



# SI-PAM Project



**LUIS M. PEÑA LEVANO**

**Advisors:**

Luis López-Mathamba, Dr. Cesar Escalante, Dr. Humberto Thome

# SIPAM: MATLATZINCA INTERPRETATIVE PATH AND FOOD LANDSCAPE



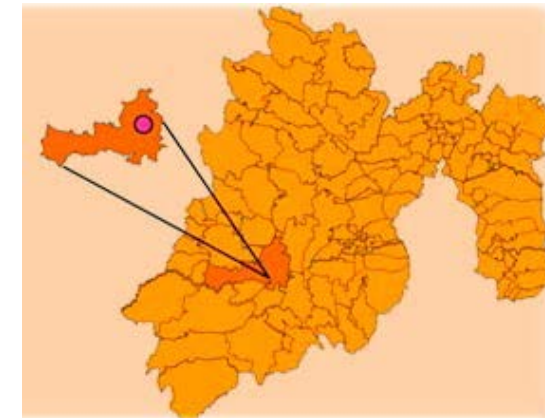
## The goal of the project

The landscape project help in the preservation of endemic food and culture of the Matlatzincas while also protecting the environment and providing a source of income for the local population through the promotion and tourism.



## Validation and research base

This project is validated and based on the research works conducted in Matlatzinca by:  
L. López-Mathamba and H. Thome (2015),  
L. López-Mathamba, L. Peña-Lévano and C. Escalante (2017)



Mexico state

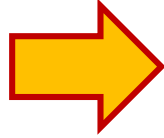


Matlatzinca



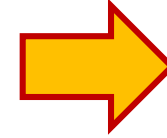
# THE MATLATZINCAS

**Matlatzincas**



Ancient nation

3000 BC



Formed the culture and economy

Current state of Mexico

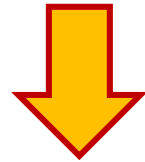
National patrimony

**Main activity**  
Agriculture

while preserving



Forest



Traditional corn



Barley



Beans



Funguses



Pulque

# CHALLENGES FOR THE LOCAL MATLATZINCAS



## INCOME

Limitations in selling their endemic food products, mainly because they are relatively unknown to market

## TRADITION LOSS

Less people speak their native language

## COST

The cost to preserve and maintain the traditional houses of the Matlatzincas is high

## SOIL EROSION

Soil erosion decreases the land productivity and thus affects agricultural output



# ENVIRONMENTAL TOOLS FOR THIS PROJECT



Food Landscape

Interpretative Landscape



# WHAT WE INTEND WITH THIS PROJECT

## Our project intends to...

- **For the locals:** A plan for social tourism as an additional source of income while also helping them to preserve their cultural traditions and landscape.
- **For the tourist:** We are offering a full-package to provide a satisfactory experience. The package would include:
  - The tour
  - Traditional food
  - Staying at a traditional cabin and
  - Interaction with the locals.



