



Tlamaya: Hungry Niche

“The bamboo and his social integration”

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Theme: Architecture, Engineering and Social Housing

Abstract

Currently in Mexico the society lives wastage of agricultural fields and rural areas, causing economic and social instability, this because of the lack of opportunities, information and work, as well as the bad use of natural resources. After analyzing the characteristics and social, economic and environmental needs of the field, there is a proposal to create a socially responsible and environmentally friendly project, located in the community of Tlamaya in Tlapacoyan, Puebla, by the favorable characteristics of climate, altitude and environment that are given for being in a wet area, such as limits with Veracruz and the altitude of the Sierra de Puebla. The land on which the project is located belongs to the Cooperativa Oro Verde Bambú, whose main goals are two proposals: The first one was seeking social integration through training of the population in various topics such as herbs medicine , permaculture, alternative medicine among others. The second proposal was to create a bamboo forest, this would have an area of 40 hectares for distribution, which also would have spaces created with this material to educate and inform people about the use of this. It was performed the planting of 12000 bamboo plants, which includes 8 different species, 4 spaces have been created based on this material, this with the help of trained people, the community and volunteers. Based on the utilization of the raw material of the project, the community was trained for creating furniture, bicycles and habitable structures, using as material: “the bamboo”. On this area comes the Company Dicma Trade with advice, training and construction of the project, taking charge of the approach and projection in the field of sustainable development with ecological purposes, Hand with hand innovating architectural proposals with the lowest environmental footprint and fusion between organic and conventional construction.

The creation of a bamboo forest, guided rural development.

In 2013 it starts with the creation of this sustainable project with the affiliation of the company Dicma Trade and Cooperative Oro Verde Bambu, as with obtaining the first 20 hectares for the development of this, its location is in the Tlamaya village Grande in Tlapacoyán Puebla, Mexico (Figure1).

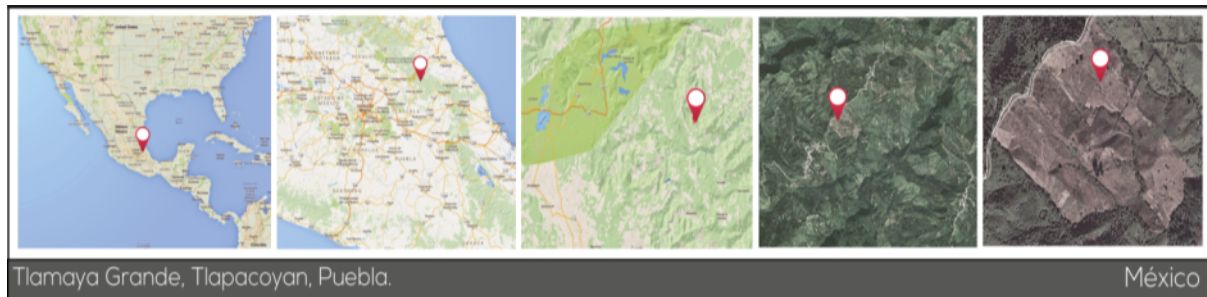
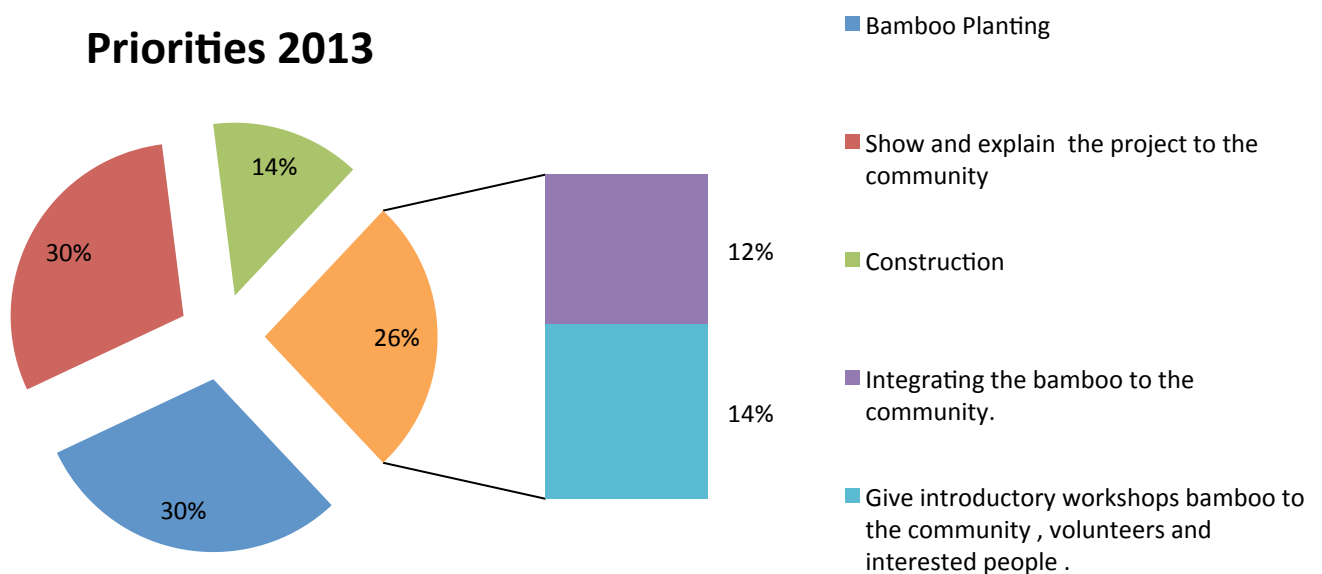


