official events (FocusGroup, 2011).

The ecotourism cooperative of La Vainilla was founded in 2004 and started working in 2007. In the beginning eight households were participating, building up the project and managing it in its early stages. Disputes among families over decision making and economic benefits led to the rupture of the original formation of members (Garcia Hernandez, 2011). Today only two households participate actively and frequently in the cooperative: one family is running the everyday business and is present at the ecotourism hut in order to receive possible visitors, meanwhile one of the community elders serves as president and is essentially involved in any decision making processes (Riemann, 2011). The way it is run these days, this organization mostly lost its cooperative dimension and historically rather served the opposite. All formerly active members of the ecotourism cooperative stated that they are mad at the families who are operating it now (Riemann, La Vainilla Community Survey , 2011).

Despite the mentioned factors it has to be mentioned that elders of the Garcia Ramirez family are said to help out some of their children with staple food, mainly corn, in cases they were not able to produce sufficiently on their own, due to inferior agricultural land size or a poor harvest (FocusGroup, 2011). Frequency and dimension of this support could not be verified which is why it is quoted only as an addition.

Social cohesion is very difficult to assess and the indicators which came up during conversations with locals provide only a limited chance of clarifying the situation. Whatsoever it can be said that an overall negative view was recognized in most occasions, interview partners were complaining about lack of cooperation and stressed that everybody has to take care of his own business. Few communal festivities and absence of labor help out support that point while family based system of lending money and usage of public spaces emphasize segmentation of community. The description of the role of the ecotourism cooperative within the social network of La Vainilla is adding to the conclusion that social cohesion should be considered as weak and problematic. It thereby also becomes a central topic for empowerment which sees strong social organization as an essential aspect of positive development.

7.4 The natural environment and climate

The community and its environment do not present any particularities from the climate and environment data displayed in chapter six. Climate is classified as Awo according to the Köppen-Geiger climate categories with average temperatures between 22 and 26°C, and an average annual precipitation between 800 and 1000 mm. The humidity index for La Vainilla is between 0.65 and 1, and is labeled sub-humid dry (Municipalidad de Santa Maria Tonameca, 2010). The rainy season begins earliest in May and ends most lately in October (Garcia Hernandez, 2011).

In 1997 hurricane Paulina struck the coastal area, also affecting La Vainilla, which saw its mangroves uprooted and its harvest damaged (Garcia Ramirez E. , 2011). Reportedly it was the ninth of October when the hurricane hit the region near Puerto Escondido. The most damage was caused in Acapulco, located further north. At least 230 people died due to direct effects of Paulina (National Hurricane Center, 1998).

La Vainilla hosts a mangrove lagoon, coastal dunes and forests. A classification of forests on municipality level displays same forest types as mentioned in chapter six (Municipalidad de Santa Maria Tonameca, 2010). Field researched did not involve the creation of a forest inventory but enlisting local tree species which are used/ consumed by inhabitants. Tables 18 and 19 demonstrate the local flora richness regarding utility. Mangroves are listed as they are the basis for tourism activities (boat tours and bird watching) although they are not used directly. Data is based on Focus Group interview results.

Tree species			
Spanish/Local	English	Scientific	Local Use
Mangle blanco	White mangrove	Laguncularia racemosa	Tourism
Mangle negro	Black mangrove	Avicennia germinans	Tourism
Mangle falso/botoncillo	False mangrove	Conocarpus erectus	Tourism
Mangle rojo	Red mangrove	Rhizophora mangle	Tourism
Noni	Great morinda	Morinda citrifolia	Medical plant
Neem (Hindi)	Neem (Hindi)	Azadirachta indica	Medical plant
Morro	Calabash tree	Crescentia cujete	Gourd (Jícara)
Mango	Mango	Mangifera (specie unidentified)	Consumption
Coco	Coconut	Cocos nucifera	Consumption
Pistacho	Pistachio	Pistacia vera	Consumption
Papaya	Papaya	Carica papaya	Consumption
Huizache	---	Fabaceae (specie unidentified)	Fuel wood
Cornizuelo	---	Acacia collinsii	Fuel wood
Mezquite	Mesquite	Prosopis (specie unidentified)	Fuel wood

Table 18: Tree Species, elaborated by author, (FocusGroup, 2011)

Non tree flora			
Spanish/Local	English	Scientific	Local Use
Sábila	Aloe	Aloe (specie unidentified)	Medical plant
Albahaca	Basil	Ocimum basilicum	Consumption
Chepil	Longbeak Rattlebox	Crotalaria longirostrata	Consumption
Yerba mora	Glossy nightshade	Solanum americanum	Consumption
Nopal	Nopal	Opuntia (specie unidentified)	Consumption
Flor de Jamaica	Roselle	Hibiscus sabdariffa	Consumption
Ajonjoli	Sesame	Sesamum indicum	Consumption
Cacahuete	Peanut	Arachis hypogaea	Consumption
Maiz	Corn	Zea mays (specie unidentified)	Consumption
Ejotes	Beans	Phaseolus vulgaris	Consumption
Almendra	Almond	Prunus dulcis	Consumption
Chile	Chili pepper	Capsicum (specie unidentified)	Consumption

Table 19: Non tree flora, elaborated by author, (FocusGroup, 2011)

No flowing or non-flowing surface fresh water body can be found within the territory of the community. Once the rainy season ends all flora starts to dry up, except the mangroves which are supplied by salty water (Riemann, 2011).

Topography of the place is determined by the foothills of the sierra sur de Oaxaca which reach into the Pacific Ocean. The site is hilly and its highest elevation, the hilltop where the local chapel stands, is measured at 44 meters above sea level (Riemann, GPS data collection, 2011).

The satellite image displays the general spatial distribution of local flora: mangroves are dark green, irrigated agricultural land in the East belongs to the neighbor community *Macahuite*, in the North exists a papaya plantation which does not belong to La Vainilla. The remaining flora has a weaker color due to minor primary biomass production. Map 1 highlights the dry climate which strongly affects the community once the rainy season ended.



Map 1: La Vainilla, (Google earth, 2011)

Local fauna can be divided in two categories: domestic and touristic. Further use was not mentioned and therefore not investigated. Tables 20 and 21 enlist identified fauna. Note that bird species are insufficiently mentioned as their diversity is not captured properly. The mentioned species were identified by local guides and/or promoted by the ecotourism cooperative in order to attract bird watching tourists.

Domestic fauna			
Spanish/Local	English	Scientific	Local Use
Pollo	Chicken	Gallus gallus domesticus	Consumption
Guajolote	Turkey	Meleagris (species unidentified)	Consumption
Borrego	Lamb	Ovis aries	Consumption
Vaca	Cattle	Bos taurus (sub-species unidentified)	Consumption
Perro	Dog	Canis lupus familiaris	Guard

Table 20: Domestic fauna, elaborated by author, (Riemann, 2011)

Touristic fauna			
Spanish/Local	English	Scientific	Local Use
Cocodrilo	American crocodile	Crocodylus acutus	Attraction
Urraca copetona	White-throated Magpie-Jay	Calocitta formosa	Attraction
Saltapared feliz	Happy Wren	Thryothorus felix	Attraction
Granatelo mexicano	Red-breasted Chat	Granatellus venustus	Attraction
Espátula rosada	Roseate Spoonbill	Platalea ajaja	Attraction
Pijije aliblanco	Black-bellied Whistling-Duck	Dendrocygna autumnalis	Attraction
Garza cucharón	Boat-billed Heron	Cochlearius cochlearius	Attraction
Avoceta americana	American Avocet	Recurvirostra americana	Attraction
Chorlito níveo	Snowy Plover	Charadrius nivosus	Attraction
Tijerilla	Magnificent Frigatebird	Fregata magnificens	Attraction

Table 21: Touristic fauna, elaborated by author based on (Garcia Hernandez, 2011; HumedalesOaxaca, 2010; Riemann, 2011)

7.5 Economic activities and sources of income

The following descriptions do not include agricultural activities as they are mostly not converted into monetary value and play an utmost role in this rural community in terms of food security. An extra sub-chapter is dedicated to that topic. Results showed that the majority of the economically active population of La Vainilla does not exercise a professional work but rather employs in casual engagements. Men are more active in making money while women only in rare cases contribute to the household budget which is due to their time consuming domestic tasks such as taking care of children, cooking and maintaining the home. Table 22 gives an overview of economic activities.

Activity	Households engaged	Total number of males engaged	Total number of females engaged
Wageworker	10	16	0
Grocery store	3	0	3
Tailor	2	0	2
Teacher	1	0	1
Carpenter	1	1	0
Employee	2	2	0

Table 22: La Vainilla economic activities, elaborated by author, (Riemann, 2011)

Note that of the ten households without any wageworker six are headed by community elders, one by the school teacher, two by the enlisted employees and one by a grocery shop owner (Riemann, La Vainilla Community Survey , 2011).

All wageworkers work on papaya plantations but only one person is working on a regular basis, the remaining fifteen are employed in times of need for additional labor and do not have a steady income. The two tailors and the carpenter work as freelancer, so their income is equally unstable. In fact the only four persons in the community who have a fixed and regular salary are the primary school teacher, one shop salesman who is employed in Puerto Escondido, one bus driver for regional transportation service and one man who is the leading worker in a nearby papaya plantation. All three grocery stores are very basic in terms of offer and facilities therefore economic benefits remain modest (Riemann, La Vainilla Community Survey , 2011).

Most families depend on the income generated by men engaged as wageworkers. The average payment for one day working is 150 Mexican Pesos. Interviewees stressed the seasonality of the employment possibilities but could not detail the frequency. It remained unclear how much a wageworker gains throughout the course of a year (Riemann, La Vainilla Community Survey , 2011). Taking the January 2012 value of the basic food basket, 1864 Mexican Pesos (SEDECO, 2012), and divide it by a day's salary, it becomes clear that a wageworker would have to be employed 12.5 days per month in order to afford the respective goods. It is questionable that wageworkers reach that number every month as employment was classified as very irregular throughout the year. It is more likely that the wageworkers average an income which compares to the average of poor rural Mexicans, meaning around 611 Mexican Pesos. Interviews revealed that during papaya harvesting and watering season (watering during dry season and harvesting after rainy season) wageworkers get employed up to 6 times a week meanwhile during the rest of the year employment frequency sank to 0 times a week. The highest possible income per month would be around 3750 Mexican Pesos per wageworker while the lowest would be zero. This translates in 7 months potentially above average rural poverty line (611 Mexican Pesos) and 5 months below it. Full employment would even raise income above the basic food basket line. Note that this is only an estimation, employment frequency is said to vary greatly and therefore the calculated income with seven month above poverty line must be considered the best possible situation but unlikely the most realistic. In chapter nine the incomes will be translated into poverty classifications taking into account more factors than the mere income.

Despite the high probability of insufficient monetary resources from employment it is not clear if the respective families suffer from poverty and food insecurity as most of them are engaged in agricultural production. Growing own crops diminishes the need to purchase food in a commercial way. But before considering the impact of agriculture in La Vainilla the sources of income have to be

completed though the mentioned activities are the major spring of Pesos. Additional engagements are few and only certain families have ways to make some extra money as shown in table 23.

Activity/Source of income	Households engaged	Total number of males engaged	Total number of females engaged
Casual market vender	3	0	4
Land lease	2	0	2
Receiving money from children	2	1	1

Table 23: La Vainilla additional activities, elaborated by author, (Riemann, 2011)

As the community elders are the major land owners they are the ones who rent pieces of land which is worked by the younger generation. Two of the elders receive money from their children who are working in the USA (Riemann, La Vainilla Community Survey , 2011). Therefore additional income sources remain sporadic for the majority of the community inhabitants who have to rely on wage working and on their own agricultural production.

7.6 Land tenure

As most inhabitants rely to some extend on their own agricultural production it is important to outline the varying access to soil as a major resource which determines levels of poverty and food security in a rural community such as La Vainilla. Due to little sources of monetary income the self-employment in crop production becomes vital for many.

Twelve households have family members who work the land and produce food which is consumed by the same family. The remaining eight households are headed by the two employees, the school teacher, two community elders, one grocery shop owner and two men who work as wagers when possible (Riemann, La Vainilla Community Survey , 2011).

As the Garcia Ramirez family settle first in the area that today is La Vainilla, they were the ones who divided the land. The family, who arrived later, namely the Valencia family, found the land already split up between the second and third generation of the Garcia Ramirez family (Garcia Ramirez E. , 2011). The second generation (the actual elders) holds the majority of land while the third generation possesses lots of inferior size. Few of the third generation of the Garcia Ramirez family and all households who belong to the Valencia family are not holding land of their own (Riemann, La Vainilla Community Survey , 2011) as shown in table 24.

Historically constituted social groups	Number of households	Number of households owning land	Number of households renting land	Number of households letting land
Garcia Ramirez (2. Generation/elders)	5	5	0	2
Garcia Ramirez (3. Generation)	11	6	0	0
Valencia family	3	0	2	0

Table 24: La Vainilla social organization, elaborated by author, (Riemann, 2011)

The school teacher was not included as she does not belong to one of the residing families, does not own land, never cultivated crops and has a regular income which allows for the maintenance of her family. Land tenure is therefore of no importance to her.

Various interviewees, both from third generation Garcia Ramirez and from the Valencia family, expresses that they find the size of their land insufficient in order to satisfy their needs (Ruiz Valencia, 2011).

7.7 Resource management and access to resources

Most natural resources which are of importance for the inhabitants of La Vainilla have been mentioned already but the way they are managed by the community or particular families needs to be displayed as well as the distinct accesses which determine the use of respective resources. This description serves on the one hand to further verify which households are more marginalized than others and on the other hand it demonstrates how different knowledge manifests in different resource management types. The later also indicates possible strengths of certain households when considering how resource management in tourism can be amplified in terms of social participation and in order to scale up the site’s offer for visitors.

7.7.1 Forestal resources

The mangrove lagoon and its trees are for touristic use only which effectually limits the accessing households to one. The family of Teresa Garcia Hernandez manages the ecotourism cooperative’s operational business and realizes boat tours in the lagoon (Garcia Hernandez, 2011). The use is non-extractive and any other use is ruled out legally.

Fuel wood is extracted from local forests in the West and North of the community. The respective species were mentioned above. Though the forestal territory is not called communitarian but private the access to it is granted all inhabitants of La Vainilla and nobody is charged. Use is extractive and limited to the dry season, from October to May (FocusGroup, 2011).

7.7.2 Energy consumption

All twenty households of the community are connected to the grid which supplies them with electricity. Only exception are the facilities of the ecotourism cooperative which are powered by a solar panel. No devices for cooling down houses were mentioned and heating up houses is unnecessary due to hot climate. The major energy source for cooking is fuelwood. In various cases gas is used additionally as a backup energy source as shown in table 25.