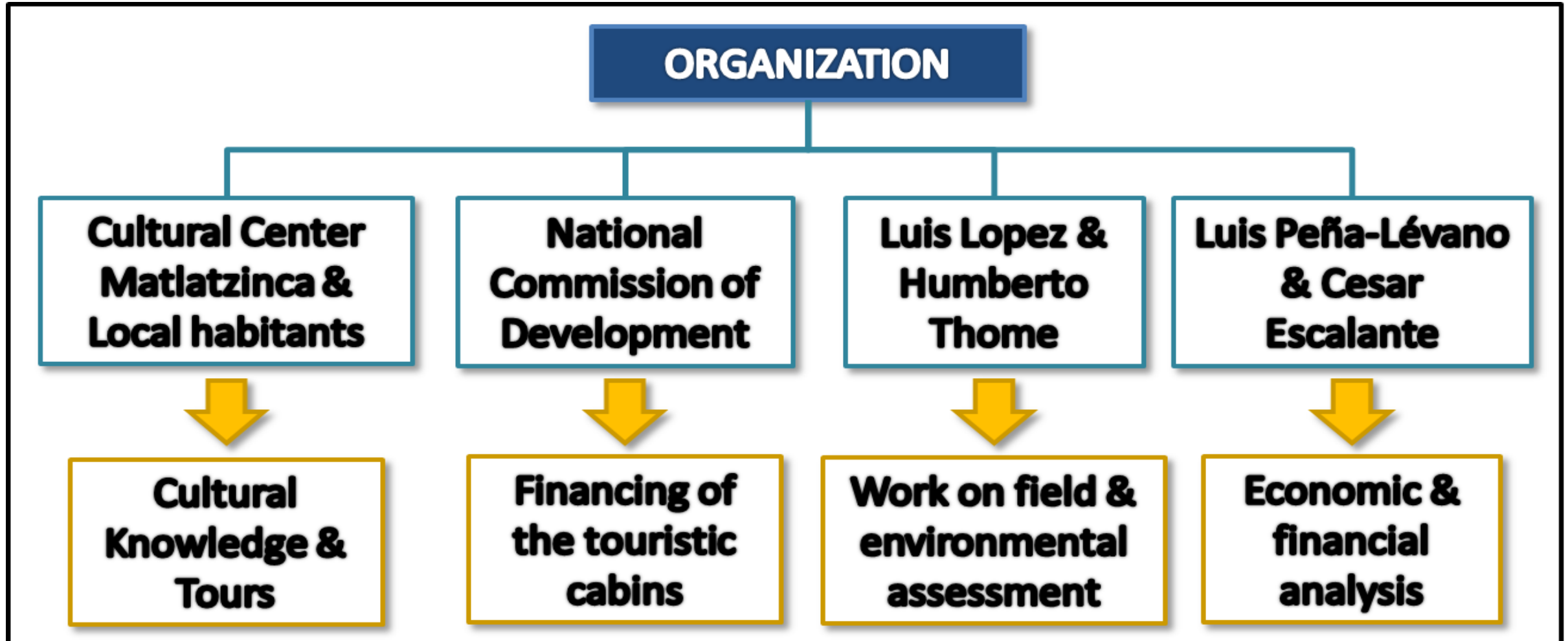
## Expected Behavioral Changes

- We expect to promote habits of organizational and systematical skills, necessary to motivate 'sustainable tourism'.

# ORGANIZATION STRUCTURE OF THE TEAM

- Our target audience: The local community of Matlatzinca

## ORGANIZATION OF THE TEAMS OF THE EXTENSION PROGRAM



# PROCEDURE OF OPERATIONS





# 1) CONNECTION WITH THE LOCAL COMMUNITY

- **Initial target population: 30 people**
  - ❖ Local permanent members
  - ❖ Older than 35 years old
  - ❖ Ones that seek to preserve the ancestral traditions
    - Language
    - Typical customs
    - Food recipes

Selection of initial target population was proposed in Thome (2012)



## The Cultural Center of Matlatzinca (CCM)

- Initially created by the locals.
- The CCM has a **local center**.
- Workshops of ‘participative planning’ **on Saturdays** during the period 2013-2014.

# 1) DATA COLLECTION – FOOD LANDSCAPE

## ETHNOBOTANICAL DATA

### ✓ The list of plants and funguses on the region

- Environmental requirements
- Soil and humidity conditions
- Seasonality
- Common uses

This dataset is validated using Thome's methodology and L. Lopez-Mathamba research (2015)



