

A Social Business on Coastal Housing



***Building Sustainable
Houses in Flood-Risk
Areas of Guatemala***

A Guest Project of Yunus Centre
107th Design Lab

Business Idea

Building *Flood Proof*
Sustainable Houses in
coastal areas of
Guatemala that provide
Water, Energy and
Sanitation



SUSTAINABILITY

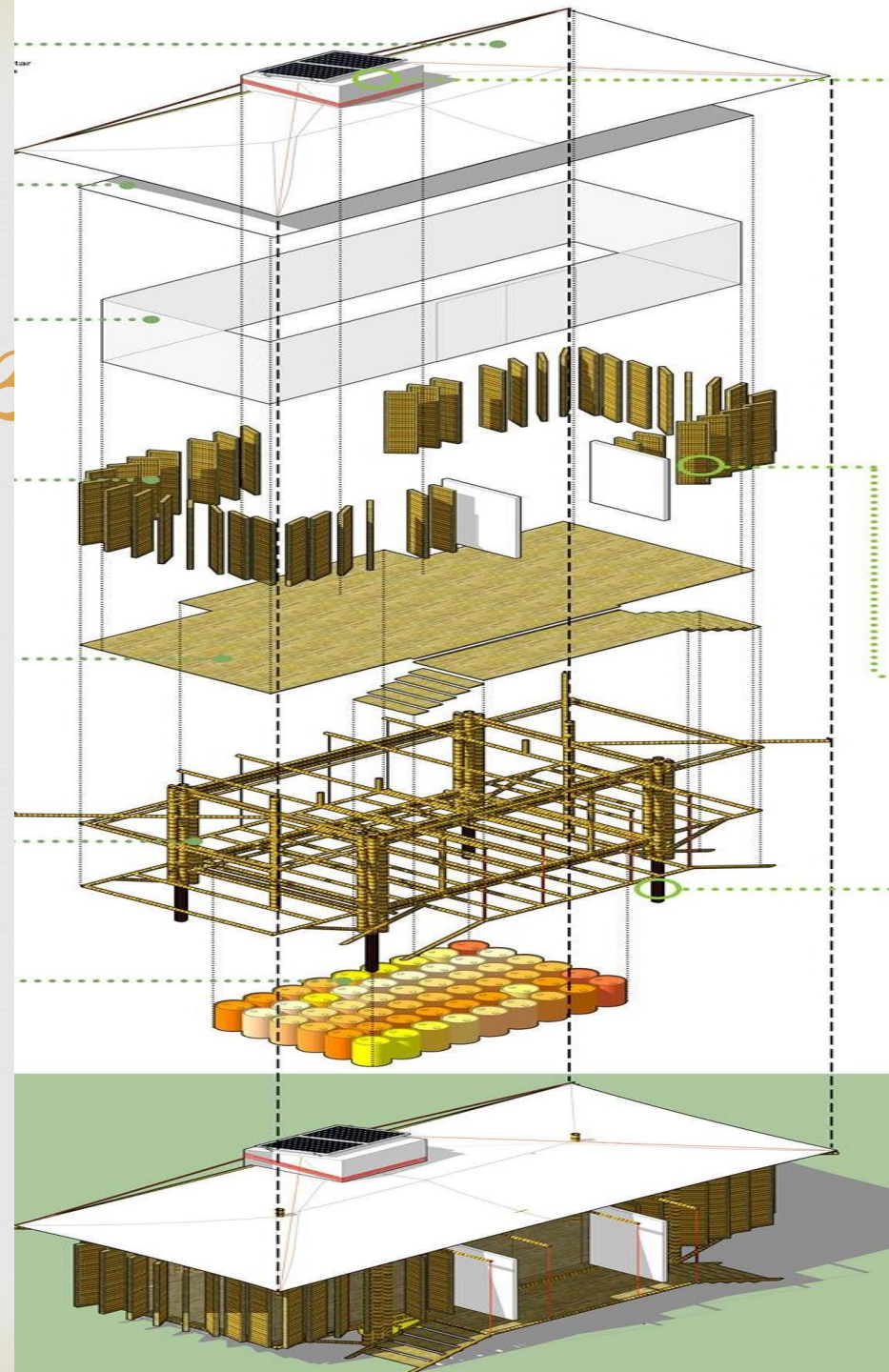
DEVELOPMENT

FLEXIBILITY

CULTURALLY
ADEQUATE

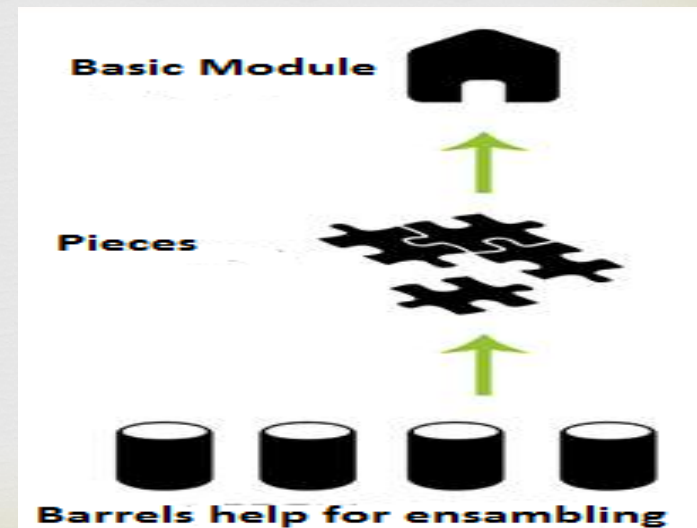
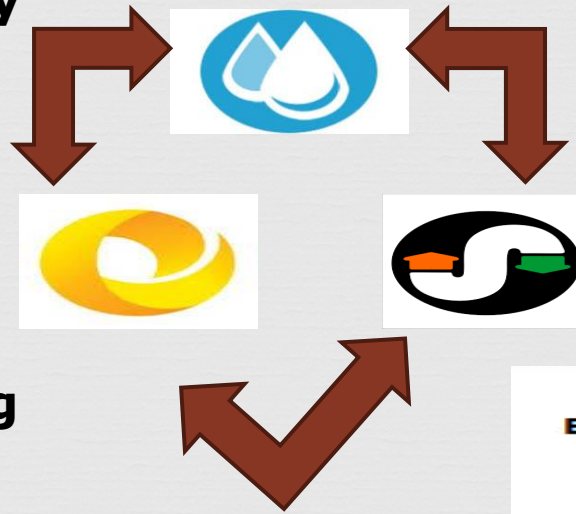
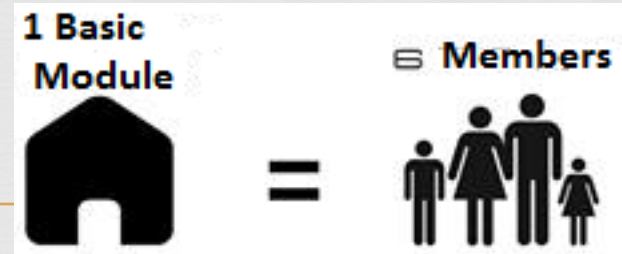
RECONSTRUCTION

PREVENTION



Objectives:

- To build houses that prevent the destruction of properties in Guatemala affected by floods.
- Provide affordable sustainable houses for people in need.
- Provide clean drinking water, energy and sanitation to improve quality of life.



Mission & Vision



Mission: Bring safety and a sense of belonging to the families in the coastal regions around the world by providing the three basic services: Clean Water, Energy and Sanitation.

Vision: To create sustainable and adequate living spaces for people in coastal areas around the world.

Target Market:

1) People at the bottom of the pyramid living in coastal areas that are affected by floods.

(Social Impact)