Energy source (for cooking)	Number of households using respective energy source
Fuelwood	11
Gas	2
Fuelwood and gas (additionally)	7

Table 25: La Vainilla energy use, elaborated by author, (Riemann, 2011)

As mentioned before the procurement of fuelwood is free of charge. This leaves the utilization of gas to the wealthier families. The two households which rely entirely on gas are headed by the school teacher and one of the community elders, who works as a tailor and leases some of her land. The seven household which are categorized as using gas additionally are run by Garcia Ramirez families, three by elders (2. Generation) and the remaining four by some of their children (Riemann, 2011). A standard gas bottle container with a volume of 30kg costs around 350 Mexican Pesos.

7.7.3 Agriculture, livestock and fishing

The variety of crops and domestic animals was described earlier but it has to be demonstrated what the twelve respective families grow and hold. This does not only expresses the dimensions of resource access and its utilization but also shows the base for the diet of the respective families. Note that medical plants are not listed although they may enrich diets but all mentioned medical plants were found to be growing on ground which can be accessed by everybody, in forests and on the roadside. The table cannot guarantee to display the entirety of crops, trees and livestock but rather aims at showing certain characteristics of local agriculture and differences in variety of produced aliments. All agriculture is based on precipitation during rainy season. Respective research showed the following results which are exposed in table 26.

Families and social groups	Growing corn	Number of other crops (beans, pumpkin etc.)	Fruit trees	Livestock variety (number of different animals held, max 4)
Garcia Ramirez family, second generation				
Ernesto G.R.	Yes	2	Yes	2
Benito G.R.	Yes	1	Yes	0
Apolonia G.R.	Yes	0	Yes	4
Isidro M. R.	Yes	3	Yes	3
Garcia Ramirez family, third generation				
Teresa G.H.	Yes	1	Yes	1
Elene G.H.	Yes	0	Yes	0
Joaquin M.J.	Yes	3	Yes	1
Obdulia G.R.	Yes	0	No	2
Celso G.H.	Yes	3	No	3
Rosa G.H.	Yes	0	No	2
Valencia family				
Ester R.V.	Yes	0	Yes	1
Maria J.L.	Yes	0	No	0

Table 26: La Vainilla agriculture and livestock, elaborated by author, (Riemann, 2011)

Fishing in this coastal community is uncommon among locals, only one man was mentioned as participating in this activity. He does so in another locality where he joins fishermen and goes out

onto the open sea (Riemann, La Vainilla Community Survey , 2011). In La Vainilla no fishing boat exists. At times men try fishing at the sea shore, throwing nets into the waves, which normally results in a few, little fish (Riemann, 2011). Fish as alimentation is unimportant as it is an unsteady and very little source. As an economic activity it is as well insignificant (FocusGroup, 2011).

Remember that elders of the Garcia Ramirez family are said to help some of their children out if they cannot produce sufficient food on their own (FocusGroup, 2011).

One interviewee pointed out that a greater diversity of crops was cultivated some years ago but after hurricane Pauline struck the region all plants were destroyed and people did not make the effort to reestablish all crops again but only the major ones, mainly corn and beans (Garcia Ramirez E. , 2011). Other members of the Focus Group affirmed the loss of agrodiversity and all gave the same explanation when asked about the reason why they did not reestablish the former variety of crops: “due to weakness” (FocusGroup, 2011).

7.7.4 Water management

The combination of various factors point to the importance of water management in La Vainilla. Its population relies mainly on agriculture as the chief source of aliments with livestock being in the second place. Hot climate and lack of fresh water bodies allow only one harvest per year, at the end of the rainy season or some two month later in the case of corn. Water for crop growth and human consumption is essential and rare, and even more so for those who are active as farmers and lack additional stable monetary income sources.

Seven wells exist in the community and ownership results from historic demographic development as all five elders possess their own well and two households of their children’s generation as shown in table 27.

Well number	Owner	Historically constituted social class	Number of households using well	Number of persons using well
1	Ernesto G.R.	Garcia Ramirez family, second generation	4	17
2	Elena G.H.	Garcia Ramirez family, third generation	1	8
3	Rosa G.H.	Garcia Ramirez family, third generation	2	6
4	Benito G.R.	Garcia Ramirez family, second generation	6	28
5	Apolonia G.R.	Garcia Ramirez family, second generation	2	4
6	Isidro M. R.	Garcia Ramirez family, second generation	2	13
7	Catalina G.R.	Garcia Ramirez family, second generation	3	8

Table 27: La Vainilla water management, elaborated by author, (Riemann, 2011)

The remaining thirteen households make use of the very same wells. Kinship determines who shares his/her well with whom. In the case of the teacher (who has no relatives within the community) Ernesto G.R. provides water, and in the case of the Valencia families (who are no kinsmen to the other families) it is Benito G.R. who allows them to access his well. But in the latter case support seems to be little or restricted to emergency situations as the three Valencia families are very active in saving water and as water scarcity was mentioned frequently among them (FocusGroup, 2011). As all wells have the same size it remains obvious that well number four is subject to overuse and that some sort of restriction to its usage must be in place from the side of the owner. The Valencia

families are the most likely to be affected by such limitations as kinship marginalizes them among users.

Water quality varies considerably as table 28 depicts. In general well water is used for cleaning and

Well number	Water quality	Consumed as drinking water
1	Fresh	Yes
2	Fresh	Yes
3	Salty	No
4	Salty and dirty	No
5	Salty	No
6	Slightly salty	Yes
7	Fresh	Yes

Table 28: La Vainilla well usage, elaborated by author, (Riemann, 2011)

washing, and only in certain cases (and times) as drinking water. Categorization of water quality follows description of locals during interviews and survey (Riemann, La Vainilla Community Survey , 2011; FocusGroup, 2011). Despite the demonstrated use of well water as potable water it has to be mentioned that all households purchase potable water from local mobile vendors who deliver the resource by small trucks. With the ongoing dry season

people rely more and more on commercially purchased drinking water as wells do not provide sufficient water for six month or even more (Riemann, 2011).

7.8 Resources and living space management

With four households from the Focus Group in-depth interviews were held about domestic resource management and organization of living space. Surveying of domestic installations and listing of natural resources available was done in order to provide insights on differences between households of different historically constituted social groups. This relates directly to their economic well-being and availability of resources. The fifth households of the Focus Group, headed by Teresa G.H., is not included in this chapter as she and her daughters spend all day at the ecotourism cooperatives facilities which will be described later on. Figures 16, 17 and 18 display the result of that research. What is named living room in the schemes also serves as bed room. Note focus on water as a vital and rare resource.

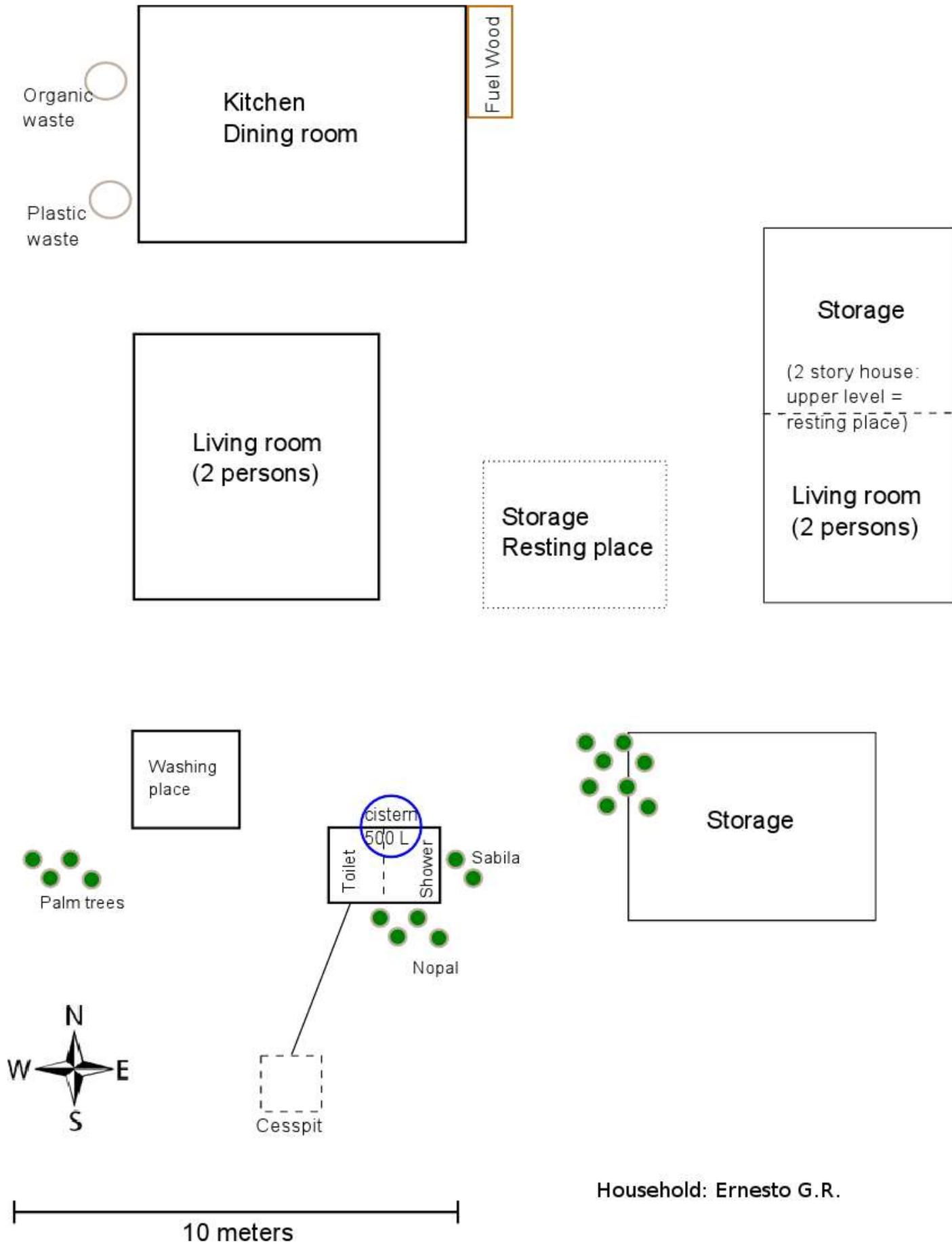


Figure 16: Resources and living space management I, elaborated by author, (Riemann, 2011)

Ernesto G.R. household: Ernesto is one of the well owners and an electric pump delivers the water to his 500 liter cistern which stands on top of the bath room. He is one major land owner, president of the ecotourism cooperative and one of the community elders. Some children send him money from the USA. He grows corn and two other crops, and shares some of his harvest with his daughter Teresa G.H. His household is composed of his wife, son, daughter-in-law and himself. Table 29 shows the relevant socio-economic data.

Criteria	Ernesto G.R.
Family/Generation	Garcia Ramirez, second generation
Household members	4
Farmer	Yes
Monetary income sources	Money transfer
Energy sources	Fuelwood and gas
Well owner	Yes
Potable water per week	90 liters
Per capita per day consumption (potable water)	3,21 liters
<p>Table 29: La Vainilla household 1, elaborated by author, (Riemann, 2011)</p>	

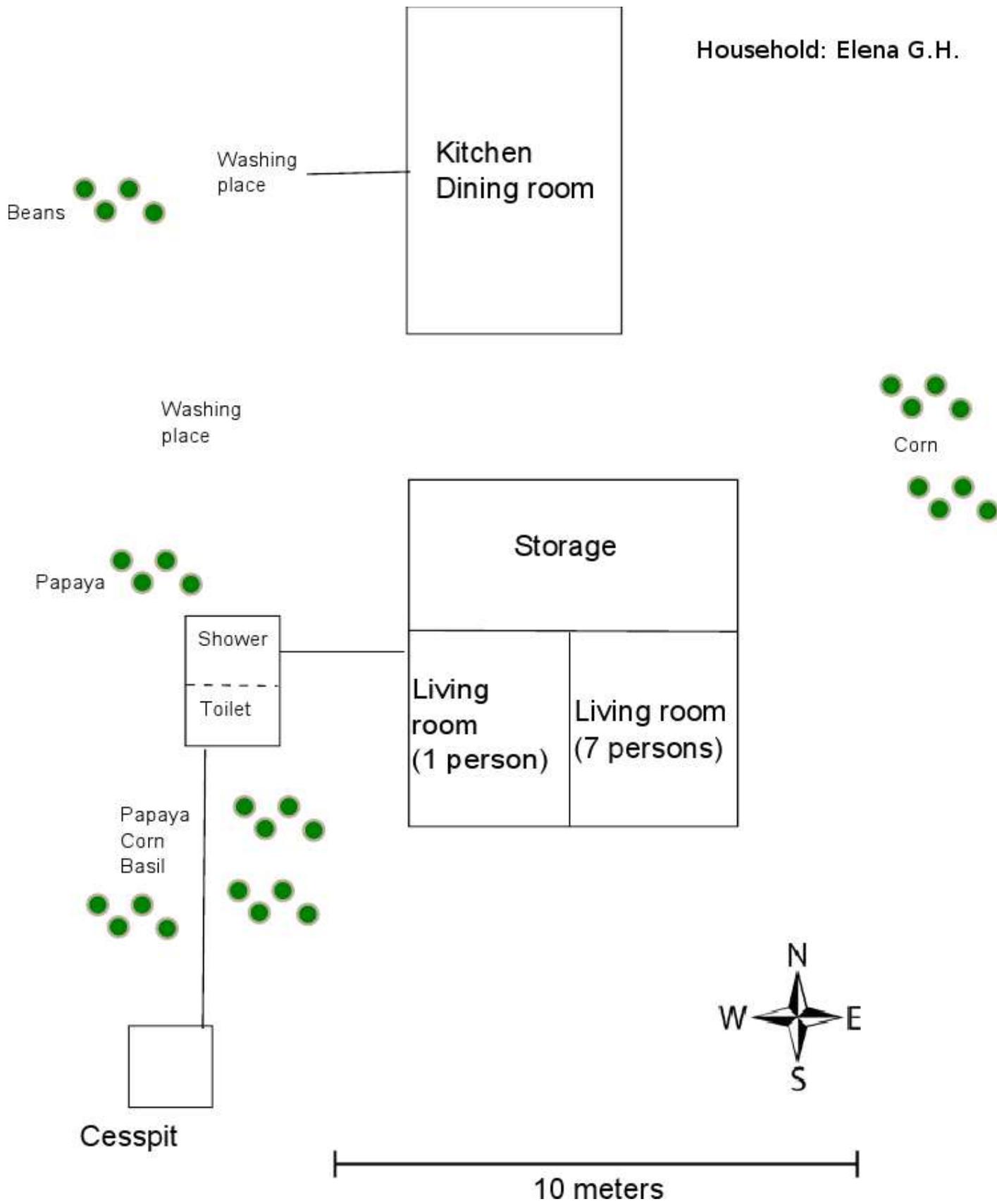


Figure 17: Resources and living space management II, elaborated by author, (Riemann, 2011)

Elena G.H. household: She is a daughter of Ernesto G.R. and received land from him when she got married. Her husband works on a Papaya plantation when possible and cultivates corn and beans on their family plot. He complained about the inferior size of agricultural land which is not sufficient to grow and harvest enough food for one year. The household does not have a bigger water storage tank but many smaller containers. Shower and toilet are operated with buckets. She and her husband have six children, all of them minor. Table 30 display the relevant socio-economic data.