**Traditional  
corn**



**Barley**



**Beans**



**Funguses**



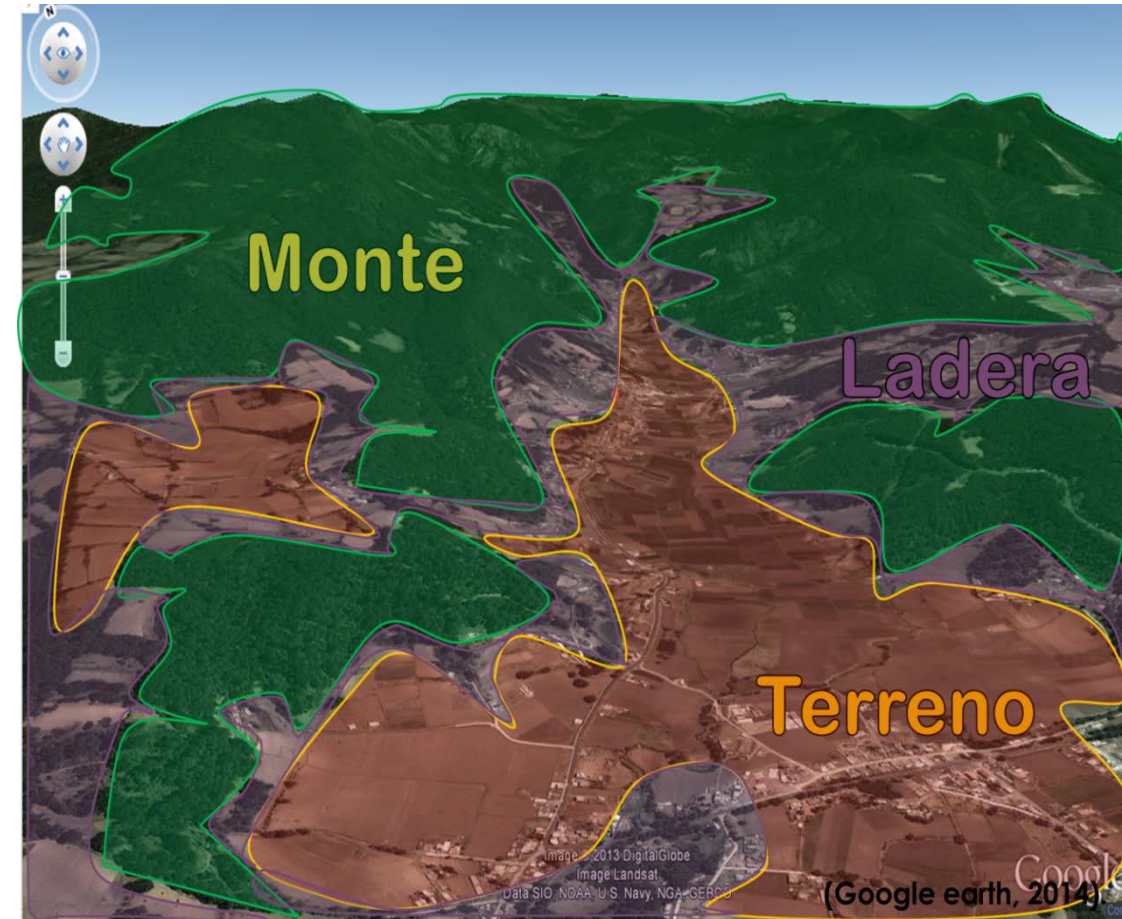
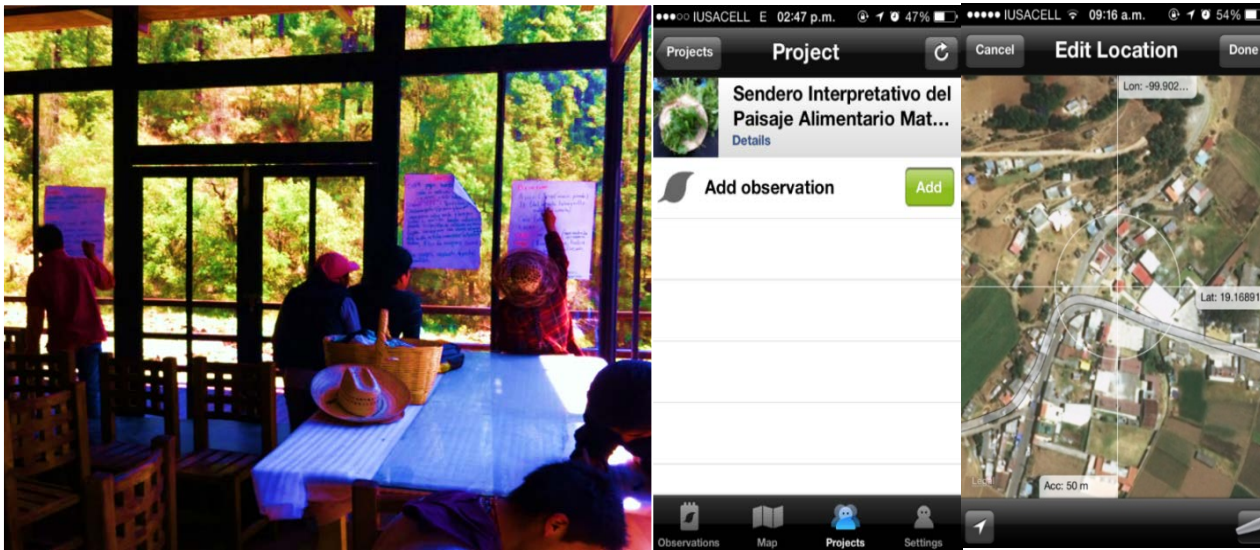
**Pulque**



# 1) DATA COLLECTION – INTERPRETATIVE LANDSCAPE

## ✓ Construction of the landscape

- Definition of attractions
- Delimitation of the zones
- Geologic characteristics



- ✓ We also did a survey on potential customers to analyze their willingness to pay and the services to provide



## 2) INVENTORY AND COST CALCULATION



### Work field on sample collection for inventory

Locals participated and helped with the collection



### Financial - economic analysis

- Food recipes, cabins and tour costs
- Supply and demand analysis
  - Maximum capacity [sustainable formulation] (*Thome, 2012*)
  - Potential demand [surveys]
  - Prices [linear segment demand formulation]
- Breakeven analysis (*Lopez, Pena-Lévano and Escalante, 2017*)









# 3) DEFINITION OF THE RECIPES AND PATHS

## Food Landscape

**Selection of the recipes was based on:**

- **Economic feasibility**
  - Cost and benefits
  - Maximum demand
- **Environmental impact**
  - Soil degradation
  - Forest preservation
  - Seasonality of ingredients
- **Sustainability**
  - Soil erosion and quality

## Interpretative Landscape

**Selection of the tours was based on:**

- **Potential demand**
  - Surveys for potential tourist
    - Maximum willingness to spend
    - Timing of visit
- **Environmental impact**
  - Soil degradation
  - Cabins capacity

### 3) OUTPUTS PROVIDED IN THIS STEP



- We met with our collaborators to verify the design of our plan



The documentation of the food and interpretative landscapes



Documents with the rules of the tours, food recipes selected and guidelines for the tours



Cost calculation and tabulation of the results

- After the verification, the building of the cabins [for the tourist] started with the funds of the Mexican National Commission.