Figure 1



In these 20 hectares starts with the first stage of planting and building spaces, as with the creations of roads for communicate the project across this land. Were planted in this space 760 bamboo plants from 7 different species, including the *Guadua angustifolia* Kunth (Table1). Then the project began with the proposals (figure2) and the construction of the first structure based on bamboo *Guadua angustifolia* Kunth (figure3), which proceeded from a certified supplier of this building material. The construction was done by hiring people prepared on the subject from Colombia and national volunteers, also we had the support of the Faculty of Architecture from the Benemérita Universidad Autónoma de Puebla with some students.

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Bamboos Planted in 2013

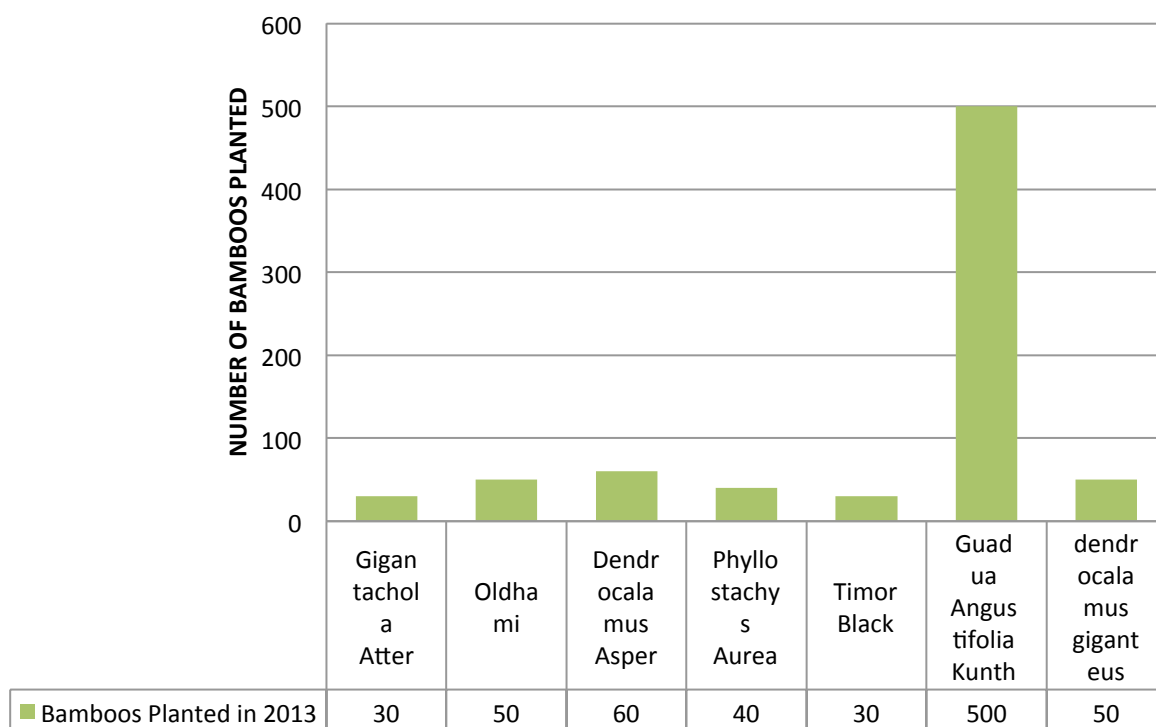


Table 1



Figure 2



Figure 3

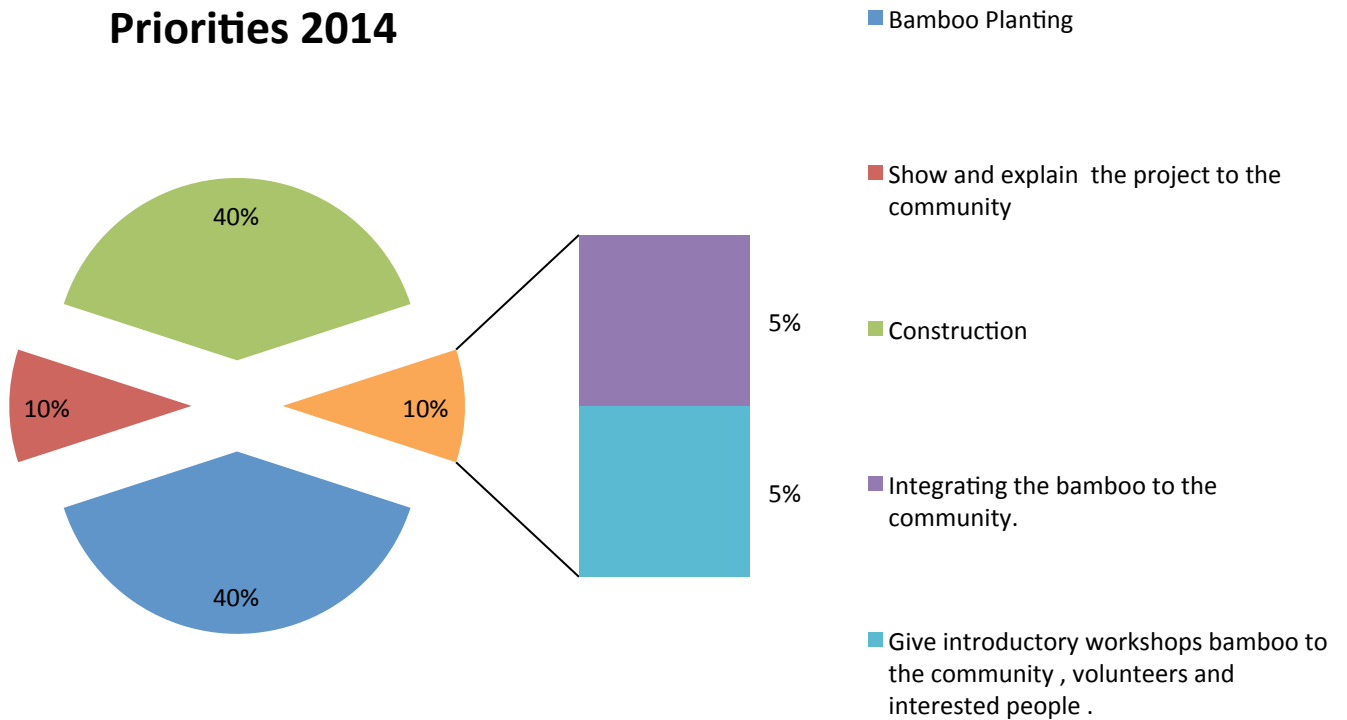
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At the end of the Multipurpose Room, starts the second construction of another bamboo structure for the finality, for having a individual cottage (figure 4), it was built in the middle of the land..