Criteria	Elena G.H
Family/Generation	Garcia Ramirez, third generation
Household members	8 (6 children)
Farmer	Yes
Monetary income sources	Wageworker
Energy sources	Fuelwood
Well owner	Yes
Potable water per week	40 liters
Per capita per day consumption (potable water)	0,71 liters
<p>Table 30: La Vainilla household 2, elaborated by author, (Riemann, 2011)</p>	

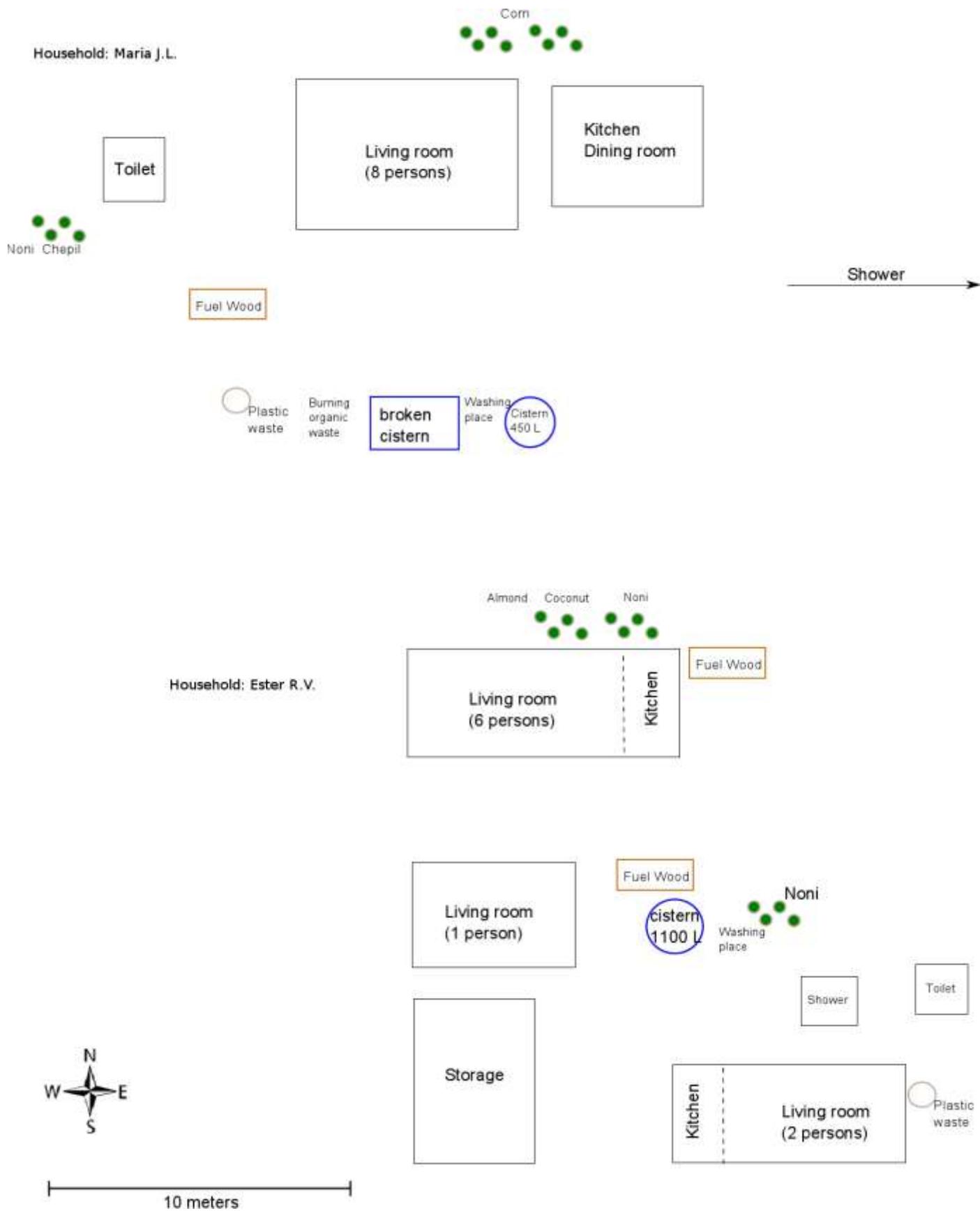


Figure 18: Resources and living space management III, elaborated by author, (Riemann, 2011)

Ester R.V. and Maria J.L. households: both families live together on the same piece of land which they share with the third Valencia family which is headed by their mother Guadalupe Valencia. Therefore all three houses were displayed altogether. Note that the two toilets are dry toilets which means that a cesspit is right below the facility and that no water is used for flushing. Every year the position of the toilets changes as the cesspits fill up. The two families have 10 children combined. Their mother lives with her husband and a brother of hers owns a smaller house of his own. Note that the elders' household consists of three buildings (the three most southern ones in the scheme) for three persons and that money transfer is the monetary income source. 60 liters of potable water are consumed weekly by the three household members. Table 31 displays the relevant socio-economic data.

Criteria	Ester R.V.	Criteria	Maria J.L.
Family/Generation	Valencia family	Family/Generation	Valencia family
Household members	6	Household members	8
Farmer	Yes	Farmer	Yes
Monetary income sources	Wageworker	Monetary income sources	Wageworker
Energy sources	Fuelwood	Energy sources	Fuelwood
Well owner	No	Well owner	No
Potable water per week	20 liters	Potable water per week	40 liters
Per capita per day consumption (potable water)	0,48 liters	Per capita per day consumption (potable water)	0,71 liters

Table 31: La Vainilla households 3 and 4, elaborated by author, (Riemann, 2011)

7.9 Household alimentation and dietary diversity

The following sub-chapter displays results from qualitative interviews regarding food security and its association with economic assets. As time and resources were limited only a simple form of measuring was applied which does not allow for verifying the amount of aliments available to a person but rather is apt to demonstrate the quality of nutrition affordable. The EU-FAO manual *Guidelines for measuring household and individual dietary diversity* (2011) was used for that purpose as it has the potential to show the manifoldness of alimentation and economic access to food. It is a scheme in which information about alimentation is categorized in order to see how many different classes of nutrients are present in the diet of a given day. Informants were asked about last day's meals, snacks and beverages. Four of five Focus Group families were interviewed for that purpose while the fifth family remained indifferent to that kind of questions which caused the cancellation of the interview. Table 32 shows the results of the dietary diversity interviews.

Household:	Ernesto G.R.	Elena G.H.	Teresa G.H.	Maria J.L.
Food group	Yes -1 ; No - 0			
Cereals	1	1	1	1
White roots and tubers	0	0	0	0
Vitamin A rich vegetables and tubers	0	0	0	0
Dark green leafy vegetables	0	0	1	0
Other vegetables	0	1	1	0
Vitamin A rich fruits	0	0	0	0
Other fruits	0	0	0	0
Organ meat	0	0	0	0
Flesh meats	0	1	0	0
Eggs	1	0	1	0
Fish and seafood	1	0	0	0
Legumes, nuts and seeds	1	1	1	1
Milk and milk products	1	1	0	0
Oils and fats	1	1	1	1
Sweets	1	1	0	0
Spices, condiments, beverages	1	1	1	1

Table 32: Dietary diversity, elaborated by author, (Riemann, 2011)

The results were translated into household dietary diversity scores (HDDS) according to the manual's guidelines and showed the outcome displayed in table 33:

Household	Ernesto G.R.	Elena G.H.	Teresa G.H.	Maria J.L.
HDDS	8	8	6	4

Table 33: Dietary diversity results, elaborated by author, (Riemann, 2011)

Higher scores indicate more dietary diversity and better economic access to food. The results give a certain insight on quality of alimentation but it must be mentioned that its value is limited as it does not allow for seasonality to be considered. So alimentation may be more or less diverse at another day due to different harvest periods. Vitamin A rich fruits were not named by any interviewee although mangos, which belong to that food group, are seen frequently in the community but were not ripe at the time of questioning (Riemann, 2011).

7.10 The ecotourism cooperative

The cooperative was founded in 2004 and started working in 2007. At that time it also became part of the regional non-governmental organization *La Red de los Humedales* (The wetland network) which functions as an administrative and advisory body of several local community projects which

are actively participating in mangrove reforestation, turtle and crocodile protection, and ecotourism (HumedalesOaxaca, 2010). This NGO was also an important contributor during field research, providing information about regional tourism and the development of La Vainilla's cooperative. As mentioned before the cooperative is run by Teresa G.H. and her daughters, with Ernesto G.R. serving as president. They are the leftovers of what once started as a project in which eight households participated but which fell apart due to internal conflicts. Nonetheless the official statement is that seven members still participate in the enterprise (Garcia Hernandez, 2011). Normally Teresa G.H. and four daughters are present at the facilities throughout the whole day but only one of the four girls is participating actively as a guide while the others remain idle and do not take much interest.

Teresa G.H. referred to the development of the cooperative, its foundation and occurring problems with other participating families in the following way (Garcia Hernandez, 2012):

In the beginning 22 associates were working [in the cooperative].

One by one they left. They wanted to be paid, they wanted to receive money.

They have to work in order to sustain their family, they have 3 or 4 children and they want to eat.

It is not enough money here.

My former husband [Alejandro] brought tourists here because he was a taxi driver and because he liked ecotourism a lot. He [Alejandro] liberated the baby crocodiles. He invited the school [children]...he brought many people [to the cooperative].

He was a very friendly person and if he would be here right now you would not be sitting here anymore, he would have taken you already to the lagoon or to the beach, he was very active, very friendly with everybody. 4 years ago he died. He constructed parts of the restaurant.

My father and Alejandro started the ecotourism, they had the idea, they cleared the ground here [...]

They [the associates] left [the cooperative] in 2007 and because we were only beginning and we had no [financial] support but people wanted to see [benefits].

My father said it is like a coconut tree when you plant it, it needs some five years [to grow].

They got mad but nobody is responsible for that.

Some work, some do not and they decided to leave.

The official, legal name of the cooperative is *Servicios de Ecoturismo Playa Tilapia S.C. de R.L. de C.V.* and by that it refers to the Tilapia beach which serves as a breeding ground for sea turtles and is the final point of boat tours which are not about bird watching.

Tourism is characterized by high seasonality with the majority of visitors arriving during the Christmas-new year period, Easter and in august (school holidays). 123 tourists were registered for 2010, 74 of them in the mentioned high season time frames. 118 visitors had a boat trip through the mangrove lagoon and 5 went hiking. Only eight boat trip tourists made actually use of the restaurant and had food there (La Red de los Humedales, 2011).

Compared to other communal ecotourism projects in the coastal area La Vainilla is of minor size and has a small offer. While nearby places like La Ventanilla and La Escobilla, which are the direct competition, are attracting more tourists and have more to offer, the cooperative in La Vainilla keeps afloat through governmental and non-governmental support. All facilities and materials as well as guide trainings were paid for by external sources which were organized by *La Red de los Humedales* (Perez Martinez, 2011). The fact that the cooperative complies with the requirements of the official

Mexican norm for ecotourism (NMX-AA-133-SCFI-2006) helped to follow that path and probably will do so in the future.

The sum of 70 Mexican Pesos is charged per person for a boat trip through the mangrove lagoon and a visit of the Tilapia beach. The alternative tour (100 Pesos) includes another route through the lagoon and bird watching but can only be realized at certain hours (visibility of birds) and periods of high water table (navigability). Boats are powered by the guide’s rowing, no fuel is used. The restaurant has no menu and offers one basic dish consisting of eggs, beans and tortilla for 35 Pesos; and a simple fish plate for 50 Pesos if fish is available. The aliments for the restaurant are bought in San Pedro Pochutla, which is the closest market town (Garcia Hernandez, 2011). The restaurant has a concrete floor, a palm leaf roof, no walls and chairs for visitors. The kitchen is a simple wooden shack and located next to the restaurant. A solar panel on the roof of the restaurant building serves as the energy source for electronic devices used in the cooperative’s facilities (Riemann, 2011).

The income generated by the ecotourism cooperative lies between 8260 and 11800 Mexican Pesos for boat trips and between 280 and 400 Mexican Pesos for the dishes sold at the restaurant. Hiking was not charged as it is not a well-organized part of the offer but rather an activity which tourists themselves initiated. The overall revenues for one year are at least 8540 and 12200 Mexican Pesos at best.

At the entrance of the community a roadside sign invites visitors to the ecotourism cooperative. It reads: “Tilapia beach, Oaxaca, Mexico. Ecotourism – Gastronomy – Boat tours – Bird watching. Like every protected area you can enjoy it and ... you should conserve it.”

The most important events regarding the community and the ecotourism cooperative are summed up in figure 19.



Figure 19: History overview of community and cooperative, elaborated by author, (Riemann, 2011)

Chapter eight: Problem assessment

In this chapter it will be demonstrated which households are desirable for participation in a potential empowerment program as the socio-economic conditions of inhabitants vary considerably. Certain families are much more in need for the creation of additional income sources and ways to enhance food security than others. Some may lack the basic skills which are essential for the realization of further development in tourism meanwhile others may easily adapt to that a new activity. The first task of this chapter is to reveal the heterogeneity of the community based on the data displayed in chapter seven. Afterwards the community will be compared to standard values regarding poverty and food security and it will be shown that La Vainilla is a representative case of a Mexican rural community.

8.1 Classifying poverty and food insecurity

First of all it must be clarified which households should be targeted as potential participants for an empowerment program which would try to get them involved in tourism activity by implementing organic gardens and selling parts of their yield to the cooperative. These persons can be called the ones who are mostly in need for empowerment or the (most) marginalized persons of the community, and they would be “those most in need, not already able to meet their own needs, with limited access to resources or who exist outside power structures (Laverack & Labonte, 2000, S. 258).” The data which was displayed in chapter seven will be analyzed for the purpose of identifying these persons.