## 4) OUTPUTS THAT WILL BE PROVIDED TO THE FARMERS IN THE WORKSHOPS

- Similar procedure as step 3 but with more details.
- The collaboration of the Cultural Center of Matlatzinca members is necessary.
- There were two different types workshops:

### 1. **Participative workshops** [Local farmers and inhabitants] –

- Before the growing period (August)
- It also included the environmental recommendations to make the plan sustainable



#### **Report and summary**

- *Food landscape* -

List of plants and funguses

Instructions of rotations, plantations

Proposed recipes and costs



#### **Report and summary**

- *Interpretative landscape* -

Cabin and host costs

Tour guidelines

Timing of the tours

### 2. **Guides training** [Tourist guides]



Instructions with the tour times and routes

Procedures and rules of the tours



## 4) PILOT & EVALUATION OF THE IMPLEMENTATION

### Pilot of the project: Socio-touristic laboratories

- We organized the **rural socio-touristic laboratory** (*Thome, 2012*). We invited members of universities and friends that were interested in participating in the tours:
  - 3 groups (each of 10-15 visitors)
  - Locals provided the tour and food services
  - Surveys were provided at the end of the tour
  - We met with the locals to discuss improvements and their experience.

#### Experimental design

We organized the tours according to the sustainability capacity calculated on Lopez-Mathamba and Thome (2014) studies to preserve the environment and avoid exploitation of resources.







**THANK YOU**





## 5) FOLLOW UP & LONG-TERM PROPOSAL

- We are planning to meet with the locals at the beginning of every month to receive information and adjust our current plan.
- Among the environmental and economic aspect we will review:

### Environmental and physical impacts

- ❖ Agricultural sustainability
- ❖ Soil erosion
- ❖ Forest fires
- ❖ Fauna and flora control
- ❖ Water quality



### Economic performance evaluation

- ❖ Tourist demand fluctuation
- ❖ Monthly revenues and profits
- ❖ Variation of cost
- ❖ Food and cabin's capacity

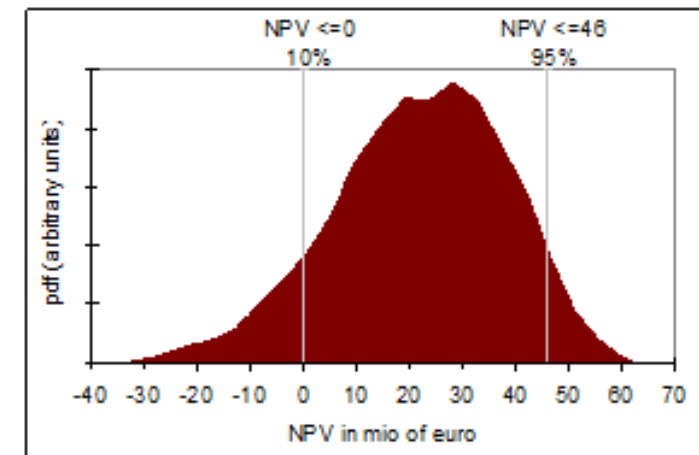
- We are also providing surveys for the visitors to fill out. As incentives to fill them out, we are providing discounts in the tour. We will use them as part of our follow-up to give recommendations for improvement during the meetings



# 5) FOLLOW UP & LONG-TERM PROPOSAL

## Long-term financial plan

- ❖ Proposal for building additional cabins (depending on expecting demand)
- ❖ Financial analysis
  - ❖ Cash flow and Net value of the project
  - ❖ Benefit-cost analysis
  - ❖ Future environmental impact
- ❖ Sensitivity analysis simulation
  - ❖ Prices and demand variation
  - ❖ Production cost
  - ❖ Food products availability
- ❖ Breakeven analysis



# CHALLENGES OVERCOME!



## INCOME

With the touristic plan they also sell their food products.

## TRADITION LOSS

People are motivated to keep their traditions because now is a source of income

## COST

They have extra income to preserve the traditional houses which are part of the attractions