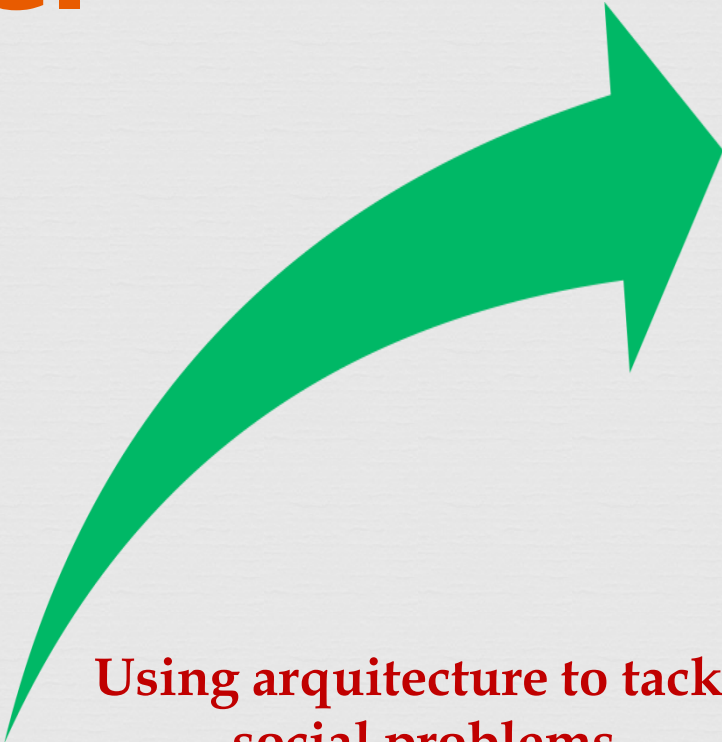
2) Affluent people interested in buying a sustainable house.

(CROSS FINANCING)

Business Model

Cross Financing:

- Low cost of House Production
- Sell houses to people with higher purchasing power
- Sell one house to cover the cost of two houses
- Build second house for people in need
- Charge a low price to them so it is not free and to cover others costs.
- Become sustainable after the first 1 year of operations



Using architecture to tackle social problems.

BUSINESS LOCATION:

GUATEMALA



Entrepreneur's Background



Name	Javier Penados
Profession	Arquitect and drawer at Guatemalan firm. Musician and artist
Qualification	BA, Architecture.Universidad del Istmo (Guatemala)