As this work aims at describing ways of how to fight poverty and food insecurity in La Vainilla, it results the necessity of expressing the “need” of the marginalized persons into terms which allow for comparison and categorization. Poverty and food security must be classified in two ways: first of all internally for the community in order to highlight given differences and secondly in a general, more formal way which is needed for comparing the situation of the inhabitants of La Vainilla with other similar situations. The first step is needed for identifying the households which are the most marginalized and mostly in need for empowerment while the second step is the basis for potential appliance of conclusions and proposals for other cases. As it will turn out the situation in La Vainilla can be considered typical for many small, rural communities in Mexico and a proposal of how to contribute to solving problems in La Vainilla may be of value for other similar cases.

8.2 Comparing poverty and food security in La Vainilla

The classifications for poverty and food security in this part will be done mostly in categories as numeric data is rare or too vague to serve as a basis for comparison. The results of interviews about income by waged worker proved too vague and do not allow for a correct calculation of generated income. Therefore the amount of income sources will be set in relation to consumers concerned – that is the ratio of money receiving household members and the total of household members. Active income, like employment, and passive income, like money transfer from children living in the US, will

be valued equally as none of the both can be specified sufficiently. By that means a first division and classification is possible. Table 34 shows the respective results.

Household (household head/interview partner)	Total of household members	Total of income sources	Ratio of household members per income source
Teresa Garcia Hernandez	9	2	4,5
Belgica Garcia Perez	2	1	2
Elene Garcia Hernandez	8	1	8
Dalia Mendez Torres	3	2	1,5
Ester Ruiz Valencia	6	1	6
Maria Juarez Luna	8	1	8
Angela Garcia Hernandez	3	1	3
Don Isidro Martinez Ramirez	8	1	8
Juaquin Martinez Jimenez	5	1	5
Doña Apolonia Garcia Ramirez	1	2	0,5
Don Benito Garcia Ramirez	3	1	3
Doña Catalina Garcia Ramirez	2	2	1
Obdulia Garcia Ramirez	9	2	4,5
Celso Garcia Hernandez	7	6	1,17
Rosa Garcia Hernandez	3	2	1,5
Felix Garcia Hernandez	2	1	2
Doña Guadalupe Valencia	3	1	3
Leticia Garcia Perez	4	1	4
Paula Garcia Perez	4	1	4
Don Ernesto Garcia Ramirez	4	2	2

Table 34: Household comparison 1, elaborated by author, (Riemann, 2011)

All households of minor size with a small ratio of members per income source can be classified as better off compared to their fellow residents. Elders are the ones owning more land than others and therefore have higher yields.

- Belgica G.P. (2;1;2) is the teacher, living with her son: she has a stable, sufficient income
- Dalia M.T. (3;2;1.5) runs a grocery store, husband works as wageworker, one child
- Angela G.H. (3;1;3), her husband works as wageworker, one child
- Doña Apolonia G.R. (1;2;0,5) runs a grocery store (beer), leases land to others and is a major landowner
- Don Benito G.R. (3;1;3) sells fish and is a major landowner
- Doña Catalina G.R. (2;2;1) works as a tailor, leases land to others and is a major landowner
- Rosa G.H. (3;2;1,5), her husband and son work as wageworker
- Felix G.H. (2;1;2) works as a carpenter and lives with his wife
- Don Ernesto G.R. (4;2;2) receives money from two sons living in Miami, one more son works in Puerto Escondido and stays with his father; Ernesto is a major landowner

In the listed cases the families are relatively small and even though the father's income as a wageworker may be the only income source, their situation is far more secure and they are less vulnerable in economic terms than other community members are. All these nine households can

already be excluded from further comparison. Note that four community elders are in that list and none of the immigrated Valencia families.

The household of Celso G.H. (7;6;1,17) is a different case as it is bigger but also provides a lot of working forces which is turned into monetary benefit. Five sons as well as the father work as wageworkers. The resulting household members – income sources ratio is very low and this household can also be excluded from further comparison.

The household of Teresa G.H. is also excluded from further comparison as she and her daughters are running the ecotourism cooperative. They are an essential part of the proposal from the beginning and their benefit of cooperating with other households would be higher revenues from the restaurant and maybe more visitors due to a higher attractiveness of the touristic offer.

As monetary income, especially when investigated in conjunction with food security, is considered for rural households, it has to be complemented with data available about potential agricultural production. Land tenure and land size were asked about in the community survey and the results allow for a rough classification as shown in table 35. As mentioned before the community elders of the Garcia Ramirez families are the major land owners.

Household	Size of cultivated land	Land tenure (one’s own land or leased)	Household – income ratio (see above)
Elene Garcia Hernandez	Normal	Owner	8
Ester Ruiz Valencia	Normal	Leased	6
Maria Juarez Luna	Normal	Leased	8
Don Isidro Martinez Ramirez	Major	Owner	8
Juaquin Martinez Jimenez	Normal	Owner	5
Obdulia Garcia Ramirez	No cultivation	None	4,5
Doña Guadalupe Valencia	No cultivation	None	3
Leticia Garcia Perez	No cultivation	None	4
Paula Garcia Perez	No cultivation	None	4

Table 35: Household comparison 2, elaborated by author, (Riemann, 2011)

The families which are not active in the field of agriculture cannot diminish their economic vulnerability by means of crop production. Their monetary income sources are the only ones for obtaining food. Among the active farmers two families are facing a reduction of their economic capabilities as food production comes with payment for land use. Economic vulnerability is therefore reduced only to a minor extent. The contrary applies for the household of Don Isidro Martinez Ramirez who is a community elder and owns more land than the other farmers mentioned.

Nonetheless some features stand out and further classification is possible. All the families not engaged in agricultural production have lower household members – income sources ratios, meaning that per person more money is available. The gap between them and the other families is considerable. The household of Leticia G.P. is somewhat better off due to the fact that her husband has a regular, stable income as he works in a regional transportation company.

Summing up the second comparison it can be said that some seven households are identified as the most marginalized in terms of income sources and supplementary food production. Among these seven the families of Maria Juarez Luna and Ester Ruiz Valencia face a particular situation which is characterized by their social isolation. Both families immigrated to La Vainilla some years ago and as they do not belong to the extended Garcia Ramirez family network, they are less likely to make use of social capital, such as getting help for heavy work, money lending or receiving food aid from elders. Together with the family of Doña Guadalupe Valencia they are the social group which was labeled Valencia families (see chapter seven). Both families only have one income source (wageworkers), minor land, which they have to lease and bigger households (6 and 8 members respectively).

Note that the identified families face high economic vulnerability due to few income sources and insufficient or no agricultural production. The order of comparison – firstly incomes sources and secondly land tenure – could also be reversed, the results would be the same as the identified households are worse off in both categories.

Ultimately the classification can be reduced to three factors: family size, income sources and cultivated land. The households which are most in need for empowerment are the ones with many family members, only one economically active member and little or no cultivated land. Households with less members, more income sources or bigger cultivated land are better off as their per capita economical or agricultural output is higher. Families not native to the place face a higher degree of marginalization due to less social capital. They are native Zapoteco speakers from the mountainous region further north.

8.3 Relating poverty and food security in La Vainilla to (inter-)national standards

The collected data allows for an estimation of the money available per capita per day. Considering an optimal situation – a wageworker gets employed and paid 6 times a week, earning a total of 3750 Mexican Pesos per month – one can see how far economic resources reach at best. The four big families with only one wageworker face a considerably severe situation. 1 dollar equaled 13,75 Mexican Pesos on May 18th (X-rates, 2012).

Families with 8 household members (Elene G.H.; Maria J.L.; Don Isidro M.R.) and one wageworker:

$3750 \text{ Pesos} / 8 = 468,75 \text{ Pesos per capita per month or } 15,62 \text{ Pesos per capita per day}$

Families with 6 household members (Ester R.V.) and one wageworker:

$3750 \text{ Pesos} / 6 = 625 \text{ Pesos per capita per month or } 20,83 \text{ Pesos per capita per day}$

These examples display the most marginalized families under optimal conditions during periods of high potential for employment. This potential is only high throughout seven months of the year therefore the available money per capita during the course of a year will be considerably lower than the values calculated above. Remember that two of these big families also have to rent the land they are working. The result is nonambiguous: these four families can be classified as extremely poor as family members are very likely to have less than 1,25 US Dollar per day (World Bank, 2010).

It is not possible to relate the case to the average income of rural poor in Mexico as mentioned before. 611 was defined as the average (CONEVAL, 2011) but own field research data lacks accuracy and it cannot be said if the most marginalized among La Vainilla's inhabitants fall into that category. In fact this investigation examines how families are maintained by economic activities while the institutional report focuses on average income per worker but not on a number of persons who are to be supplied by that income.

The amount of available food during a certain period of time could not be determined during field research, it is therefore not possible to classify what all aspects of food insecurity people might suffer from. Physical availability as well as stability of supply cannot be verified. But due to the fact that the mentioned families are extremely poor their economic access to food is challenged as a consequence. The very low scores of the marginalized families which participated in the dietary diversity survey indicate a bad nutritious status. Hence these families can be classified as food insecure as not all four dimensions of food security are fulfilled simultaneously (EC-FAO, 2008). Due to the seasonality of employment as wageworkers and crop production the type of food insecurity is difficult to assess but as economic access is likely to be challenged throughout the year and crop production is not considerably diverse – and thereby two dimensions of food security are under permanent threat – it seems more likely to fall under the category of chronic food insecurity.

The reference value of the basic food basket is a good guideline for national classification. Adjusting it to the respective family sizes 8 and 6, the necessary monetary resources needed are 3467,92 and 2600,94 Mexican Pesos per month (SEDECO, 2012). Both values are under the optimal income of a wageworker fully employed. Although this reference is more adequate for urban contexts it nonetheless points to the fundamental necessity of additional food production of these poor families which have no reliable economic income source throughout the whole year. Economically they are hardly fit to maintain themselves, only by means of agriculture they can compensate their economically weak food access.

The classifications were only done for the most marginalized families as they are in the focus of this work which aims at finding ways of empowerment and therefore has less interest in families which are relatively better off. Note that this does not mean that the remaining families do not suffer from poverty or food insecurity, it is just more likely that they suffer less from these problems than the most marginalized. This is a direct expression of the heterogeneity of the community where different families have different assets and capabilities. This description is the basis

After the problem assessment and identification of potential beneficiaries of empowerment programs is finished the focus shifts to the applicability of the previously presented scheme for empowerment. It must be analyzed in how far the community as it was characterized is fit to engage in a possible empowerment program which would try to get the most marginalized involved and take engagement in the tourism sector to the next level. Potential obstacles and solutions to the same will be outlined based on the data displayed in chapter seven.

8.4 La Vainilla: a typical rural community in Mexico?

As it was outlined in chapter five a few questions must be answered in order to verify if this case study is representative for Mexican rural communities which were affected by certain historic

processes described earlier. The following conclusions are brief as most of the relevant data was already displayed.

- Indigenous people are among the most marginalized in the community and face a situation in which they cannot rely on considerable social capital. Therefore they are worse off than non-indigenous people regarding poverty and food insecurity.
- The results from the dietary diversity interviews showed that the respective families rely on tortilla, beans and chili as the foundation of their alimentation. Poorer families rely more on it than families that are relatively better off.
- Interview partners said that men and women work on the fields but that it is mainly a man's work duty with the woman helping out in certain situations. The work unit may be classified as unstable.
- Agrobiodiversity was lost according to field research results.
- Some of the community elders are able to sell some corn on the local market but nobody else has sufficient surplus to do so.
- Farmers are almost entirely excluded from technological equipment, working the land with spades and pikes. External investment possibilities are not in place.
- The emigration rate is very high with 17 persons or 15,31% of the total village population.
- The compliance with criteria regarding historic processes and their effects reveals that La Vainilla can be considered a typical, representative case of rural, Mexican communities, which suffered developments on national and international levels.

Part three: Proposal

This last part is concerned with formulating a proposal that targets a way by which further touristic development can empower greater parts of the community La Vainilla. It has three main concerns: finding a touristic niche within the regional tourism scenario which fits the situation of the community, demonstrating how that niche could be practically occupied by the local ecotourism cooperative and finally how an empowerment program would have to look like in order to fit the cultural and socio-economic conditions of the community.

The first chapter compares tourism related data which was revealed earlier on with the socio-cultural and ecological potential that was found in La Vainilla. Culinary tourism was identified as a promising niche after different methods were put to use for that purpose.

The second chapter shows how organic gardens could be implemented in La Vainilla. It combines general academic knowledge in this field with specific local knowledge which was found available. Its aim is to display the actual possibility of creating these organic gardens with material and knowledge existing within the very same region. It is about possible adaptation to socio-natural environments by means which are locally available. Some laboratory research was done in order to further fortify the assumptions made during the elaboration of this practical part of the proposal.

The third chapter is concerned with the social implementation of the gardens. It considers the data displayed in chapter seven and compares it with criteria for empowerment programs which were elaborated in chapter two. It will highlight obstacles for more cooperation within the community and show possible solutions.

Chapter nine: Tourism prospects for La Vainilla

After displaying the characteristics of regional tourism and of the community La Vainilla it must be undertaken to compare the touristic offers which are in place and to identify potential niches which are promising for further touristic development for the community. This examination tries to include potentials for new opportunities as well as ways of making better and maybe different use of resources which are already employed in tourism. The analysis consists of two steps: first of all a participatory approach was employed and in the second place it was followed by a competition comparison. The latter one is based on Porter's concept of the five forces of competition (1998) which was adapted to tourism scenarios by Crouch and Ritchie (1999).

9.1 Participatory approach

Three different ways of getting locals involved in an analysis of their own tourism prospects were applied during field research but the results remained not satisfying. On a special occasion greater parts of the community came together on the 24th May 2011 in order to realize a workshop about the ecotourism cooperative. Besides general aspects participants were also asked explicitly about their view upon potential future development of their tourism project. In the end only the guide of the cooperative spoke out and cited the natural capital as the main foundation for all tourism related activities, present and potential future. All other participants remained silent.

The second attempt to get locals' view on future development was a rather vague question at the end of the survey questionnaire. As it was not the intention to ask about specific potentials but rather enable every interviewee to express his or her own perspective the formulated question was very open. Unfortunately this attempt was not executed till the end as it became clear from the very beginning that locals who are not working in the ecotourism cooperative were not able to answer this question. Considering that lack of reflection on the subject as expressed by locals in two different occasions it becomes evident that participation in tourism is limited to those who are involved on a daily basis or at least in decision making processes. Only a few persons are active in this cooperative while the rest of the community is not involved and not concerned, therefore they are not able to comment on potential future development in the tourism sector as they are missing an insight view. The lacking cooperation results in a very limited understanding of the issue and information gathering had to adapt to that situation and focus on local specialists.