Figure 4

Priorities 2014



In early 2014 the third structure is created: one sectioned dome 3/8 ellipsoid, diameter approx. 10 meters, height 3.50 meters, the bamboo specie that was used is: *Guadua angustifolia*: 8cm, the structure was built in three days with collaboration of the Italian architect Carlo di Biagio, the community and national and international volunteers some of them were from Colombia and England. (Figure 5-6)

“Unlike other domes based on the field, currently the dome 'Tlamaya' is the first large format ellipsoidal dome bamboo using the mutual coupling of Leonardo Da Vinci. It is based on a set susceptible to movement; the most reliable values were taken only using the computer, even from the actual model in 1:10 scale. The structure is completely removable and self-supporting, rests properly at the ground, without special anchors and assumes that offers good resistance to external stress”, (‘La cupola ellissoidica di Tlamaya’ Lulu.com editions, Raleigh 2014, Author: Biagio Di Carlo)



Figure 5



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Figure 6

In mid-2014 starts to build the fourth structure based on the bamboo *Guadua Angustifolia*, for the purpose for a general dining room, it is located in the center of the land, this construction as the others was conducted with hiring of trained personnel from Colombia as with the help of the community and national volunteers. The proyectual idea was born by a native fungus, Which a feature is to have light in his center.(figure7The octagonal structure with the hyperbolic support at the middle generates sets of lights at different times of day and year due to the direction of the sun where the light comes on top of a structure of pyramidal shape based octagonal fixed to the upper support hyperbolic. (Figure 8-9-10).





