

Development of special interest tourism in natural parks using coordinated mobile sustainable spaces for exploration.

Hernán Jerez¹, Camilo Moraes² and Paula Calvo Soto.

¹ Aer Architect, Universidad Técnica Federico Santa Maria, Santiago, Chile

² Aer Architect, Universidad Técnica Federico Santa Maria, Viña del Mar, Chile

ABSTRACT: Mobile Space for Exploration [EME: Espacio Móvil Exploratorio] is a strategy to develop sustainable tourism, it's a net of mobile modules that allows travel without the necessity of another infrastructure. The idea behind this project is to bring together transport and hostelry in one unique module that exchange food, water and energy with local communities.

The first prototype is an all terrain truck chassis implemented with solar rechargeable energy, dry sanitary, pulverized water, GPS and EDGE communication. Transport and hostelry together avoids the construction of permanent buildings that could damage the environment, meanwhile mobility brings an ephemeral condition that respect natural equilibrium. Communication technology implementation makes possible follow flexible routes that can connect the specific interest themes of tourists with local nearby communities and also allows act like a monitoring instrument for identifying necessary adjustments in regulation.

This strategy is focused in northern Chile, but can be used in other desert regions [34% of the world areas] that offer a potential special interest tourism focus. It pretends to improve the ecological conservation of natural areas, life quality of local communities [communication and energy implementation] and to bring an ecological and flexible way to develop tourism in extremely isolated places.

From a sustainable development perspective, low impact mobile modules strategy presents clear advantages instead of permanent infrastructure normally used.

Keywords: Mobility, Hostelry, Tourism, Local communities, Satelital communication.

1. INTRODUCTION

Tourism demands for visiting natural places in Chile have been constantly increasing during the last ten years. This growth, if certainly positive in the economical aspect, requires a sustainable strategy, to allow exploit tourism resources with a long term thought that considers environmental and socio-cultural preservation. EME is proposed as a development strategy for special interest tourism in which mobile modules travel through flexible routes programmed according to the tourist requirements and the availability to use the parks in a specific time period, entering in a feedback process with local communities of the territory to be visited.

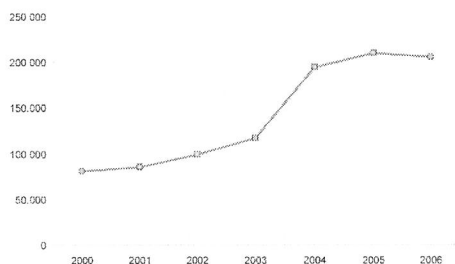


Figure 1: North macrozone total SNASPE visitors [I, II, III, IV regions] in last seven years.

Due to good weather conditions that allow for outdoor activities practically during the whole year, we chose the Chilean north macro-zone as the investigation field.

2. SUSTAINABLE TOURISM

About 700 million trips a year are produced worldwide, of which 70 percent corresponds to a conventional tourism around sun and beach. 25 percent are motivated by “special interests” and as far

as Chile is concerned, they are related to natural and cultural resources.

“Sustainable tourism development guidelines and management practices are applicable to all forms of tourism in all types of destinations, including mass tourism and the different tourism segments. Sustainability principles refer to the environmental, economic and socio-cultural aspects of tourism development, and a suitable balance must be established among these three dimensions to guarantee its long-term sustainability.

Thus, sustainable tourism should:

1) Make optimal use of environmental resources that constitute a key element in tourism development, maintaining essential ecological processes and helping to keep the natural resources and biodiversity.

2) Respect the socio-cultural authenticity of host communities, keep their architectonic cultural heritage alive and their traditional values, and contribute to inter-cultural understanding and tolerance.



Figure 2: Visitors walking by a path in “Los Flamencos National Reserve”, Toconao community.

3) Ensure viable, long-term economic operations, providing well distributed socio-economic benefits to all agents, including stable employment and income-earning opportunities and social services for host

communities, and contributing to poverty alleviation.

Sustainable tourism development requires the informed participation of all relevant agents, as well as strong political leadership to ensure wide participation and to establish an agreement. Achieving sustainable tourism is a continuous process and it requires constant monitoring of impacts to introduce the necessary preventive and/or corrective measures.