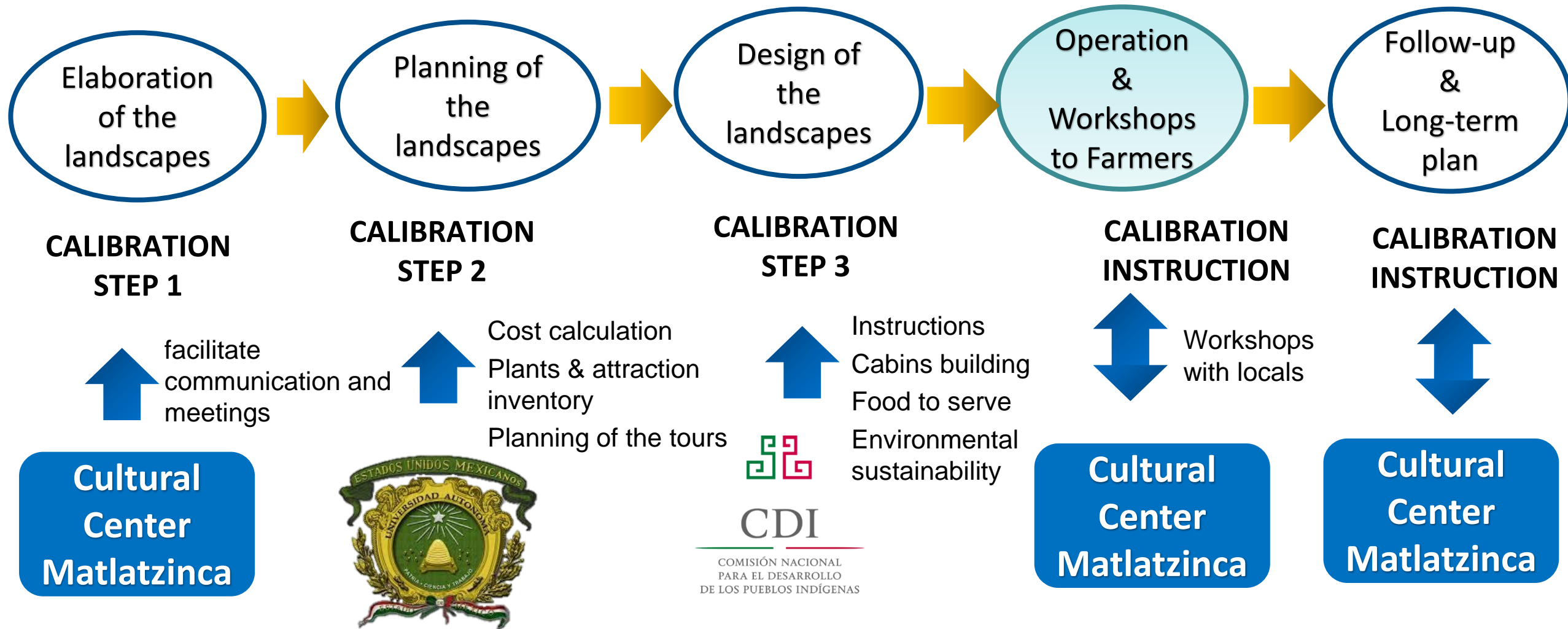
## SOIL EROSION

With our environmental plan, they reduce the problem of erosion



# THANK YOU! - HERE IS A LITTLE SUMMARY

- Our target audience: The Matlatzinca's inhabitants



# ENVIRONMENTAL TOOLS FOR THIS PROJECT



## Food Landscape

Promote endemic food while being environmentally sustainable

- ✓ Inventory of funguses and plants
- ✓ Calculation of cultural impact indices



## Interpretative Landscape

Organized plan to facilitate visitors' access to the natural culture and environment

- ✓ It provides them with recreational and educational services



# WHAT WE INTEND WITH THIS PROJECT



**We intend to help locals to preserve their traditions and culture while, at the same time, providing them with a business plan for a sustainable tourism business model that will help enhance their financial position and thus improve their quality of life**





# SI-PAM: INTEREST FROM ORGANIZATIONS

- The project's inherent merits have already started to generate interest from different corporations and institutions:



CDI

COMISIÓN NACIONAL  
PARA EL DESARROLLO  
DE LOS PUEBLOS INDÍGENAS

**MEXICAN NATIONAL COMMISSION**

Development of native population



**NATIONAL UNIVERSITIES**

Other faculties and universities



**CULTURAL CENTER**

**MATLATZINCA**

Local community

SECTUR

SECRETARÍA DE TURISMO



**MINISTRY OF TOURISM AND DEVELOPMENT**

Governmental organizations

# SI-PAM



**Expand to  
other  
Mexican  
local  
communities**

**Initial target population:**

**Locals from Matlatzinca**

✓ **30 main people from the town**

✓ **The rural community**

**Tourists**

✓ **Initially 10-15 visitors per 3 daily tours**

**Ethnobotanical  
analysis**

**Include cultural impact  
and production cost**

# 1) SI-PAM: THE FIRST INTERACTIONS WITH LOCALS

- Our initial target were the local members that preserve the traditions from their ancestors, such as language, typical customs, food recipes.
- The members that participated were adults [ $>35$  years old], born in the town and permanently living there.
- In these weekly interactions, we also received help from the local authorities.
- We prepared questionnaires with respect to the possible attractions, the local plants and known benefits and collected this information in our database.