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Figure 8



Figure 9

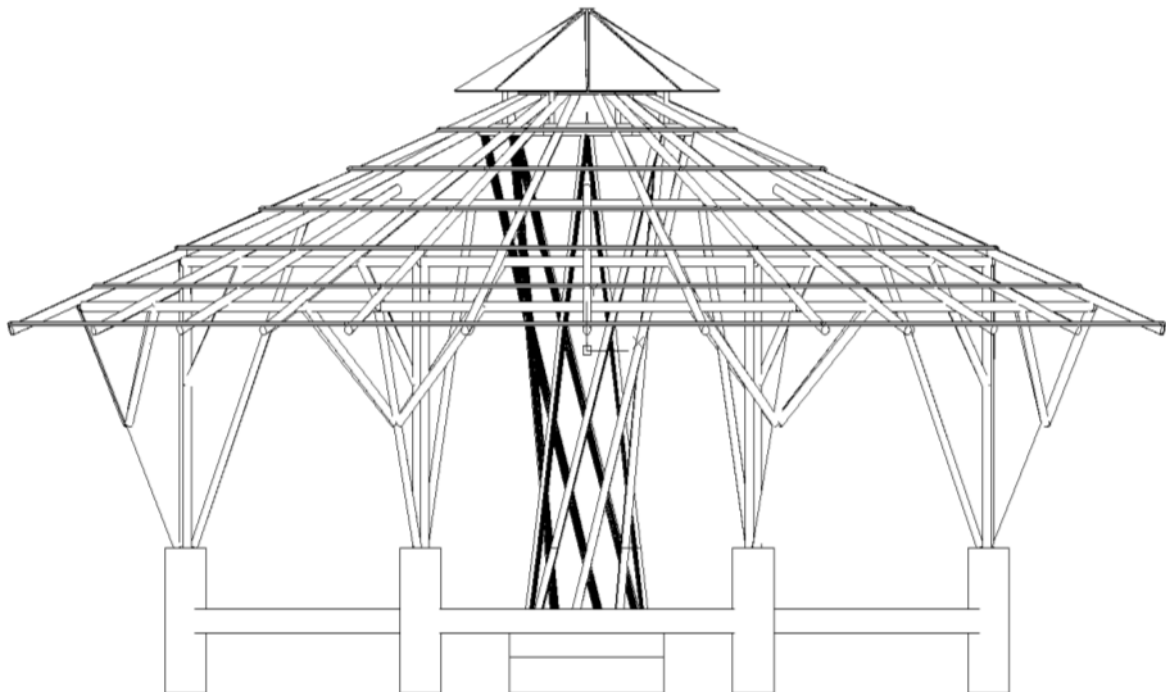


Figure 10

The construction time for each project had its own difficulty and development (Table 2), since the land has positives and negatives, between positive we can find the slope as it moisturizes to earth naturally by gravity, on the negative side, the carry of materials to the place where construction was located was very difficult, other things also made changes in the construction of the project was the amount of people who had for them (Table 3), and other of the most important was the weather, as the weather usually round 25 ° to 42 ° centigrade and exceptionally heavy rainfall.