Sustainable tourism should also provide a high level satisfaction to tourists and ensure them a meaningful experience, making them more aware of the sustainability issues and promoting sustainable tourism practices amongst them.” (OMT) [1]

3. PROPOSAL

To develop a sustainable tourism proposal that neither interferes nor modifies the territory, we decided not to build, not to invade, the idea is simply to be visitors. But how can we visit areas which have no infrastructure, if we do not build? The

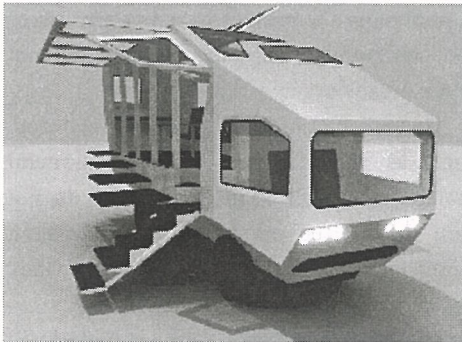


Figure 3: EME1 prototype, main module unfolded state.

answer is a visiting infrastructure, one which does not remain, which is ephemeral, which is mobile.

With this concept we project a first mobile space prototype, a device for ten people mounted on a truck chassis. Two guides in the front part, who will conduct the tourist group of eight visitors who are in the rear, a living-room with mobile tables and chairs, so as to provide flexibility to the inner program depending upon the users' needs.

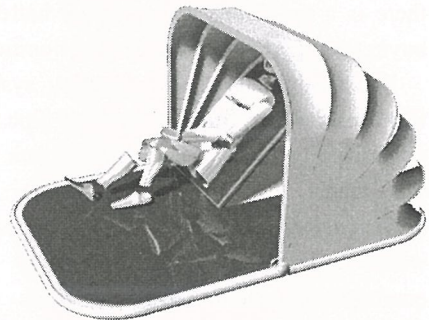
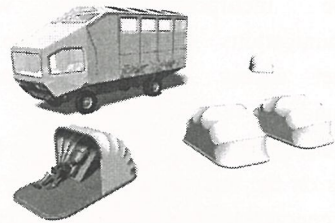


Figure 4: EME1 prototype, bedroom units around the main module.

The device has the capacity to mutate: the walls are folded up and down, generating shadow, open air and steps that enlarge the surface in 4 [m²], they can be used to sit down, as a path starter or simply to go down.

As long as the device is moving, the tourist stays in the rear used as a living-room, and at the same time it can be

changed into a dining-room and belvedere when the device is not moving.

Basically, the space experience intended to be delivered to the user is the shadow under a tree in the desert.

To spend the night, the module includes a cartridge-bedroom, consisting in folding and reclining tents that may be single or double.

They are installed in paths determined by the community in charge of the visited area, each of these bedroom units is connected to the truck to obtain electricity.

The incorporation of wireless communications allows users to have internet access from their tents and surroundings.

In energetic terms, EME has four 85 [W] panels on the top, capable of satisfying the basic energetic needs of the group. Besides, there is a possibility to re-charge batteries buying energy from the local communities.

The module has a dry sanitary system that uses the heat from the exhaust pipe and pulverized water both for the bathroom and the kitchen.

Sanitary waste, such as urine, recycled water and feces are delivered to the communities to be reused as fertilizers.

4. STRATEGY

4.1 TERRITORY

In order to take care, protect and value the natural patrimony of Chile, the National System of Protected Rustic Areas of the State (SNASPE) was created, which under the administration of the National Forest Corporation (CONAF) intends to preserve, keep and perpetuate this patrimony and diversity for present and future humanity.

EME pretends to collaborate with this governmental corporation as a monitoring instrument and support.

We visited National Parks and local communities from the II, III and IV Region in a 5000 [km] research trip, in which we passed by 4 ecosystems of the northern macro zone of the country.

- (1) Cost Desert
- (2) Interior Desert
- (3) Altiplane
- (4) High Andes Steppe

During this trip we could appreciate the present preservation conditions of the parks and observe how the lack of regulations has allowed the settlers to generate disorder, throwing garbage away and taking possession of the land without any criteria.

Finally, we could verify the feasibility of driving through these roads in single-traction vehicles, coverage of cellular phones, and reliability to follow routes planned in GPS with satisfactory results.

4.2 LOCAL COMMUNITIES

Within the National Parks, there are some villages which are in developing process, implementing renewable energies and coordinating themselves as active agents of the community, and others which do not count on any organization system.

The communities that are not included, such as the "huireros" are in general communities with no instruction and do not care about environmental preservation, being even not aware of the damage they can cause.

These communities are included in EME's strategy, implementing communication, energy and sustainable methods to improve life quality. At the same time, an economical exchange is proposed

to increase the scarce income of this group of people, buying water, food and energy for them, and hiring guide services, etc.



Figure 5: Non inserted community, huireros in Llanos del Challe National Park.

As an example, in the National Reserve of Flamingos, the park is sub-divided in several areas that are administrated by local native communities. In most part of these areas, a great development can be observed due to the utilization of tourism as an economical income.