Achievements & Awards	1st place Inter University Architecture Competition Award. (2015) Municipal Park Award for designing an innovative recreative park for the municipality of Guatemala

Name	Julio Linares
Profession	Guatemalan Social Entrepreneur. Founder of Rhinolime, solar company.
Qualification	Double Major in Economics and Business Administration National Cheng Chi University (Taiwan)
Achievements & Awards	International Cooperation and Development Fund Scholarship (2010) Ministry of Foreign Affairs TAIWAN Scholarship (2015)

Social Problem



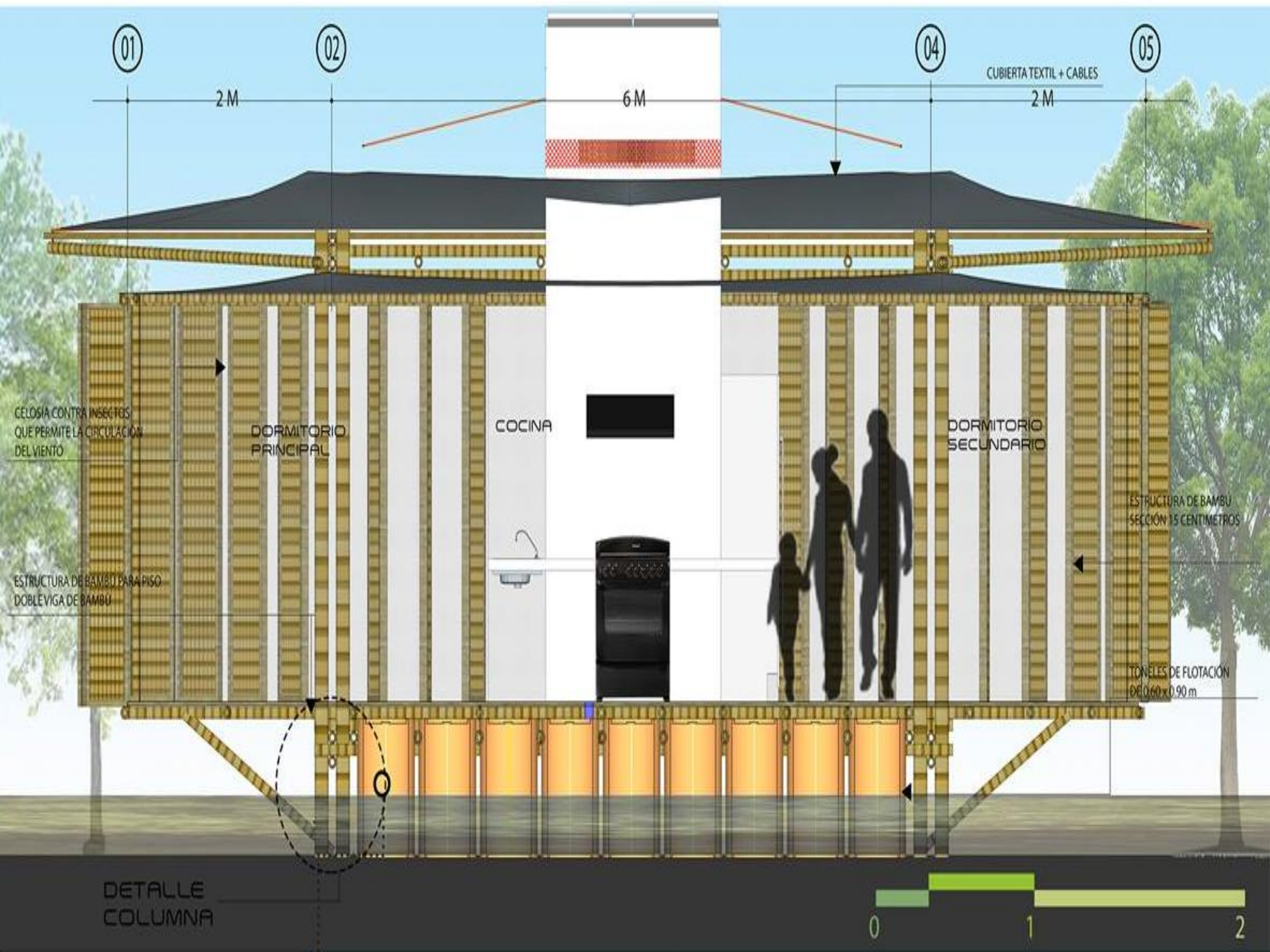
1. People in coastal areas of Guatemala lose their houses to natural disasters every year
2. Lack of access to basic services during calamities (Water, Energy, Sanitation)