Days of Construction

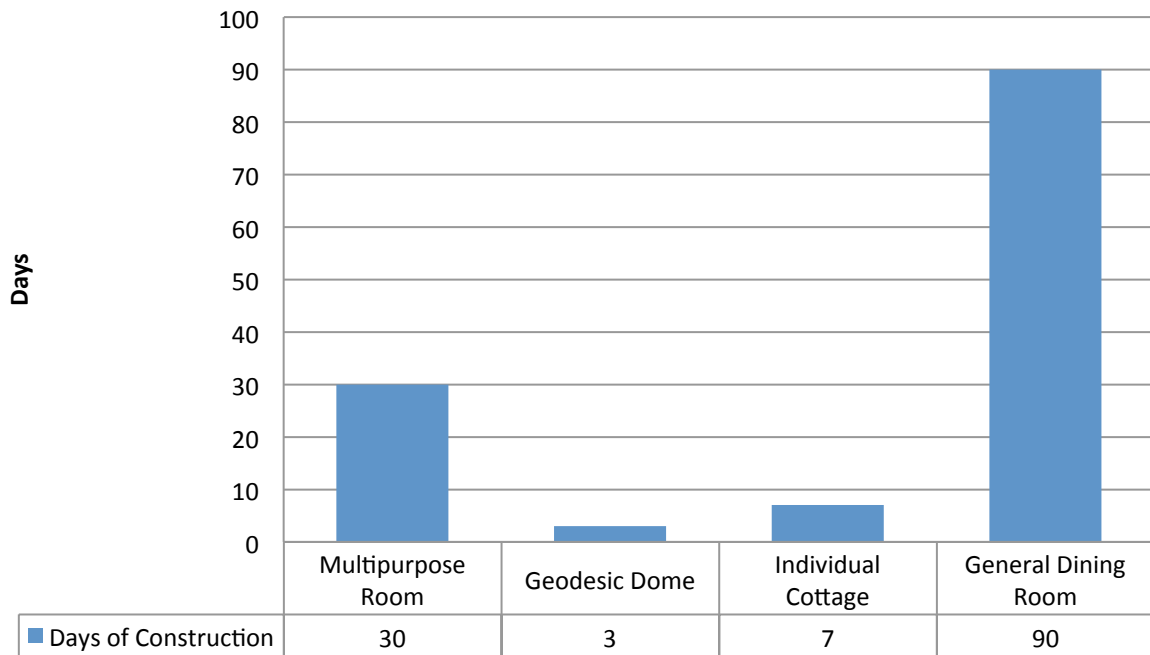


Table 2

Number of people in each project