In an interview with the ecotourism cooperative's guide (Ruby), secretary (Teresa) and president (Ernesto) they explained their view on potentials for further development as follows (EcotourismCooperative, 2012):

Teresa: In high season they come and ask if we have cabañas but we do not.

Ernesto: We don't have cabañas.

Interviewer S. Riemann: And the CDI [Comisión Nacional para el Desarrollo de los Pueblos Indígenas – National Commission for the Development of Indigenous People] could help you (constructing cabañas)?

Ernesto: Yes, the CDI offers the money. And they also send people who realize it.

[...]

Ernesto: Another attractive? Another thing for tourists? [...] They may say we can see crocodiles in Ventanilla, crocodiles in Vainilla. Crocodiles here, crocodiles there. Beach can we see here, beach can we see there and there and there. Another attractive is what we need.

Interviewer S. Riemann: What could it be?

Ernesto: Well, offer tours throughout the entire lagoon [area]. With bicycles. [...] There are a lot of things we can do. But first you have to think it over. And not doing the same. Because the same you can see there and here and there. Crocodiles there and here. We need another thing.

[...]

Ernesto: Now we also have permission to take tourists to the beach and watch turtles.

[...]

Teresa: We want to offer bicycle trips from here to the beach. But bicycles are missing. We have to submit a request for bicycles. Some ten bicycles or maybe five for the beginning. Because we cannot do what they do in Ventanilla.

The given answers point to crucial aspects mentioned before. The cooperative relies heavily on external economic support so filing applications for funding from governmental institutions plays an important role. It was mentioned for construction of cabañas and for acquisition of bicycles. Regarding the touristic offer the answers show that they have a good understanding of the general situation and its difficulty due to similar offers in various places. Frequent reference to Ventanilla shows that they are very aware of the fact that this place hosts the most successful communitarian tourism project in the region and that every other project should take it as a benchmark. But in the end their strategy to amplify their offer resembles strategies of their competitors. Cabañas, bicycle tours and turtle watching are offered in other locations as well. One could suppose that the La Vainilla ecotourism cooperative copies strategies of other communal tourism projects as they themselves find it difficult to come up with an idea that carries the potential to differentiate the touristic offer of their place from others in a substantial way. This assumption is supported by the repetition of the question for further potential touristic development which interviewees formulated themselves but could not answer. According to the tourism coordinator from *La Red de los Humedales* this strategy carries little potential (Perez Martinez, 2011): Similar projects with cabañas (like La Escobilla) lack sufficient visitors to effectively run these accommodation units and a larger offer of cabañas in the region would not increase benefits but put in jeopardy the economic viability of the cooperatives in the region. Bicycle tours and turtle watching also do not amplify the offer and only lead to a broader spread of revenues. Taking La Vainilla's ecotourism cooperative as a part of the greater whole these options do not carry potential for considerable positive development but

only aim at getting one's share of the already in place economic benefits. These claims are fully supported by own observation of regional tourism (Riemann, 2011).

Therefore this analysis also includes a competition comparison between La Vainilla's cooperative and others.

9.2 Competition comparison

The following comparison is based on a model which was elaborated by Crouch and Ritchie (1999) in order to be able to categorize factors in the tourism industry which lead to successful development in a competitive context. For that purpose they altered a scheme which was designed for comparison of national industries but found wide spread appliance in different business areas as well. Harvard business school lecturer and head of the Institute for Strategy and Competitiveness, Michael Porter is the originator of that theory (1998) and he defines two basic types of advantages: comparative and competitive. A comparative advantage is based on abundance of a resource while a competitive advantage is based on the value added to a resource before selling. In tourism resources which are sold to visitors and make up for the attractiveness of the place are not like industrial resources which are extracted and carried away. They remain in place while tourists travel in order to "consume" these goods, like beautiful landscapes or local culture. Abundance is therefore not relevant like it is in other industries. Added value becomes the essential criteria for advantage when talking about competition in tourism (Crouch & Ritchie, 1999). Applied to the case it means that having a longer beach or more mangroves in a context where all competitors have similar beaches and mangroves does not create an advantage but the better use of the respective resource does. The following categories for comparing tourism competition in Coastal Oaxaca are seen as the "key motivators for visitation to a destination" (Crouch & Ritchie, 1999, S. 146).

- (1) Physiography or overall nature: is the same for all competitors. All places have similar natural capital and all sell it as the main attraction. Mangrove lagoons, beaches and hilly landscapes are the respective ecosystems shared by all providers and which come along with local biodiversity.
- (2) Culture and history: the region has no considerable historic sites and cultural dimension of tourism remains poor. The municipality of Santa Maria Tonameca has the biggest share of indigenous population in comparison with other municipalities of the region but local culture is not used as an attraction. As all competitors are weak on cultural offers it must be regarded a potential field for improvement open to everybody.
- (3) Local connections for business ties and regular visitors' inflow: La Vainilla has ties to *La Red de los Humedales* which sometimes organizes tourist visits, but all other competitors have the same connection. In fact Escobilla and Ventanilla have more connections which are related to their specific offers. La Vainilla misses out on that point.
- (4) Activities: La Vainilla offers the same (and less) than the other competitors. It has the same potential, so creativity decides whether they can score in this field. Lack of creativity or ideas was expressed in poor responses regarding tourism and further potential development of it.
- (5) Special events: up to now La Vainilla was not able to organize any special event but recently they were allowed to take tourists to the beach and watch sea turtles which marks an improvement. Escobilla relies strongly on visitors who want to see sea turtles hatch but in

generally all cooperatives in the coastal area lack special events. Puerto Escondido and Las Bahias de Huatulco often host fishing and surfing contests.

- (6) Tourism superstructure: most competitors win this category over La Vainilla as they offer accommodation and have well run restaurants. La Vainilla has the necessary restaurant facilities but does not make proper use of them so that can be regarded a not fulfilled potential.

When comparing La Vainilla and other ecotourism cooperatives in Coastal Oaxaca it can be broken down to the following key facts portrayed in table 36, leaving aside Puerto Escondido and Las Bahias de Huatulco:

Motivation for visitation	Competitors	La Vainilla	(Plans for further development)
Nature	Lagoon, beach, forest	Lagoon, beach, forest	Does not apply
Culture	None	None	None
Connections	NGO, business	NGO	None
Activities	See table in chapter 6.2.2	See table in chapter 6.2.2	Bicycle tour
Special events	Sea turtle hatching	None	Sea turtle hatching
Superstructure	Accommodation, restaurant	None	Accommodation

Table 36: Competition comparison, elaborated by author, (Riemann, 2011)

The restaurant of La Vainilla’s ecotourism cooperative was listed as absent due to its inferior impact and considering it a no-factor in terms of attracting visitors. It is not promoted anyhow and almost nobody eats there.

What sticks out is the effort to close gaps with competitors as mentioned before. The greatest potential for creating a distinct offer must be ascribed to cultural attractions which are neglected throughout the whole region. Activities and special events can carry great potentials but rely on creativity and the responsible persons in La Vainilla’s cooperative seemingly have problems coming up with a unique idea.

Summing up results from the competition comparison and interviews a few points are essential for formulating a proposal which should fit the touristic context of the region.

- Nature is at the heart of all touristic offers, directly (ecotourism) or indirectly (sun and beach tourism).
- Cultural attractions are unexploited (and not identified)
- The existing restaurant facilities are not fully used
- The ecotourism cooperative members plan to copy offers from competitors

Consequently a variety of options is resulting and one have to make a choice of how to combine nature related tourism with cultural offer as these two points look like promising pillars of a proposal. Due to the lack of ideas from local participants for further development which has the potential to differentiate La Vainilla from other competitors, a proposal was elaborated based on conversations with the tourism responsible from *La Red de los Humedales* (Perez Martinez, 2011)

and on results of the above analysis. Note that the following layout does not claim to display the only possible way of enriching the cooperative’s touristic offer. A variety of options is available and thinkable but due to various potential benefits the decision was made to focus on one kind of tourism which fits the regional tourism context and the actual situation of inhabitants of the community.

9.3 A promising tourism niche for La Vainilla: Culinary tourism

Based on the previously mentioned results culinary tourism was found to be promising for the ecotourism cooperative of La Vainilla. It combines nature and culture related tourism, is not offered in other places in the region, has the potential to address the specific problems of inhabitants of La Vainilla and can contribute to the empowerment of the community.

Nature and culture are the “two primary dimensions of food” (Mack, 1999). It combines grown aliments and the culture specific processing of them (Leach, 1989), therefore it can be considered a good fit for the vacant tourism potentials which were identified before. It is not contradicting nature related tourism but has itself a natural foundation and adds to it a cultural element. The result is an offer which integrates itself into the overall picture of tourism in Coastal Oaxaca and has a distinctive note as it aims at using the idle cultural potential of the region. Necessarily the food offered must display some culture specific characteristics, otherwise it would not fulfill the criterion of displaying culture and fitting the respective niche. As noted in chapter five Mexico promotes culinary tourism through governmental programs (Rutas Gastronómicas, 2011) and private operators do the same (Visiting Mexico, 2011). Mexican cuisine is considered intangible cultural heritage of humanity (UNESCO, 2012). Therefore a general potential and acceptance of that kind of tourism can be assessed.

Field research showed that culinary tourism is not promoted in Coastal Oaxaca. Obviously visitors come and enjoy the local food but the offer is not containing dishes which are explicitly local or regional. Sea food makes up for most of the menu while typical Mexican food completes it. Dishes with Oaxacan denomination are extremely rare (Riemann, 2012).

Comparing La Vainilla’s restaurant with the closest and direct competitors shows that conditions are good in order to make better use of facilities which are already in place and have the same size as the ones in other places where tourism is realized at a larger scale. Table 37 displays these facts. Note that all three restaurants purchase their food either from Puerto Escondido, Puerto Angel or San Pedro Pochutla. In none of the places locally grown food is offered.

Community	Restaurant’s name	Visitor capacity (seats)	Total number of dishes offered	Seafood dishes	Mexican dishes	Regional dishes
La Ventanilla	“Oasis”	55	39	23	16	0
La Escobilla	“La Tortuga Feliz”	32	8	6	2	0
La Vainilla	Without name	31	3	2	1	0

Table 37: Restaurant comparison, elaborated by author, (Riemann, 2012)

It remains the question how culinary tourism can possibly empower a community which suffers from food insecurity? Therefore the realization of the respective tourism form is sought to comprise the installation of organic gardens. By that the touristic offer of La Vainilla’s ecotourism cooperative would gain an additional characteristic it could promote (locally grown organic food) in order to distinguish itself from competitors and in fact various goals of empowerment could be fulfilled. At present the ecotourism cooperative purchases almost all food from San Pedro Pochutla which is due to the fact that no active member is an agriculturalist and that not all necessary items are available within the community. If aliments would be provided locally an increased interaction would result as the cooperative could purchase it from locals. For that purpose agrodiversity must be increased as farmers grow only a few distinct crops but a greater variety is needed to provide a sound basis for culinary tourism. The benefits for households which engage in growing vegetables in organic gardens would be manifold.

Additional income could be generated by selling vegetables to the restaurant where they would be processed in order to prepare dishes which reflect features of the regional cuisine. Harvested but not sold vegetables would enrich domestic diets and thereby diminish malnutrition. If households which are in need for empowerment and not active in the ecotourism cooperative, would engage in installing organic gardens and cooperate with the tourism organization the community would see more social cohesion as more families get involved and work together. Figure 20 visualizes the overall scheme of the role of organic gardens.

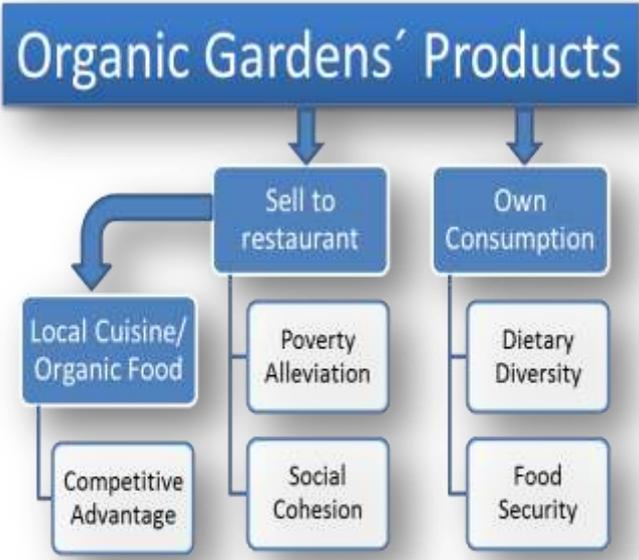


Figure 20: Potential of organic gardens, elaborated by author

Chapter ten: Organic Gardens: Managing resources and knowledge for tourism and empowerment

Resulting from an analysis of the regional tourism scenario and interviews with local experts it became clear that further development in the sector of gastronomic tourism can be considered promising for the community of La Vainilla and its ecotourism cooperative.

Accommodation and alimentation are the central pillars of tourism, as all clients depend on them in an essential way, and thereby they are important generators of income. But the offering of food can be more than the simple response to a basic need as it carries the potential to become a source of attraction itself. Well known examples are the Italian and French cuisines which add to the fame of these countries as touristic destinations.

In the case of La Vainilla the decision is not aiming at creating a gastronomic tourism hub in that small community but more likely to make better use of existing resources which in this context are mainly the restaurant facilities and the tourists who come to visit the place because of its mangrove lagoon. This attraction will still be the heart piece of the site but needs addition in order to make the place more attractive as several communities with tourism cooperatives offer tours through mangrove lagoons. This situation calls for a second attraction which distinguishes La Vainilla from its similar neighbors.

A broader offer of typical, regional dishes not only makes for a difference in a competitive context but is also a way to generate more income without altering the already existing structures too much. Low investment and low risk result from that and make the enterprise a task which can easily be adopted by residents.

Oaxaca's two most important tourism centers in the region – Las Bahias de Huatulco and Puerto Escondido – come with dozens of restaurant which compete for tourists and thereby create a diversified, rich landscape of food offer. Whatsoever they are rarely into serving traditional dishes and/or organic food (Riemann, 2012; Machorro, 2012).

From the points outlined above results the proposal of developing gastronomic tourism, complementary to the lagoon tours. To distinguish this culinary offer from others a focus shall be laid on traditional, typical dishes from the coastal region of Oaxaca and on the use of organic food which shall be grown in the community La Vainilla.

10.1 Culinary tourism based on local food

First of all food which could be offered in traditional/local dishes had to be identified. This was done during a field trip in June 2011 in the form of profound interviews with locals. They were asked about crops they used to cultivate before turning towards (almost) corn monoculture. This method has two advantages as it is based on local knowledge: the mentioned crops surely are cultivatable in that

place and people know how to prepare dishes with the mentioned food items, because this is what they have done before (Amo Rodriguez, 2008).