Solution

Building sustainable floating houses through bamboo which will-

- Start floating during flood and provide shelter for the flood-affected people
- Provide electricity, clean water and proper sanitation system during natural calamities





01

02

04

05

2 M

6 M

2 M

CUBIERTA TEXTIL + CABLES

CELOSIA CONTRA INSECTOS
QUE PERMITE LA CIRCULACION
DEL VIENTO

DORMITORIO
PRINCIPAL

COCINA

DORMITORIO
SECUNDARIO

ESTRUCTURA DE BAMBU
SECCION 15 CENTIMETROS

ESTRUCTURA DE BAMBU PARA PISO
DOBLE VIGA DE BAMBU

TANELES DE FLOTACION
DE 0.60 x 0.90 m

DETALLE
COLUMNA



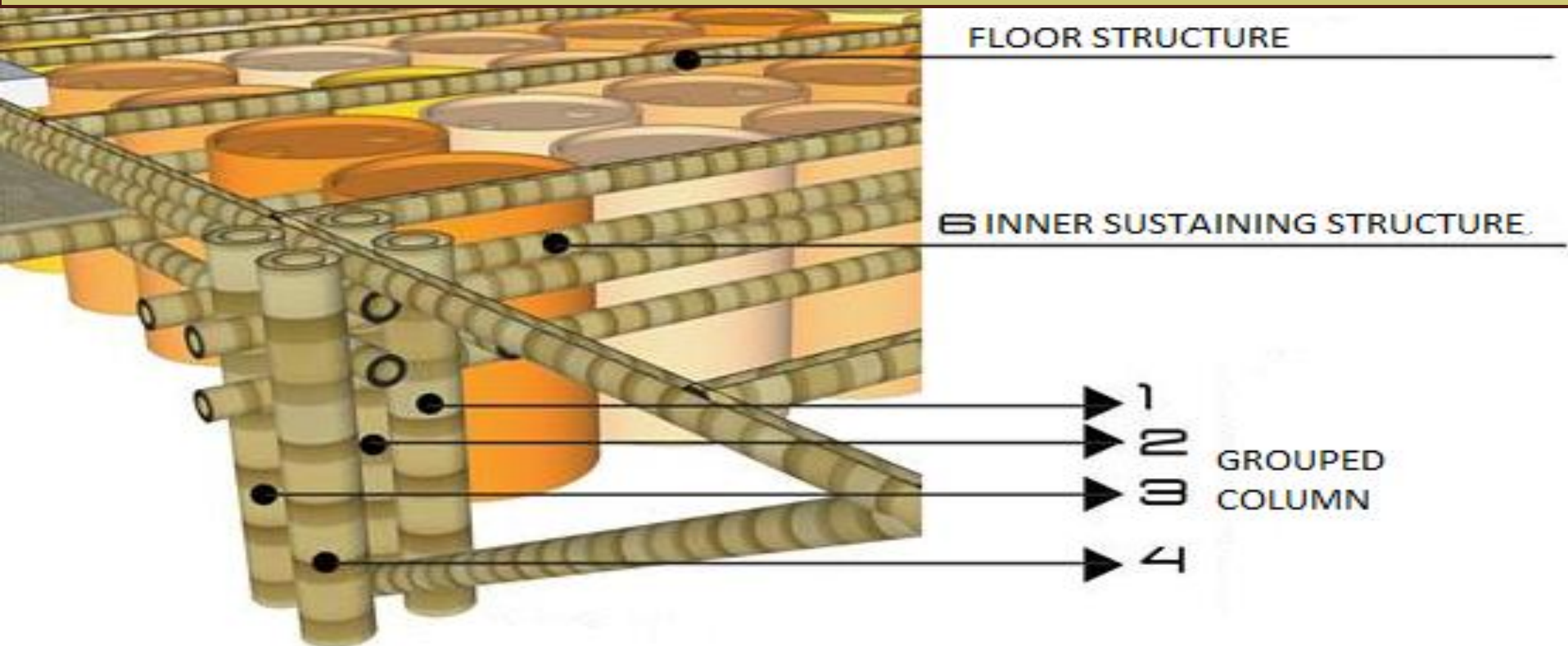
Foundation Details

Bamboo column

Concrete Foundation

Bamboo structure goes up or down with the hydraulic force made by the resistance of the floating barrels.