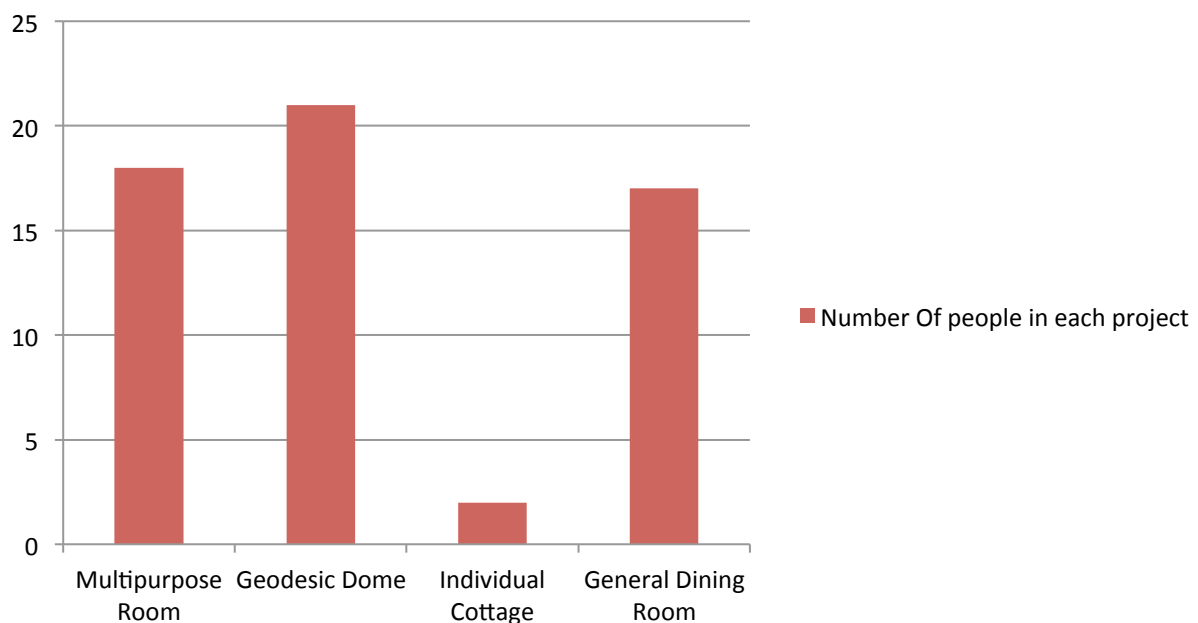
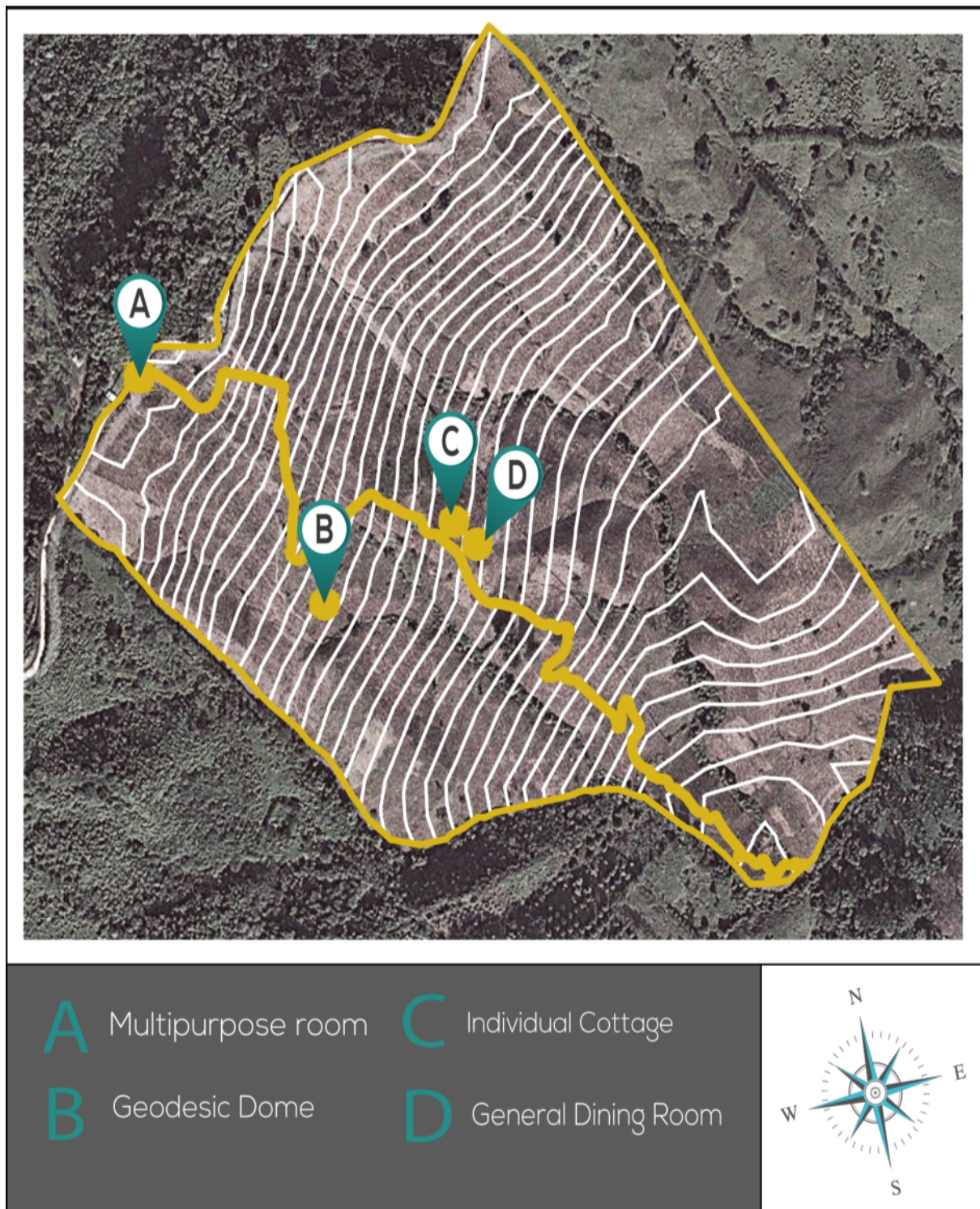