The result was the mentioning of various nutritious crops and several aromatic plants which serve as spices. The interviewees easily and voluntarily described how to prepare dishes from the items they just had mentioned. Table 38 exposes the results.

Nutritious crops	Aromatic plants
Jitomate	Chepil
Calabaza	Quintonil
Chile	Verdolaga
Cebollín	Jamaica
Frijol	Cilantro
Ejote	Yerba mora
Rabano	
Zanahoria	
Nopal	
<p style="text-align: center;">Table 38: Crops for gardens, (Garcia Ramirez & Garcia Hernandez, 2011)</p>	

Note that some of the plants were mentioned before as cultivated nowadays. This is due to the fact that most agriculturalists grow only very few distinct crops but the entire variety of all planted crops in the community piles up to a certain diversity which does not reflect the household scale agrodiversity poorness.

10.2 Organic gardening: the principles

Organic food was chosen as an attraction and as a sustainable way to further develop the tourism activities of the community and the cooperative. The restaurant’s offer is thereby distinguished from “normal” (=non-organic, non-local) restaurants and the way food is gained contributes to ecologically sustainable resources management and has the potential to empower the involved residents.

Persons who engage in growing vegetables and aromatic plants organically are given the opportunity to sell (part of) their yield to the restaurant of the cooperative and thereby get an additional income. At the same time they are diversifying their own diet, making it healthier and contribute to their own alimentary security and independence.

Making use of local knowledge is most crucial for the sustainable management of these resources. As the residents of La Vainilla are not familiar with organic gardening, local NGOs were contacted. They have gained knowledge in this respective field and can be regarded authorities in organic gardening in this region: they know the soils, the crops, the climate, production methods, plagues etc. Especially ECOSTA Yutu Cuii was found to be a useful source of information and could possibly be employed for the realization of workshops within the community of La Vainilla. Leonor Díaz Santos is employed in that NGO and realizes such workshops. She served as an interview partner and her knowledge display was of huge importance.

Organic gardening is a categorical term which includes several potential sub-categories, such as biodynamic farming, natural farming, bio-intensive farming etc. It is used in order to highlight the variety of methods which may be applied but have certain characteristics in common. The following descriptions show one way of running an organic garden but alterations to this concept may be realized and still the outcome would be labeled organic garden. A lack of mechanical and chemical processes distinguishes these methods fundamentally from conventional, modern farming.

Certain aspects of running an organic garden apply for whatever circumstances and are concerned with the basic elements and processes involved.

- Soil preparation is essential, especially when bio-intensive cultivation is the method to be applied. It allows for more efficiency, leaving more yields, but also causing more work.
- The way plants are arranged is crucial, as their combination can work as natural protection as well as a good breeding ground for plagues when not properly understood.
- Organic pesticides need to be employed to control attacks of insects and other animals which may harm the plants or slow down their growth.
- Fertilizers and compost are useful contributions which strengthen the plants, making them more resistant and productive.

These very fundamental aspects are enriched by methods like rotation of crops, the application of mulch and green manures. All contribute to the health and productiveness of the crops and are equally important as their contribution may be of huge impact.

Authors from different parts of the world mention the same aspects as crucial to the success of the implementation of organic gardens as well as local NGOs in Oaxaca's coastal region do (Méndez Alzamora, 2003; Cabrera & Salazar, 2004; Spence & Pears, 2008; ECOSTA, 2009; Prates, 2011; Seymour, 1978; Lavelle, 2004).

10.2.1 Soil preparation

Depending on the nature of the soil certain steps can be taken to make it more fertile and a better host for the crops which are to be planted. The results from the soil samples are excellent bases to take specific action but despite this, general methods are always useful as all soils require certain treatments if they are to become better. Enriching soil with organic matter has two principal objectives: it gives ground for the development of micro-organisms, which are essential for the liberation of nutrients, and it assures that the main activity of these micro-organisms takes place somewhat distant from the young plants as plagues and illnesses (especially mushrooms) are bred as well in this center of activity (Méndez Alzamora, 2003; Lavelle, 2004).

To accomplish the desired effects a 30cm thick layer of soil is dug out, putting the soil aside. The dug out hole is then filled with organic matter. First a layer of brown material – dead organic matter like fallen down leaves – is put into the hole, then follows a layer of green material – alive organic matter like fresh leaves – on top of it. Another layer of brown material and finally once more green material are put into the hole which shall be filled up by these four layers. In the end the excavated soil is put back on top of the filling. The fresh leaves only have to fulfill one condition: they should not be resinous as this makes them difficult to be decomposed. One further aspect to be considered when

optimal sprouting is desired: the topmost layer of soil, which will cover the seeds, should be cleaned of stones so the scion can rise without problems (Díaz Santos, 2011).

This method proved to be successful in the region of Oaxaca's coast and is not requiring complicated technology or profound understanding of bio-chemical processes which take place in the soil. Therefore it is considered an effective and easy method to increase soil fertility in La Vainilla.

10.2.2 Plant arrangement

Depending on what crops and aromatic plants are seeded certain arrangements have to be made. The growth cycle of the plants and the rainy season must be considered in order to know which crops and/or aromatic plants have to be seeded first and which ones later on. Depending on the superficial and subterranean size of the plants a certain limited quantity of plants shall be seeded in order to avoid contra-productive competition between them. A high density of plants would lead to less nutrients and solar energy available for each plant which would result in weakness. This would increase the risk of plagues causing severe damage to the garden products. Enough space for each plant provides a natural basis for healthy growth which is an effective method of preventing plagues from causing damage (Méndez Alzamora, 2003; Spence & Pears, 2008).

Combination of certain plants can result in a mutual protection and strengthening as they hold off plagues and create unsuitable conditions for insects and mushrooms above and under the soil horizon. Several useful combinations are known for the arrangement of organic gardens (Lavelle, 2004).

ECOSTA elaborated a list for the most common crops in the region of Oaxaca's coast and favorable and non-favorable combinations with other crops (accompanists and enemies). See appendix #5 in the attachment part for information.

10.2.3 Organic pesticides

The basis for the production of organic pesticides are aromatic and/or bitter plants which fulfill the task of rejecting plagues due to their intense smell and taste. The manufacturing of liquid plant manure is somewhat complex and more time consuming (up to 10 days) but has the advantage that it stimulates the overall health of the plant and prevents insect attacks (Méndez Alzamora, 2003).

Easier to produce are organic pesticides which use ground aromatic and/or bitter plant leaves dissolved in water and then applied to the plants through a spraying device. As these plants form an essential part of the garden itself they are a sound source for pesticides. Their preparation is not complex and little work intensive. Picking the leaves, grinding them and leaving them in water overnight are the only tasks before the actual usage in the garden. The plants mentioned in the interviews (listed above) do for pesticides and some of them are already present in the community this is why their application does not require much effort nor time. This method had proven effective in the region and is taught by local NGOs (Díaz Santos, 2011).

10.2.4 Fertilizers and compost

Though not always necessary this aspect is of huge importance as it is about strengthening the plants, making them less vulnerable for plagues and illnesses and increasing its reproduction ratio

(Spence & Pears, 2008; Lavelle, 2004). Liquid manure works as a good fertilizer and is based on agrestal plants. They are collected, cut and mixed with water and yeast from the bakery. The mixture is then covered up and stirred every day over a period of seven to ten days. Passing it through a clean rag finishes the procedure and the liquid manure may be applied to the plants. The leftover sediments are also usable as fertilizer (Méndez Alzamora, 2003).

In coastal areas algae is a good option as it is very rich in oligoelements which are needed to a certain amount by plants and help to increase the structure of the soil as it becomes denser (Spence & Pears, 2008).

Another way of preparing organic fertilizer involves animal dung and human urine. Goats and cows are the most important animals for that purpose in the coastal region of Oaxaca. A bucket is filled to one fourth with animal dung and with three fourth water, stirred and covered up, placed under a tree which shadows it. After 30 days of stirring it regularly the fertilizer is ready but highly concentrated. One liter has to be dissolved in four liters water before applied (Díaz Santos, 2011).

Human urine is mixed with soil (ratio: 1 liter with one spoon full of soil) and then equally covered and stirred up for 30 days in a shadowy place. Before usage it is dissolved in ten liters water (Díaz Santos, 2011).

Both types of fertilizer (animal dung and human urine) are applied every three days but only before plants start to grow fruits (Díaz Santos, 2011). Mixed with straw is may also be used as a fertilizing way of preparing the soil, though this method is very time consuming as it accounts for up to 12 months of preparation (Spence & Pears, 2008).

Compost is a fundamental way of increasing fertility of soil and through its appliance digging and ploughing (and other ways of working and preparing the soil) may even become obsolete (Seymour, 1978). It is essentially easy to create compost as all the weeds, vegetable rests from the garden and kitchen slops can be used (Spence & Pears, 2008).

The composition of the compost may vary according to environmental conditions and availability of organic matter. One way to create good, fertile compost consists in the following structure of layers shown in table 39:

Compost layers
Soil
Some chalk
Kitchen slops
Eggshells
Ash
Goat and/or donkey dung
Cow dung
Green organic matter
Dried organic matter
Table 39: Compost for gardens, (Díaz Santos, 2011)

Total height of the compost should be about one meter. It should be placed under a tree or in a similarly shadowy place for about three month before applied to the garden plantation.

10.2.5 Monitoring of crop development

In order to provide statistic data on the development of the grown crops monitoring methods have to be employed at least once in an agricultural cycle. This will allow for comparison if different methods are applied to the gardens and/or determine the success of the gardening project.

Monitoring will refer to 1) extent and distribution of the crops and 2) condition of the same and thereby provide a basis for further decision taking and management strategies (M&E Key Documents, 2003).

Crops must be measured in terms of their height, crown volume and density to obtain data regarding the first criteria (extent and distribution) and in terms of alimentary production and health to obtain information regarding their condition (US Department of Agriculture and US Department of the Interior, 1999).

The small scale farmers of La Vainilla do monitor their crop development but not in a statistic manner. Visual judgment based on knowledge acquired throughout the years is their method which served them well and would do the same for monitoring of crop development in the gardens.

10.3 Soil sample analysis and its indications

Two soil samples were taken from the land which could serve as the first ground for the implementation of organic gardens. The landowner is an agriculturist and the head of the tourism cooperativa. As he is quite busy working his land and leading the cooperative he agreed upon a cooperation which leaves him as the one lending the land to somehow, who has no own land to grow crops on, and sharing the yield with that person. That way one land-less resident of La Vainilla has the opportunity to enrich his and his family's diet and thereby reduce its alimentary and economic

dependence. At the same time another part of the yield could go to the tourism cooperative's restaurant where it is sold to tourists thereby generating more income.

The first soil sample was taken at one end of the land, closer to the mangrove lagoon, and the second one at the point where the organic gardens will end, further towards the village of La Vainilla. Before excavating soil the uppermost layer, which normally contains a lot of organic matter and which is more exposed to weather conditions and thereby is not representative for the soil itself, was removed. Then soil was dug up to a depth of about 40 cm and taken as a sample.

The results are shown in table 40. Analysis was realized in Instituto de Investigacion de Zonas Deserticas in San Luis Potosí.

	Soil sample # 1	Soil sample # 2
pH	7,76 (weak/low Alkalinity)	8,05 (weak/low Alkalinity)
Soil texture		
Portion of sand	68,4%	70,4%
Portion of clay	15,3%	15,3%
Portion of silt	16,3%	14,3%
Resulting classification of soil	Sandy loam	Sandy loam
Portion of organic matter	3,03% Rich	3,25% Rich
Conductivity	2,37 mS	1,44 mS

Table 40: Soil sample results, elaborated by author, (Riemann, 2011)

The pH which resulted can be regarded optimal as the value is almost neutral which ensures good growing conditions for a variety of plants. As it is the goal to grow several different crops on that land the soil must be able to host plants with different preferences. This can only be done when conditions are favorable in general terms. A higher or lower pH may be good for one certain crop but not that good for another one and this is why this soil with its almost neutral pH serves the purpose and needs no alteration before crops are grown on that land.

The soil texture is somewhat of a problem as its extremely high portion of sand causes water to pass through without much effect. It is not stored by the soil and takes many nutrients with it as it goes deeper which leaves the upper parts of the soil in less nutritive conditions which may slow down the growth of the plants. Soil preparation as described before (the addition of brown and green material, see above) counteracts this problem and gives the soil a better texture in the long run.

Both soil samples are classified as sandy loam.

Though the soil is very sandy its portion of organic matter is high, making it a rich soil. This indicates good general fertility which may result in lesser appliance of fertilizers.

Conductivity is also at a good level, providing enough nutrients and at the same time not being overloaded with salts. Nonetheless it has to be mentioned that the test on conductivity was a general one and does not allow for further differentiation of the portion of each salt (potassium, calcium, magnesium, sulfur, nitrogen and phosphorus). The facilities of the Instituto de Investigacion de Zonas Deserticas in San Luis Potosí do not come with the needed equipment to realize the more detailed test.

Summing up the indications of the soil sample analysis it can be said that the chosen land only needs the addition of brown and green material in order to improve drainage but would be a good, almost optimal host for the crops which could to be planted.

10.4 Benefits of organic gardens for locals and tourism development

Organic gardens have the potential to help the cooperative distinguish itself from competitors and their food offer, and they fit the local conditions and possibilities. As all material involved can be obtained or produced locally the financial investment remains very low. The needed labor force is available and most inhabitants of the community are small scale farmers and have a lot of experience growing crops. Specific knowledge for organic gardens is present in the region and could be brought to La Vainilla. Thereby locals could widen their expertise and agricultural activity. As knowledge and materials are locally or regionally available this enterprise would not run the risk of create further dependence from external agents who provide exclusive, rare materials or insights.

The factual implementation of organic gardens in the community can be classified as a realistic perspective. The knowledge available complies with all academic criteria: local expert interviewee Díaz Santos described perfectly well how all important aspects of organic gardening are handled in the region.

The remaining and more complicated issue is the envisioned empowerment through these gardens via the realization of its potential benefit for local tourism.

10.5 Conflict of resources: gardens and water consumption

From the above descriptions results one remaining question about sustainable resource management which is due to local water scarcity. All other resources which are required for the implementation and maintenance of the gardens are available and face no considerable limitation. Water on the contrary is very rare due to climatic conditions, local topology and hydrology. Fresh water consumption is determined by economic well-being as demonstrated in chapter seven. Water for irrigation ends is not available and crops are only cultivated during rainy season (Riemann, 2011). Gardens can be run during rainy season and thereby not alter the consumption of water. The harvest would be available in a certain time and would be able to contribute to the diet diversification of the respective households. The problem arises due to the seasonality of tourism in La Vainilla. The vast majority of visitors come on three occasions which were mentioned earlier. It therefore would be necessary to provide local food at these times. Table 41 illustrates the problematic timing of tourist arrivals and precipitation.