# SI-PAM



**Expand to  
other  
Mexican  
local  
communities**

**Initial target population:**

**Locals from Matlatzinca**

✓ **30 main people from the town**

✓ **The rural community**

**Tourists**

✓ **Initially 10-15 visitors per 3 daily tours**

**Ethnobotanical  
analysis**

**Include cultural impact  
and production cost**

# SET OF ACTIVITIES OF THE PROGRAM

Activity	2013		2014				2015				2016			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<b>i. Elaboration of the food landscape (Calibration)</b>	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow								
<i>Construction of the landscape and borders definition</i>		Green	Green	Green	Green									
<i>Definition of plants and analysis of their distribution</i>		Green	Green	Green	Green									
<b>Visits to San Francisco Oxtotilpan</b>	Green	Green		Green	Green									
<b>Work field on ethnobotanic and ethno-fungi collection</b>		Green		Green										
<b>ii. Planning of the food landscape and the interpretative path (Calibration)</b>		Yellow	Yellow	Yellow	Yellow									
<i>Administration and rules of use of the paths</i>			Green	Green	Green									
<i>Cost calculation to breakeven and potential annual profits</i>		Green	Green	Green	Green									

Green color squares mean the step is completed. Yellow is on process of being completed. Each square represents a quarter of a year

- We are also **validating** our project with the research methodology and results from the experiments conducted by L. López-Mathamba and Thome (2015) and L. López-Mathamba et. al (2017).
- The corroboration of the first results permitted us to proceed with the design (step 3) and instruction process. (steps 4 and 5).

# 1) SI-PAM: THE FIRST INTERACTIONS WITH LOCALS

- Our initial target where the local members that preserve the traditions from their ancestors, such as language, typical customs, food recipes.
- The members that participated were adults [ $>35$  years old], born in the town and permanently living there.
- In these weekly interactions, we also received help from the local authorities.
- We prepared questionnaires with respect to the possible attractions, the local plants and known benefits and collected this information in our database.





# SET OF ACTIVITIES OF THE PROGRAM

Activity	2013		2014				2015				2016			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<b>iii. Design of the food landscape and the interpretative path (Calibration)</b>														
<i>Design and elaboration of the path</i>														
<i>Connection of the interpretative path with local food</i>														
<i>Analysis of the environmental impacts</i>														

Green color squares mean the step is completed. Yellow is on process of being completed. Each square represents a quarter of a year

- This part of the project was **validated** and verified its consistency with Thome (2012) study.
- Using the collection of information (steps 1, 2) and after the validation and verification, we proceeded with the implementation and design of the landscapes to later proceed with the instruction process (steps 4 and 5).

# SET OF ACTIVITIES OF THE PROGRAM

Activity	2013		2014				2015				2016			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<b>iv. Operation of the food landscape and the interpretative path (Calibration/instruction)</b>		■	■	■	■	■	■	■	■	■				
<i>Workshops and participative planning</i>				■										
<i>Social Laboratory of Rural tourism</i>					■									
<b>v. Follow-up of SIPAM and long-term proposal (Calibration/instruction)</b>		■	■	■	■		■	■	■		■	■	■	■
<i>Monitoring and conservation of the path</i>		■	■	■	■	■	■	■	■	■	■	■		
<i>Evaluation of tourist surveys</i>			■	■	■		■	■	■		■	■	■	■
<i>Benefit-Cost Analysis cost for the next 20 years</i>										■	■	■	■	■
<i>Meetings of the goals achieved with the locals</i>										■	■	■	■	■
<b>Implementation of the improvements</b>										■	■	■	■	■

Green color squares mean the step is completed. Yellow is on process of being completed. Each square represents a quarter of a year

- In these two last steps, the validation of the proposal, calibration and instructions are constants in order to have feedback and improvements for short implementation.
- We included periodic follow-ups in step 4 for constant improvements while developing also the planning for the long-term proposal [20 years horizon].

## 4) PILOT & EVALUATION OF THE IMPLEMENTATION

### Socio-touristic laboratories

- Once we have taught them how to provide the services for the tourist and how to make a sustainable and environmental friendly agricultural activities, we then started the organization of the **pilot of the project** , which is known as **Socio-touristic laboratory** (*Thome, 2012*).
- In the rural socio-touristic laboratory, we invited members of universities and friends that were interested in participating in the tours.

### Experimental design

We organized the tours according to the sustainability capacity calculated on Lopez-Mathamba and Thome studies in order to preserve the environment and avoid exploitation of resources.





## 4) PILOT & EVALUATION OF THE IMPLEMENTATION

### Socio-touristic laboratories and initial follow-up

- There were in total 3 groups, each group had between 10-15 visitors.
- The locals were responsible to provide the tours and food while we assisted them and observed the service.
- At the end of the tours, we provided surveys to the visitors to ask about their experience, what we should improve and ask them for any further recommendations.
- We also met with the locals at the end of the laboratories to ask them their experience and recommendations to improve the project.