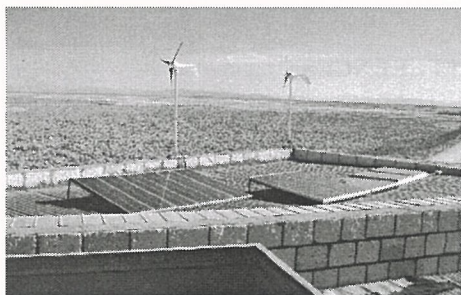


Figure 6: Toconao community energy caption.

The pictures show the installations of Chaxa Lagoon, administrated by the community of Toconao. They have implemented administration systems and the re-utilization of water, solar and aeolian energy. Its infrastructure consists of a multimedia room operated with the energy collected by the community itself.

The development of strategies that include the local communities is necessary for the success of a sustainable tourism.

4.3 COMMUNICATION

6th International Conference on Sustainable Energy Technologies

The roads where these mobile space systems are planned to be installed, have been designed in digital drawings to allow following the routes without risk of getting lost or isolated. Following a determined route with a GPS is a real, simple and cheap solution.

At present, we count on a good coverage of mobile phones in Chile, and during our trip we could verify that in 70% of the route we had telephone coverage using a common device. This coverage offers the possibility not only to talk but also to have an internet connection in a great extent of the journey.

4.4 COORDINATION

The coordination means is a brain fed by internet as a receiver, a web page in which each traveller registers and determines the dates when he can travel and the places he wants to visit, thus creating a matrix which will result in dates and journeys of traveller groups. The brain schedules the routes and delivers them already coordinated in order to be followed with a GPS in determined time periods and, at the same time, advises the communities about the arrival dates, number of passengers, etc.

Finally, the guides deliver the information to the operations centre to facilitate monitoring and improvement of this territory and its inhabitants.

5. CONCLUSION

Through a practical research with daily use devices, we could verify that GPS and EDGE technological capacities are available in most part of the north macro zone route we drove through. With the use of this technology, it is possible to monitor the

National Parks supporting the preservation task.

There is a real need to collaborate with the development of isolated communities, which are the ones that really take care of and respect these ancestral lands; to avoid their over exploitation and degradation, we require from them as main actors in caring and monitoring these areas, not only helping to their environmental preservation but also to take advantage of them for the improvement of their life quality in a sustainable way, without changing their culture, but helping them to incorporate technology, so that they may continue developing their own history in a present environment, confirming their identity as viable and long lasting cultures.

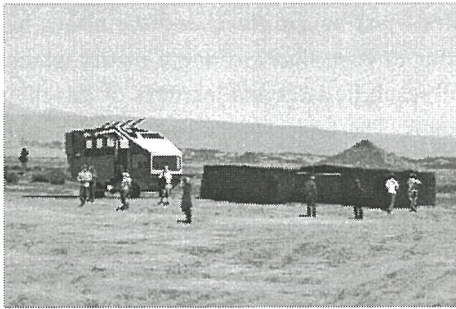


Figure 9: EME visiting Tulor community.

This project is economically feasible by itself, but requires from a governmental character to make prevail monitoring and improvement of our natural spaces and to improve the life quality of the faraway settlers. Identifying and strengthening the villages in their own habitat, instead of disseminating them throughout the towns and the contribution to environmental and landscape preservation, will constitute two important factors that will strengthen this tourism system, not only providing economical results in the short-term, until

completing the installation of cottages, hotels, camping, which may end by corrupting these ancestral villages, but also providing social and environmental benefits, which on a sustainable basis, may last indefinitely.

Finally, the development of Exploring Mobile Spaces proposes a sustainable method, economically feasible, ecologically traditional and proposing ethic and social equality with the local communities, to be also used as a monitoring instrument for the National System of Protected Natural Areas of the State (SNASPE), helping to control preservation and proposing and organized administration.

The research is developed in Chile, but under the adequate considerations, it may be applied in other world areas.

REFERENCES

[1] http://www.worldtourism.org/espanol/frameset/frame_sustainable.html

AUTHOR'S REFERENCES

[1] Hernán Jerez Guerrero
Architect
UTFSM
Organisation: Aer
E-mail: hermanjerez@aer.cl
Contact Address: Luis Valenzuela 3269
Santiago / Chile
Phone number: 056_2_3189080

[2] Camilo Moraes Zambrano
Architect
UTFSM
Organisation: Aer
E-mail: camilomoraes@aer.cl
Contact Address: Habana 457
Viña del Mar/ Chile
Phone number: 056_9_8211723