Anchor foundation and column



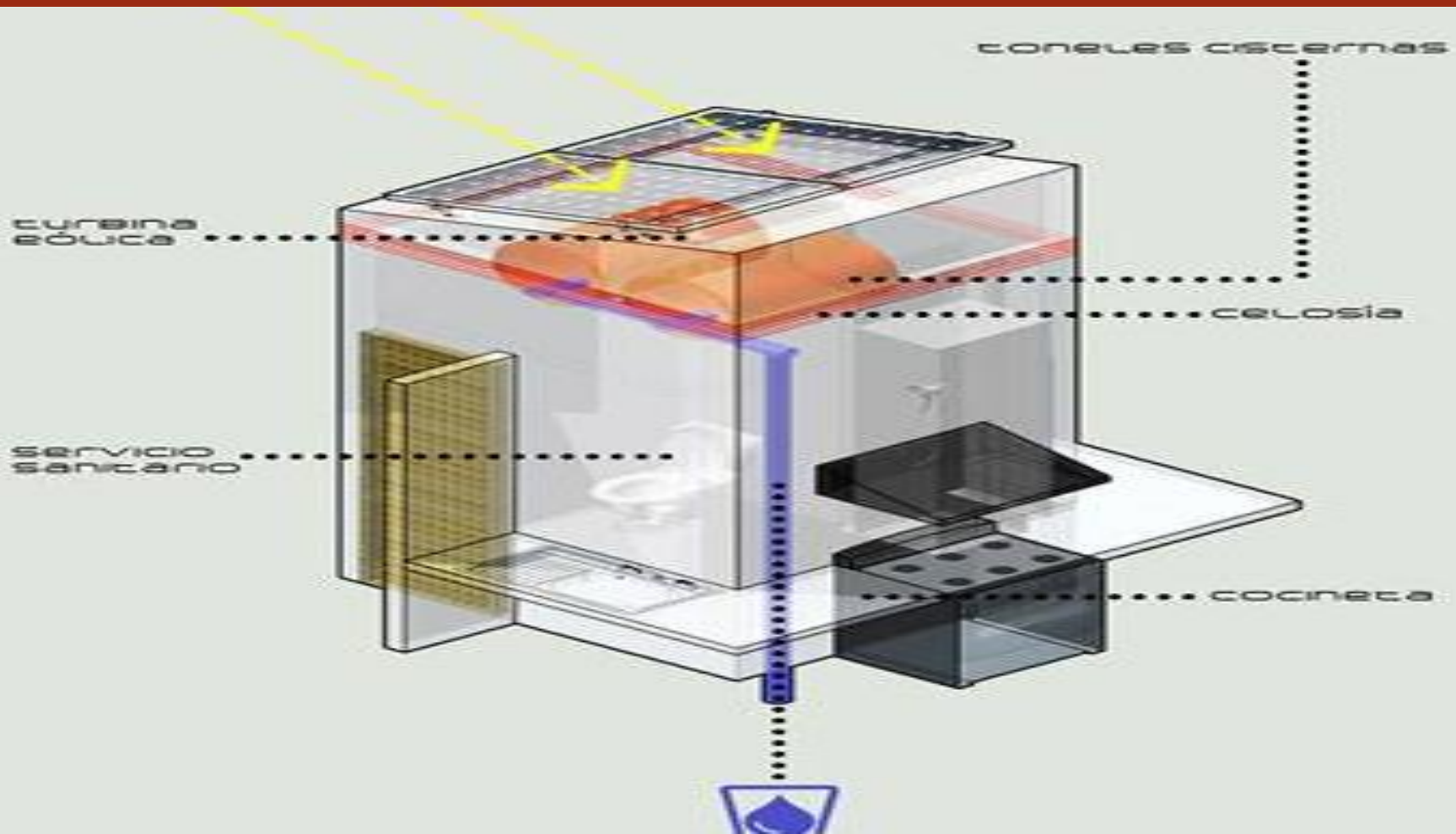
CENTRALIZED SERVICE MODULE

All the technologies needed for the functionality of the house are here:

Sanitary services and kitchen

Solar panels for energy

Hidroneumatic system



Initial Investment of 35,000 USD Per Unit Cost- 2870 USD

Start Up Cost		
Variable Cost		USD
	Bambú 10cm (4")	73.5
	Bambú 5cm (1")	375
	Bambú 7.8 cm (3")	199
	Plastic Barrels	200
	Pine Wood	52.5
	Wood 12" x 20'	40
	Anti Mosquito Net (m2)	28.125
	River Sand	17.5
	Yellow Sand	16.875
	Cement	60
	Transport	37.5
	Nails 3" a 5"	10.3125
	Lona vinilica	112
	pvc de ½" agua potable	5.625
	PVC for Drainage 3" (biodigestor)	27
	Solar Panel	100
	Roofplaster 101 Cindu	210
	Ecofilter	60
Total Variable Costs for 12 Houses		19499.25
Fixed Costs		
	Wages	12000
	Co office rent	1200
	Miscellaneous Costs	780
	Transport	960
Total Fixed Cost		14940
Total Start Up Cost		34439.25

FINANCIAL STATEMENT

	2016			2017	2018	2019
	Monthly	qty	Annually	Annually	Annually	Annually
Number of houses built	1		12	12	16	18
Sales (richer people)	5500	6	33000	39000	60000	72000
Sales (poor people)	500	6	3000	3150	3300	3300
Total Sales (Two Houses) (A)	6000		36000	42150	63300	75300
RAW Materials (House)	1525		18300	19200	26880	31680
Solar Panel	100		1200	1260	1760	2070
Total Raw Materials Cost (B)	1625		19500	20460	28640	33750
Gross Profit (A-B)=C	4375		16500	21690	34660	41550
Administrative cost:						
Wages	1000		12000	13200	19200	23400
Co-office rent	100		1200	1320	1920	2340
Miscellaneous Costs	65		780	900	1360	1710
Transport	80		960	1020	1080	1080
Total administrative cost (D)	1245		14940	16440	23560	28530
PBIT = (C-D)	3130		1560	5250	11100	13020

Investment Cost = 35000 USD
Source of Investment = Own
BEP = 1st year
Payback Period = 4.5 Years