# 1) CONNECTION WITH THE LOCAL COMMUNITY

- **Initial target population: 30 people**
  - ❖ Local permanent members
  - ❖ Older than 35 years old
  - ❖ Ones that seek to preserve the ancestral traditions
    - Language
    - Typical customs
    - Food recipes

Selection of initial target population was proposed in Thome (2012)



## The Cultural Center of Matlatzinca (CCM)

- Initially, they created the CCM. In this sense, when L. Lopez-Mathamba decided to start the elaboration of the SI-PAM project, it was easy to gather them and elicit their participation.
- The CCM has a **local center** for meetings. Thus, under the guidance of Dr. Thome and support of the local authorities, the **weekly** meetings and interviews with the locals were usually conducted **on Saturdays** through workshops of 'participative planning' during the period 2013-2014.

## 5) FOLLOW UP & LONG-TERM PROPOSAL

- We are planning to meet with the locals at the beginning of every month to receive information and adjust our current plan.
- Among the environmental and economic aspect we will review:

### Environmental and physical impacts

- ❖ Agricultural sustainability
- ❖ Soil erosion
- ❖ Forest fires
- ❖ Fauna and flora control
- ❖ Water quality



### Economic performance evaluation

- ❖ Tourist demand fluctuation
- ❖ Monthly revenues and profits
- ❖ Variation of cost
- ❖ Food and cabin's capacity

- We are also providing surveys for the visitors to fill out. As incentives to fill them out, we are providing discounts in the tour. We will use them as part of our follow-up to give recommendations for improvement during the meetings





## 4) OUTPUTS THAT WILL BE PROVIDED TO THE FARMERS IN THE WORKSHOPS

- Similar procedure as step 3 but with more details.
- The collaboration of the Cultural Center of Matlatzinca members is necessary.
- There were two different types workshops:

### 1. **Participative workshops** [Local farmers and inhabitants] –

Before the growing period (August), to guide them with the planting timing and procedures as well as the meals, food recipes and beverages they will provide to the tourists. It also included the environmental recommendations to make the plan sustainable and environmental friendly.

#### **Report and summary**

- *Food landscape* -

List of plants and funguses

Instructions of rotations, plantations

Proposed recipes and costs



#### **Report and summary**

- *Interpretative landscape* -

Cabin and host costs

Tour guidelines

Timing of the tours



### 1. **Guides training** [Tourist guides] – To provide them with the instructions and paths of the tours



Instructions with the tour times and routes

Procedures and rules of the tours

## 5) FOLLOW UP & LONG-TERM PROPOSAL

- At the end of the second year we will provide a long-term financial proposal. This plan will take into consideration the follow-ups: visitors' surveys, the information from the environmental, economic and sustainability impacts and changes in the supply.
- This plan will have a projection of 20 years and seek to benefit locals' income.
- This financial analysis will also consider benefit-cost analysis to provide a proposal for external funding from governmental organizations.