	Jan.	Febr.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Rainfall												
Labor demand												
Local crops												
Tourists												
Table 41: La Vainilla seasonality, elaborated by author, (Riemann, 2011)												

The August tourists could be served vegetables from local, organic gardens but the Christmas and more so the Easter tourists become a problem in terms of water management. Harvesting in December would require irrigation to some extent in order to “extend” the rainy season. Harvesting in April would require watering during the entire life cycle of the planted crops. Providing crops in Christmas and Easter would therefore enhance water scarcity and create a conflict of resources. If families would run their gardens with irrigation water the situation would create a resources trade-off. More water would be invested but monetary income and diet diversification would be a positive counterweight. The viability of that equation depends on two factors. Buying fresh water from commercial water sellers would be too costly therefore local water conditions and management are the most decisive factors.

Viability of irrigation depends on:

- (1) Quality (salinity) and quantity of water from well
- (2) Water storing devices

If salinity of water from well is high and no water storages are available no irrigation is possible. Water tanks can be found in some households and are useful devices for enabling irrigation at least till mid-December. Wells have actually the same function but are also limited in their usage due to their size and climatic conditions. Well water is said to become scarce at the end of the dry season. The number of water consumers per well is also decisive for potential irrigation as it determines the possibility of sufficient extraction. The respective numbers were displayed in chapter 7.7.4.

As the most marginalized make use of wells which face greater numbers of consumers and are classified as salty or slightly salty, one possible source for irrigation would be water storage devices. But the ratio of household members and possibly stored water remains unfavorable for further extraction of stored water. Among the poorest water is just too scarce and could hardly be used for other purposed than the most urgent ones.

It results a trade-off situation in which the income generated through selling garden products to the ecotourism cooperative must be partially invested in buying access to further well water or additional water storage devices. If an external organization would engage in an empowerment program in La Vainilla it could minimize investment risks and improve the trade-off equation by implementing additional water storage devices for participating families.

Chapter eleven: The applicability of an empowerment program

In this last part of the proposal it shall be considered in how far the identified households of the community could successfully participate in an empowerment program which tries to implement organic gardens with the most marginalized families and connect them with the ecotourism cooperative. If an outside agent would try to realize such an empowerment program how good are prospects that he may accomplish the desired outcome? The criteria elaborated in chapter two will serve as the reference points for answering that question.

11.1 Participation and internal organization

The following considerations deal with the likeliness of participation, the expected motivation, the role of leadership, the organization of the involved and a possible way of how cooperation could be secured in the long run. It is about the first steps every empowerment program has to take in order to get started and bring people together.

Participation is necessary and most difficult as a program would try to involve the most marginalized but always faces the problem that these persons are less likely to participate. Also in La Vainilla that problem may arise but an outside agent could, based on the information displayed in this work, try to animate the families which are most marginalized. As the concerned persons clearly identify their lack of monetary income and the resulting scarcity in food purchase a well-trained agent could adjust to such conditions and address people's concerns and thereby increase the chance of their participation and create motivation. Once the possible benefits are clearly portrayed participants should be willing to get involved although they lack a good understanding of the background tourism scenario. Getting the ecotourism cooperative to participate would also depend of the demonstration of resulting advantages which may come into effect due to the empowerment program. This particular group of persons knows about their problem of a missing competitive advantage in tourism.

Leadership was given when the ecotourism cooperative was founded and developed in its first years. Alejandro Garcia Hernandez (the husband of Teresa G.H.) came up with the idea (together with Ernesto G.R.) and was a very active facilitator, bringing people to the community and realizing boat trips. With his death (he was killed by crocodiles) leadership within the cooperative ceased as well. Ernesto G.R. is the actual leader but not involved in the daily operations. However as a community elder he would have the necessary respect and acceptance among locals. If not him another elder could be the leader but not anybody else as social relations determine the elders to be the ones in leading roles.

The organization in the community must be describes as weak, especially when looking at the situation of the cooperative. It is isolated due to past developments. General social cohesion was found to be weak as well which increases the problem. In fact little internal organization exists on which an empowerment program could build on. But getting people involved would be a first step to fight that situation.

Reliability of cooperation is an aspect which can hardly be clarified here due to missing experiences of successful or unsuccessful cooperation in the past. How one group involved could rely on the compliance to agreements of another group can only be answered theoretically. External monitoring from governmental institutions is not an option as only the cooperative itself is obliged to comply with certain standards in the legal ecotourism norm, its cooperation with other parts of the community is not part of the evaluation. Local NGO *La Red de los Humedales* could be a possible monitor as community development is on their agenda but their small pool of active employees is rather unable to fulfill such a task. Internal monitoring would remain the only viable solution but would be based on unequal power relations as the providers, the families managing the organic gardens and selling its products to the cooperative, are in no position to neither claim their rights nor get help in cases of misfortune meanwhile the cooperative has official support from institutions.

11.2 Knowledge and resources mobilization

The knowledge which exists in La Vainilla and in the region is sufficient for the proposed case. General understanding of agricultural processes is present in families where crops are grown so adapting to gardening should be of no problem once they are instructed by local experts. Those who have no respective knowledge could be taught by local NGOs which are very experienced in this field. Access and availability are very good when talking about organic gardening but the issue is different in the case of tourism. The cooperative is relatively inexperienced in terms of entrepreneurial activity which finds its expression in a touristic offer that copies other offers and in the permanent search for institutional financing rather than own efforts. Local NGO *La Red de los Humedales* used to help out on that but in a recent turn of events the respective post was cut and no employee is directly responsible for the touristic development of the cooperatives. Whatsoever this NGO remains a good source of information although the access to it became more complicated.

Problem assessment is good at both sides. Potential providers see poverty and food insecurity as problematic factors which influence their well-being and the ecotourism cooperative realizes the need for further development and amplification of their offer. Potential providers have generally no understanding of the problems of the cooperative but this would be of minor importance in the first place. For further cooperation and more active participation in the cooperative the potential providers would need to get more tourism related knowledge in the long run. The problem of little social cohesion seems to be well understood as well due its repeated mentioning.

Resource mobilization should be easy as all necessary resources are locally available like it was described in chapter ten. Human labor force is available as well. The fact that all wagedworkers from La Vainilla are men makes it more likely that women will take care of the gardens on a daily basis.

11.3 External organization

Up to now the ecotourism cooperative is the exclusive entity which interacts with other institutions and tourists. Cooperating with local providers for the restaurant would probably not change that although more individuals and households become dependent on that interaction. A different external representation should result from internal organization changes but the unofficial nature of the relation between providers and cooperative would stand in its way.

Links to others became a problem for La Vainilla’s tourism project. Two important sources of support, which brought in tourists, broke away. The tourism responsible from *La Red de los Humedales* is not active anymore as the post was cancelled and along with that comes the abandoning of the so called “Ecotourism Hut” in Mazunte which served as a promotion basis and as service provider, taking people directly to some community in order to realize a boat trip. Consequently the cooperative is more isolated than before. If the cooperative could get more people involved a broader social base could provide potential links to other communities or individuals.

The interaction with external agents was very fruitful for the cooperative but also put them in a situation of dependence. Now that external agents cannot provide any support the viability of tourism in La Vainilla faces a major threat. One may say that influence from outside agents was inaccurate but the present situation is characterized by an urgent need for outsiders who can support the cooperative and its members. Capacity building was facilitated insufficiently throughout the last years and governmental institutions provide only money but do not demand anything in return. Outside agents were always to play the active role while La Vainilla’s cooperative remained a more passive receiver of benefits.

Self-determined organization during a possible empowerment program would result questionable and it seems more likely that participants follow the outside agent who carries out the program. Accordingly it would be probable that participants struggle to take control of the empowerment process. To a certain extent it is desirable that an outside agent has influence which allows him to influence situations in a positive way. Outsiders are not stuck in local structures and therefore are able to overcome problems like little social cohesion more easily. On the other hand it must be accomplished that the participants have control over goals and ways of an empowerment program otherwise the whole process may just not be apt for their specific situation.

11.4 Summary

Tables 42, 43 and 44 illustrate how conditions comply with requirements for a potential empowerment program. Some conditions provide a very solid basis for further development and would allow an outside agent to make use of it in an uncomplicated manner. Other aspects are more difficult and would require a bigger effort by the facilitator of the program, overcoming obstacles and create incentives.

Participation and internal organization	Good conditions	Ambiguous state	Critical state
Participation	X		
Leadership		X	
Internal organization			X
Reliability		X	

Table 42: Summary participation and internal organization, elaborated by author, (Riemann, 2011)

Knowledge and resources mobilization	Good conditions	Ambiguous state	Critical state
Knowledge access and availability	X		
Problem assessment	X		
Resources mobilization	X		
Table 43: Summary knowledge and resource mobilization, elaborated by author, (Riemann, 2011)			

External organization	Good conditions	Ambiguous state	Critical state
Links to others			X
Outside agents		X	
Program control		X	
Table 44: Summary external organization, elaborated by author, (Riemann, 2011)			

Chapter twelve: Conclusions, findings, implications and further research needs

The last chapter of this work is dedicated to final thoughts about the findings of the analysis, the proposal and problems which occurred during the field research process and while realizing the written work. Firstly the outcome of the investigation shall be summed up. Secondly implications resulting from encountered problems shall be displayed, indicating potential further scientific research. Thirdly recommendations concerning ecotourism cooperatives and culinary tourism will be outlined in order to provide a useful set of factors that are relevant for empowerment through ecotourism in Mexico.

12.1 Conclusions and findings

The work investigated the potential facilitator role of resources management in sustainable tourism, it was look upon its possible contributions to empower parts of the community of La Vainilla. In order to do so a first problem assessment was realized which involved locals as only their participation provides the necessary insights needed for clarifying actual problems within the community. Few income sources and resulting poverty, together with little agricultural productivity which leads to food insecurity, were identified as the most crucial factors. Little social cohesion in general and in relation to the ecotourism cooperative was the third aspect of importance. The following field research was based on a holistic approach which incorporated various forms of capital, it therefore examined the livelihood of the involved rather than single aspects which formerly were taken as determined indicators for poverty assessment. The in-depth portray of the community and its inhabitants in chapter seven allows for a general understanding of the situation, the interrelation of important factors and was taken as the foundation on which a proposal would be based on. Tourism was taken as a facilitator for economic development and focus was laid on resources management as a potential source for further activity in the tourism sector. Its role for solving the identified problems was the heart piece of this work and involved an analysis of regional and local tourism and the formulation of a proposal of how further touristic activity can contribute to the empowerment of the community.

The conclusions from field research regarding tourism and empowerment can be summarized along these lines:

- The in-depth problem assessment assured the initial (participatory) problem assessment
- Big, young and indigenous families are the most marginalized persons
- Tourism is an important industry in Mexico and in coastal Oaxaca
- Tourism contributes little to the economic development of La Vainilla
- Culinary tourism is a promising niche in the regional tourism scenario
- Organic gardens can help overcome poverty and food insecurity by selling products to the ecotourism restaurant and enriching domestic diets
- Organic gardens are based on resources management concepts that are ecologically (and economically) sustainable

- The proposed form of culinary tourism is socially sustainable as more families would benefit from it (better access to resources – intragenerational equity) and resources management does not compromise future benefits (intergenerational equity)

The specific objectives of this work were worked on step by step und thus leading to a complex understanding of the underlying issues which allows to formulate an answer to the overall research question.

The concept of empowerment was defined in two ways, first as a problem assessment and secondly as a program approach which aims at reducing or eliminating identified problems. The assessment takes into consideration the accessibility and distribution of assets, capabilities and social capital which determine food security and economic well-being. It identifies (groups of) persons who are in need for empowerment. The program searches for new ways of resource management that may tackle the revealed problems, it therefore aims at the expansion of assets and/or capabilities and at more social cohesion which allows for food security and alleviation of poverty while the process has to be fueled and controled by the community. Thus empowerment through resource management is a form of sustainable development which takes fully into account the intra- and intergenerational equity in resource usage and thereby is able to enhance levels of livelihood.

Tourism has the potential to contribute to empowerment and sustainable development but has to comply with certain criteria. It should enhance social equity and cohesion by leaving the hosts satisfied, create economic benefits for them, conserve natural resources and should be steered by locals. Control over an altered resource management system is crucial in the given case as poverty and food insecurity are closely related to this aspect.

In Mexico tourism is a major industry and helped in many cases to foster economic development of poor regions but also tends to monopolize economic benefits, overexploit natural resources, overtaking local efforts and thereby alienate residents. Understanding the history of rural areas and tourism in Mexico helps to locate such tendencies in a broader context and avoid certain pitfalls when formulating a proposal for La Vainilla which considers these case specific criteria as well.

Coastal Oaxaca is characterized by hot and dry tropical climate and its little precipitation. It is a poor region with little economic development where temporary agriculture and tourism are the main income sources. Due to its beautiful landscapes and rich biodiversity the region attracts more than 1 million visitors per year.

La Vainilla is a small community in Coastal Oaxaca with 20 households and a kinship related social organization. Many families depend on temporary agriculture, while business and especially tourism play a minor role. The lack of superficial fresh water bodies results in a limited output of agricultural efforts and few employment possibilities lead to little purchasing power which makes most families live in poverty or even extreme poverty. La Vainilla suffers from the same problems as other communities in the region.

Analyzing the potentials and problems of La Vainilla as a community and as a touristic site it became clear that it faces various disadvantages compared to other regional tourism competitors. Still a promising niche for further development was found in the form of culinary eco-tourism, something which distinguishes the place from others and still goes along with the interests of visitors.

Organic gardens run by locals are proposed as the basis for the identified tourism niche. The general features of such gardens comply with ecological and economic sustainability criteria while its operational link with the local ecotourism cooperative carries the capacity to lead to social equity and cohesion. The gardens could be implemented using locally available resources and knowledge and if the sustainability criteria for empowerment and tourism are matched poverty and food insecurity might be reduced by these gardens leaving all involved with more assets and capabilities than before and in a situation of mutual cooperation.

The research question is to be answered in the following way:

Management of local resources in tourism can lead to the empowerment of greater parts of the community La Vainilla by the implementation of organic gardens that sell their products to the ecotourism cooperative's restaurant which can amplify its touristic offer by engaging actively in gastronomic tourism. By doing so La Vainilla can attract more tourists and increase economic benefits without compromising domestic resource use in the long run and can contribute to better living standards.

The hypothesis is to be answered:

It is affirmed that La Vainilla has the potential to attract visitors and participate more actively in the local tourism market in a sustainable way. Organic gardens and culinary tourism can enable locals to take advantage of the market situation without compromising domestic resources use and living standards but instead it will contribute to a better use of existing resources and an empowered community.