Marketing Strategy



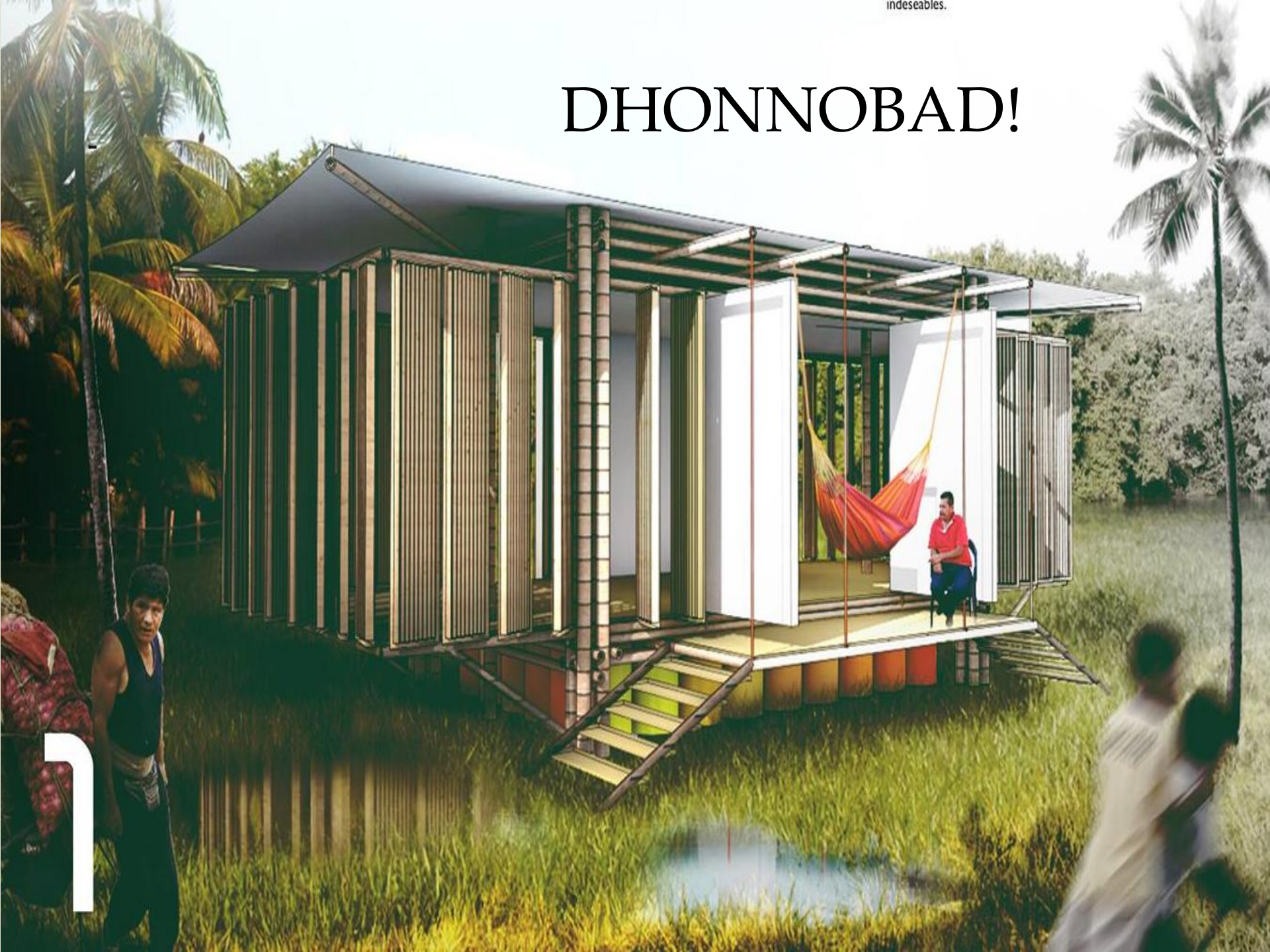
- Crowdfunding campaign in order to tell the world about our social business (indiegogo, kickstarter)
- Going to the people that get affected by floods & people who may have lost their house at any point in time
- We plan to work together with companies that want to sponsor our product in order to get more exposure.
- Our best marketing is a house well made as neighbours of our clients will inquire about it once it is in use
- Online marketing through social networking

Social Impact



- ❑ Reduce the risk of people losing their homes in areas affected by floods
- ❑ We will give appropriate and honorable housing to **12 families** meaning that we could impact **60 lives**.
- ❑ On our first year will give access to drinking water to **60 people** in need. The social impact will come out of using something as simple and common as rain to change lives.
- ❑ In **5 years** if we can reach **100 houses**, about **500 people** with access to the basic services (water, energy and sanitation).
- ❑ In **30 years** we plan to reach **10,000 households** which equals to **50,000 people** whose lives have been improved by our products.
- ❑ The carbon footprint left by the people using our houses will be half as they will now live more sustainable and ecofriendly lives, according to their own needs.

DHONNOBAD!



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