**MEXICAN NATIONAL COMMISSION**

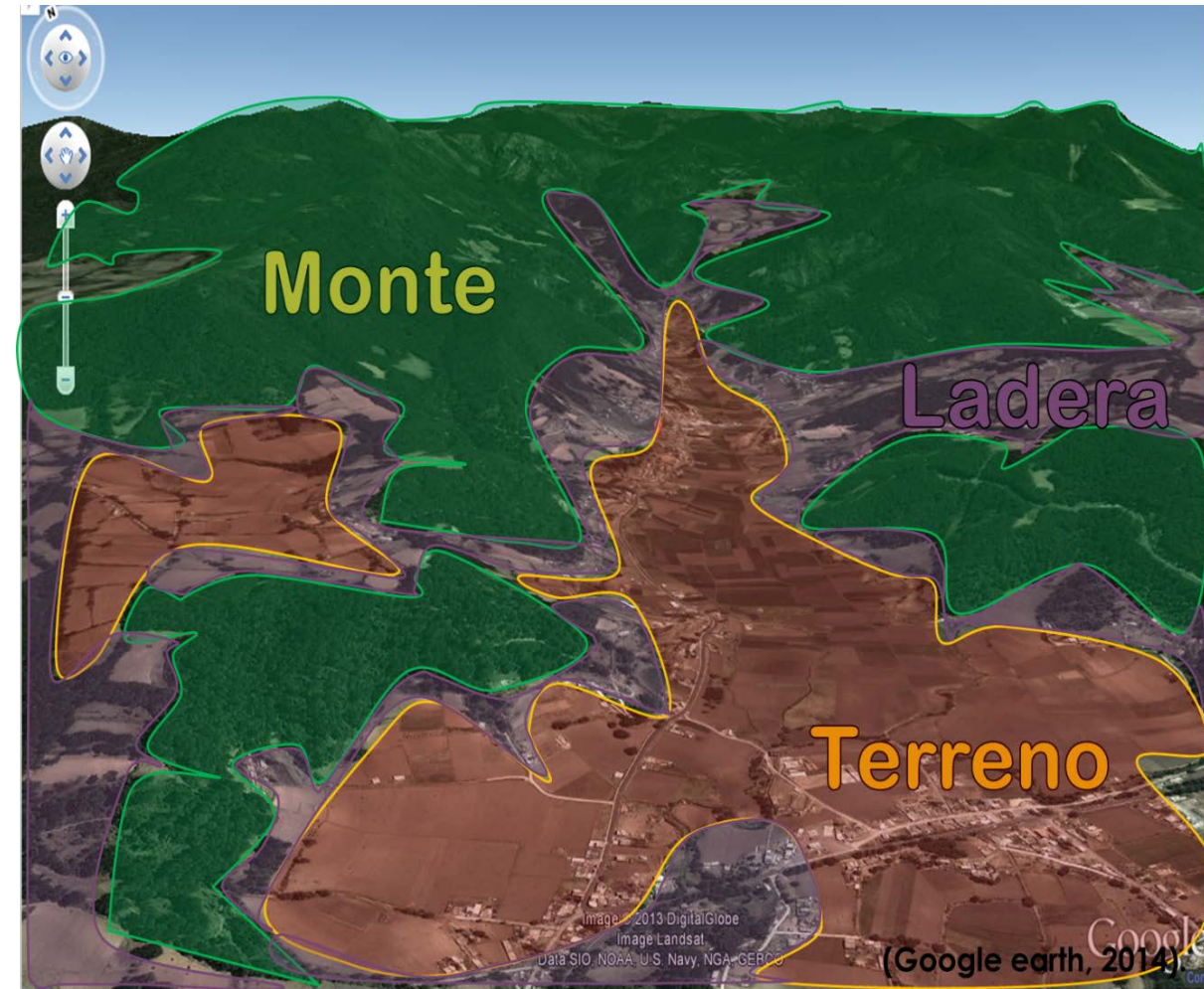
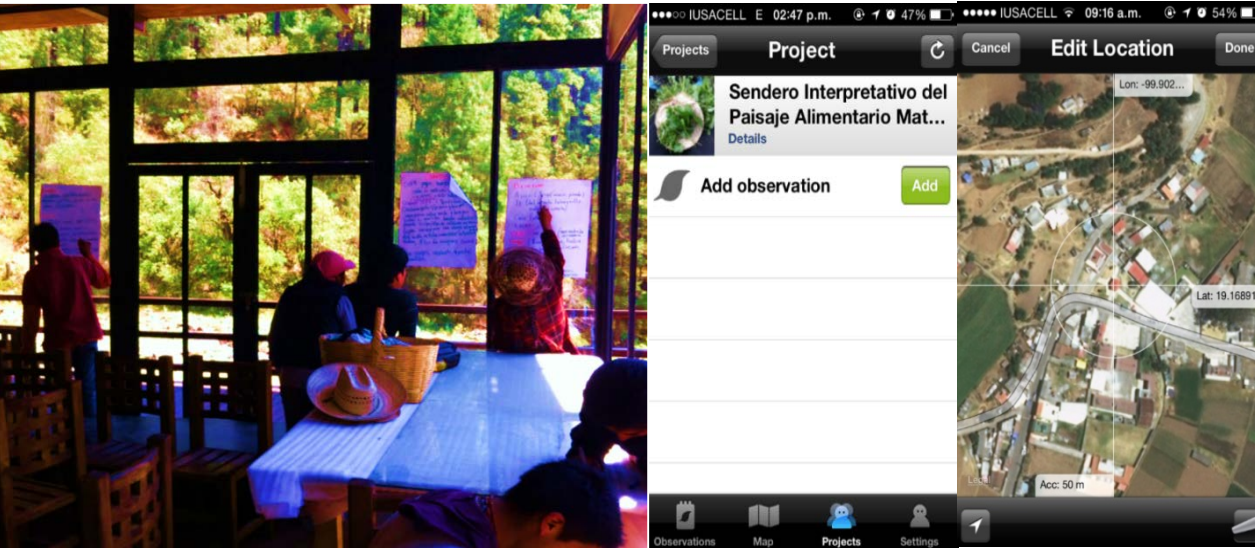


**MINISTRY OF TOURISM AND DEVELOPMENT**

# 1) DATA COLLECTION – INTERPRETATIVE LANDSCAPE

## ✓ Construction of the landscape

- Definition of attractions
- Delimitation of the zones
- Geologic characteristics
- Weather pattern information



- ✓ We also did a survey on potential customers to analyze their willingness to pay and the services to provide



# WHAT WE INTEND WITH THIS PROJECT

## **We want to change/motivate...**

- We want to motivate the locals to preserve their cultural traditions, food and natural landscape and provide them with options/strategies that can benefit them.

## **Expected Behavioral Changes**

- We expect that they can change their behavior and care for the environment and consider a financial alternative that will optimize their economic returns while also preserving their traditions.
- Thus we want to promote among locals the habits of organizational and systematical skills, necessary to motivate 'sustainable tourism'.