The case study has shown that sustainable tourism can be accomplished on a local level leading to an empowered community while many potential threats which come along with touristic development remain absent. This implies the assumption that the proposed form of further engagement in this sector is a "soft" alternative with reduced risks. Table 45 highlights how the proposal took care of case specific aspects and how the possible solution can tackle relevant problems while mostly leaving aside negative external effects. The advantages become clear when comparing the table to the general synthetic tourism – empowerment table at the end of chapter 3.6. The differences in scale and control play the most significant roles, due to the fact that the envisioned development is based on residents, their abilities and local, natural resources outside influence with other interests does not compete for control in decision making processes or over resources, nor does it interfere with social structures. Still some negative effects remain, e.g. seasonality, and certain general threats which are related to the host-guest situation cannot be eliminated.

Organic gardens and Culinary Tourism	Organic gardens	Selling to restaurant	Traditional dishes offer (cooperative)	Culinary (additional) tourists
Keys to empowerment in La Vainilla				
Access to resources	Diversified	-	-	Competed
Water management	More difficult	-	-	Higher pressure
Food security	Improved	-	-	-
Dietary diversity	Improved	-	-	-
Income	-	Improved (but fickle)	Improved (but fickle)	Improved (but fickle)
Social capital	-	Improved	-	Enhanced self-esteem or alienation
Participation in tourism	Improved	Improved (but fickle)	-	Increasing with arrivals
Table 45: Case specific synthesis tourism-empowerment, elaborated by author, (Riemann, 2011)				

12.2 Implications

The findings and conclusions of the field and written work brought about reflections on some topics which were of importance during the process and shall be outlined here as they indicate how the results of this work could be the basis for further actions or theoretical considerations.

12.2.1 The ecotourism norm

Although the ecotourism cooperative in La Vainilla complies with the official SEMARNAT norm it does very little to empower greater parts of the community. As the purchase of local, organic products is not obligatory for the cooperative the local multiplier effect of tourism remains very low. The norm can accept a formal agreement regarding local product purchase but the grading of such an agreement is minimal, therefore any cooperative can easily achieve conformity with the norm without purchasing local, organic products. SEMARNAT could increase the empowerment effect of ecotourism cooperatives by giving more value and credit to the importance of product purchase on the local level (higher value in compliance rating). It also could include it in the basic rules which apply for all cooperatives no matter how they gain their norm acceptance (formal agreement would be obligatory for all contenders). Social organization would be improved as interaction would become necessary but on the other hand negative attitude could result due to the fact that social cohesion is forced.

The nature of the relationship between the ecotourism cooperative and local product provider (organic gardeners) is unequal in its basic design. Problems concerning responsibility and power relations result: the cooperative is recognized and supported by SEMARNAT but the providers have no status except having signed a formal agreement with the cooperative. If providers would become institutionalized they would acquire rights and obligations just like the cooperative and interaction between these two parts would be equalized. If the cooperative violates the agreement the providers could claim their right via the formal way, something they cannot do these days as SEMARNAT only checks the existence of a formal agreement but does not involve providers directly.

Creating means for dispute resolving is essential for joint resources management (Ostrom, 1990) and need to be addressed by policy makers.

12.2.2 Problem assessment methods

During field research various methods were applied and the outcome was a holistic description of local livelihoods. It allowed for many insights which normally are rare due to time and resource restrictions when problem assessments for empowerment programs are realized. Livelihood approaches try to create an overall image of the situation but limitations on research render this aim unrealistic (Krantz, 2001). Looking at the different methods applied in this work certain lectures can be learned regarding the reach of methods. Some provided little insights while others reflected essential problems in an effective way.

Income and expenditures could not be grasped in numbers while living conditions expressed in spatial dimensions and domestic resource management (water saving facilities) provided useful insights. Problematic results the applicability of such a method to an entire community. The ongoing field research provided sufficient time and acceptance among members of the Focus Group in order to carry out such an investigation but problem assessments which have a practical orientation do not come with that much time.

Interviews about the community's history created enough information about present day social structure which resulted to be a good indicator of differences in livelihoods with the indigenous people who immigrated later being the most marginalized ones within the community. Interviews about social organization and local land tenure systems combine for a powerful tool that can identify the poor in a rural context with few employment possibilities.

12.2.3 Overcoming the empowerment participation dilemma

The case study provided an affirmation of a problem which earlier was described as the empowerment participation dilemma: the most marginalized normally are the least to participate in empowerment initiatives. The Zapoteco speaking families did not engage in the ecotourism cooperative although it was very popular in its beginning. Their social marginalization is reinforcing itself and any further empowerment program which would be realized within the community would have a good chance of not involving them as they are not calling for involvement. A simple participatory approach could result in the participation of only those families which have more assets and capabilities and who are more familiar with engaging in such initiatives. Identifying the most marginalized results an urgent task before realizing any empowerment program. Creating formal obligations of cooperation like considered above could overcome the participation dilemma in a classical top-bottom way as a governmental institution (in this case SEMARNAT) creates opportunities for participation rather than waiting for the powerless to call for empowerment (Newig, Kuhn, & Heinrichs, 2011).

12.2.4 Initiative and control

All empowerment programs face a contradiction regarding the role of outside agents, their influence and the organization and leadership among locals. Empowerment is needed when conditions do not allow for a self-initiated process of change. An external influence can help to overcome internal

obstacles but brings potential alienation to the place. An outsider can deliver knowledge and show how resources may be used in a different way and thereby help to fight certain problems but in the end the success of an empowerment program is measured once the outsider left and the process is followed up by locals. Foreign control is needed in the beginning but has to cease towards the end otherwise locals remain dependent on externals and cannot take full control of the desired development. In the case of La Vainilla internal initiative is scarce and support would be welcomed. The remaining question would be: who takes control? According to the kinship related organization within the community it would be an elder of the Garcia Ramirez family and that may result in a marginalized role of the Zapoteco speaking families like it is the case in everyday life in the village. Thus the already difficult issue of handing over the control over the empowerment program is further complicated by local hierarchies. Leadership within the group of the participants of an empowerment program must be watched carefully

12.3 Further research needs

The proposal exposed within this work is focused on solving problems right away and almost immediately but does not aim at rooting out the causes for poverty and food insecurity. The imbalance between demographic and economic growth can hardly be addressed by means of organic gardening. Empowerment which eliminates socio-economic tensions would need to tackle problems from the health and education areas. Means of birth control and family planning are seemingly missing in the rural context of La Vainilla but would have a great impact in the long run by diminishing demographic pressure and empowering women (Center for Environment and Population, 2012). Population growth in fact is seen as a major threat to sustainable development worldwide (Rio+20, 2012) and revealed its negative impacts in this case study. Further research could engage in finding potential ways of communicating basic concepts of family planning to families in La Vainilla.

Local organization was extremely weak in the case of La Vainilla and resulted the main focus of a potential empowerment program as it was identified as a major obstacle to empowerment. Investigation of successful cooperation models in rural contexts could provide sparks about possible ways of common engagement in economic enterprises such as tourism when social cohesion is low. Comparison of La Vainilla and other rural tourism projects in the region, such as La Ventanilla and La Escobilla, could help to understand the problem of social organization or at least deepen its understanding.

As this work has focused on resources management and its social and ecological sustainability the economic aspect remained sidelined. It was exposed that organic gardens do not require considerable financial investment (but labor) still it could not be clarified how far reaching the economic empowerment could be resulting from sells to the ecotourism cooperative's restaurant. Further research regarding the economic potential of the proposed economic cooperation between local tourism operators and food provider may quantify the dimensions of potential economic empowerment. Hence an equation could result which would be able to enumerate the economic potential of organic gardens for other cases of touristic development in rural areas.

If the proposal of this work would be realized question about future developments would arise especially in the case of success which is copied by other competitors. A follow-up study could provide insights on the changing competitiveness of La Vainilla once culinary tourism and organic gardens become a regional standard. Flexibility and creative use of knowledge and resources would

be required in order to respond to such potential future changes. Being able to respond to shifting scenarios indicates lasting empowerment but cannot be discussed fully in this work as the empirical data for such development is not available. A program which aims at such versatile enhancement of assets and capabilities would need a broader approach, teaching participants about tourism's underlying mechanisms and strategies. In how far such a program would be realizable could be an interesting research question.

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Appendixes

Survey table 1: Households, Emigration, Kinship and Ethnicity

Enumeration	Interviewpartner/Head of household	Number of inhabitants	Emigrated family members	Garcia Ramirez Family (1=Yes)	Languages spoken (besides spanish)
1	Dona Teresa	9	1	1	1 none
2	Belgica Garcia Perez	2	0	0	0 none
3	Elene Garcia Hernandez	8	0	1	1 none
4	Dalia Mendez Torres	3	0	1	1 none
5	Ester Ruiz Valencia	6	0	0	0 Zapotec
6	Maria Juarez Luna	8	0	0	0 Zapotec
7	Angela Garcia Hernandez	3	0	1	1 none
8	Don Isidro Martinez Ramirez	8	0	1	1 none
9	Juaquin Martinez Jimenez	5	0	1	1 none
10	Dona Apolonia	1	2	1	1 none
11	Don Benito	3	3	1	1 none
12	Catalina Garcia Ramirez	2	2	1	1 none
13	Obdulia Garcia	9	2	1	1 none
14	Celso	7	0	1	1 none
15	Rosa Garcia Hernandez	3	1	1	1 none
16	Felix Garcia Hernandez	2	0	1	1 none
17	Guadalupe Valencia	3	2	0	0 Zapotec
18	Leticia Garcia Perez	4	0	1	1 none
19	Paula Garcia Perez	4	0	1	1 none
20	Don Ernesto	4	4	1	1 none

Attachment 1: Survey table I

Survey table 2: Income sources and alimentation sources

Enumeration	economic activity	Agriculture (land size not tenure)	Animals	Crops/Gardens	Alimentation sources
1	wageworker (1), ecotourism cooperative	small	chicken	Maiz, Frijol	own crops, Don Ernestos crops, commercial
2	School teacher	none	none	none	commercial
3	wageworker (1)	small	none	Maiz, Mango, Coco, Pistazie	commercial
4	wageworker (1), Grocery (1)	none	none	none	commercial
5	wageworker (1),	small	chicken	Maiz, Mango	commercial
6	wageworker (1)	small	none	Maiz, Jamaica	Own crops, commercial
7	wageworker	none	none	none	commercial
8	wageworker,	medium	chicken, turkey, lamb	Maiz, Ajonjolli, Jamaica, Mango	own crops, commercial
9	wageworker	small	chicken	Maiz, Ajonjolli, Jamaica, Mango	own crops (and from father), commercial
10	Grocery (beverages + beer), land lease	medium	Cows, chicken, lamb , turkey	Maiz , Mango	own crops, commercial
11	Selling crops, fishing	medium	none	Maiz, Mango, Coco, Peanut	own crops, commercial
12	Tailor, land lease	small	chicken, lamb	none	commercial
13	Tailor , money transfer (children)	small	chicken, lamb	Maiz	own crops (and from mother), commercial
14	wageworker (6), selling maiz	small	chicken, lamb, cows	Maiz, Beans, Chile, Jamaica	own crops, commercial
15	wageworker (2)	small	chicken, lamb	Maiz	own crops, commercial
16	Carpenter	small	none	Coco	commercial
17	money transfer (children)	none	chicken	none	commercial
18	Transportation (1)	none	chicken	gardening	commercial
19	wageworker	none	chicken	Almond	commercial
20	crops, money transfer (children)	big	chicken, lamb	Maiz, Pumpkin, Beans, Mango, Lemon	own crops, commercial

Survey table 3: water and energy management

	Well used (owned by:)	Well: water quality	Water source: potable water	energy source: electricity	energy source: cooking
1	Don Ernesto	fresh	well, commercial	grid	fuelwood
2	Don Ernesto	fresh	well, commercial	grid	gas
3	Elene Garcia Hernandez	fresh	well, commercial	grid	fuelwood
4	Rosa Garcia Hernandez	salty	commercial	grid	Fuelwood > gas
5	Don Benito	fresh and dirty	commercial	grid	fuelwood
6	Don Benito	fresh and dirty	commercial	grid	fuelwood
7	Dona Apolonia	salty	commercial	grid	fuelwood
8	Don Isidro	salty	Well , commercial	grid	fuelwood
9	Don Isidro	salty	well, commercial	grid	fuelwood
10	Dona Apolonia	salty	commercial	grid	fuelwood and gas
11	Don Benito	fresh and dirty	commercial	grid	fuelwood and gas
12	Dona Catalina	fresh	well, commercial	grid	gas
13	Dona Catalina	fresh	well, commercial	grid	fuelwood
14	Dona Catalina	fresh	well, commercial	grid	fuelwood and gas
15	Rosa Garcia Hernandez	salty	commercial	grid	fuelwood and gas
16	Don Ernesto	fresh	well, commercial	grid	fuelwood and gas
17	Don Benito	fresh and dirty	commercial	grid	fuelwood
18	Don Benito	fresh and dirty	commercial	grid	fuelwood
19	Don Benito	fresh and dirty	commercial	grid	fuelwood
20	Don Ernesto	fresh	well, commercial	grid	fuelwood and gas



En el siguiente cuadro hay más ejemplos para que los tomes en cuenta al sembrar

Asociación de Cultivos

Hortalizas	Compañeros	Enemigos
Ajo y cebolla	Betabel, lechuga jitomate	Frijoles y chícharos
Betabel y brócoli	Frijol de mata	Frijol trepador
Col y coliflor	cebolla y ajo, papas, betabel, plantas aromáticas	Papas
Chícharo	Zanahoria, nabos, rábanos, pepino, maíz y la mayoría de las hortalizas.	Ajo y cebolla
Espinaca	Lechuga	No tiene
Frijol	Papa, zanahoria, pepino, col y la mayoría de las hortalizas	Ajo y cebolla
Girasol	Pepino	Papa
Haba	Maíz	No tiene
Lechuga	Zanahoria, rábano, pepino y calabaza	No tiene
Maíz	Frijol, calabaza y pepino	No tiene
Nabo	Chícharo	No tiene
Papa	Frijol, maíz col y haba	Pepino, calabaza y girasol
Pepino	Frijol, chícharo, maíz, cebolla y rábano	Papa
Rábano	Chícharo, lechuga y zanahoria	No tiene
Soya	Es el cultivo ideal, crece bien con todas y ayuda a todas	No tiene
Tomate	Cebollín, cebolla, perejil, zanahoria y lechuga	Papa y repollo
Zanahoria	Lechuga, rábano, chícharo, tomate y cebolla	No tiene