Table 3

For the realization of all these buildings, we receive the support of the entire community, which was the reason for hiring qualified staff to teach the community to handle this material for construction. The result was successful because the community learned basic criteria for building with bamboo, this in order to propagate the self-construction on a proper way, because now some of the social problems worldwide are the homelessness. (figure11)



At the end of the construction of the General Dining Room, 20 hectares more were added, giving a total of 40 hectares to the project, this was caused by the impact of the project within the community. Also during the construction of this project, some specialists were teaching people from the community in the herbs medicine and permaculture. (figure12)



Figure 12

By the end of December 2014, 12,000 bamboo plants were planted in the 40 hectares. (Figure13)

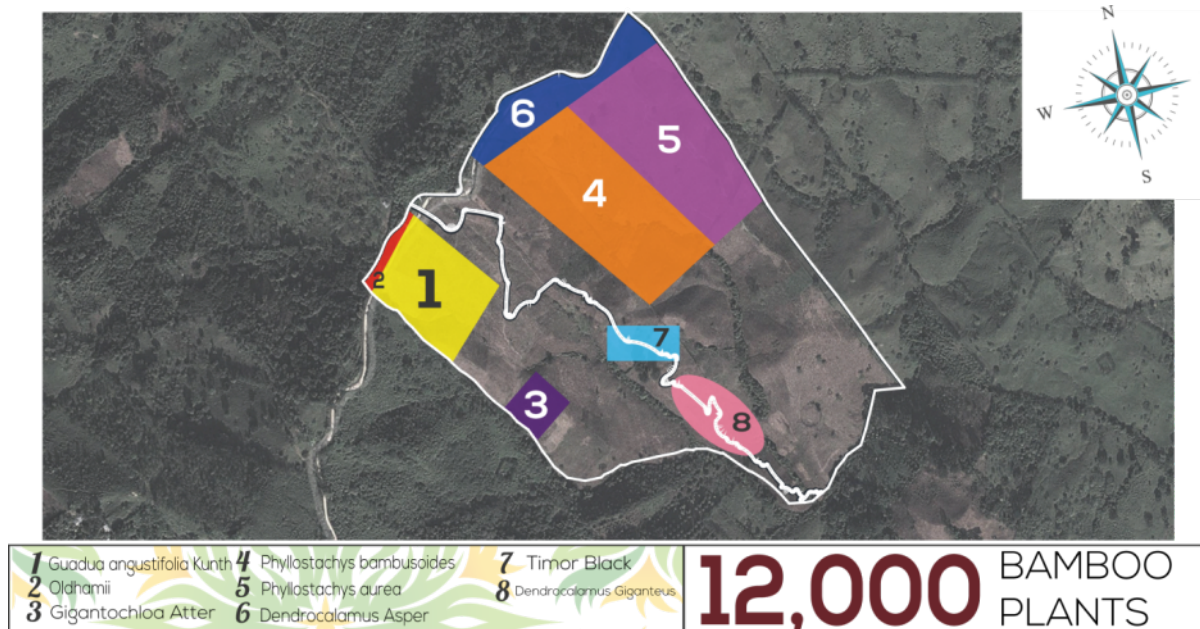


Figure 13

We are currently training the community in creating bicycle (Figure 14) and furniture using bamboo (figure15), because the bamboo species for make them, are growing in the land of the project, this for the purpose to use this material in the future.

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The community has observed the project and currently more than 14 families have planted different types of bamboo in their lands to use in a few years, as well as housing, transportation or furniture.



Figure 14



Figure 15

Also the land where the project is located, have been reforested by the bamboo. (Figure 16)



Figure 16

Conclusion

The project created more integration, interest and participation by the community. Besides generating jobs and creating bicycles, furniture and bamboo construction among others for economic and social development. It has been planted and propagated bamboos cooperatively in turn generating a significant environmental impact. For the 2015 are expected the creation of new spaces, more training for the community and the spreading of the 12000 species of bamboo.

FIGURE CAPTIONS

Figure 1: Location of the project

Figure 2: First Design Proposals

Figure 3: The construction of the first bamboo structure.

Figure 4: The bamboo structure of the individual cottage

Figure 5: The creation of the Tlamaya Bamboo Dome

Figure 6: View from the inside of the Tlamaya Bamboo Dome

Figure 7: Projectual idea for the general dining room

Figure 8: Front view of the hyperbolic structure from the general dining room

Figure 9: View from the top of the hyperbolic structure

Figure 10: General Dining Room bamboo structure

Figure 11: Current Location of the bamboo constructions.

Figure 12: Training to the Community about Herbs medicine.

Figure 13: The Distribution and location of the 12000 Bamboo Plants

Figure 14: Bamboo Bicycle Workshop to the community.

Figure 15: Bamboo Furniture Workshop to the community.

Figure 16: Reforestation of the land, where the project is located

Table 1: Bamboos planted in 2013

Table 2: Days of construction

Table 3: Number of people in each project

Bibliographies

La cupola ellissoidica di Tlamaya' Lulu.com editions, Raleigh 2014,
Author: Biagio Di Carlo