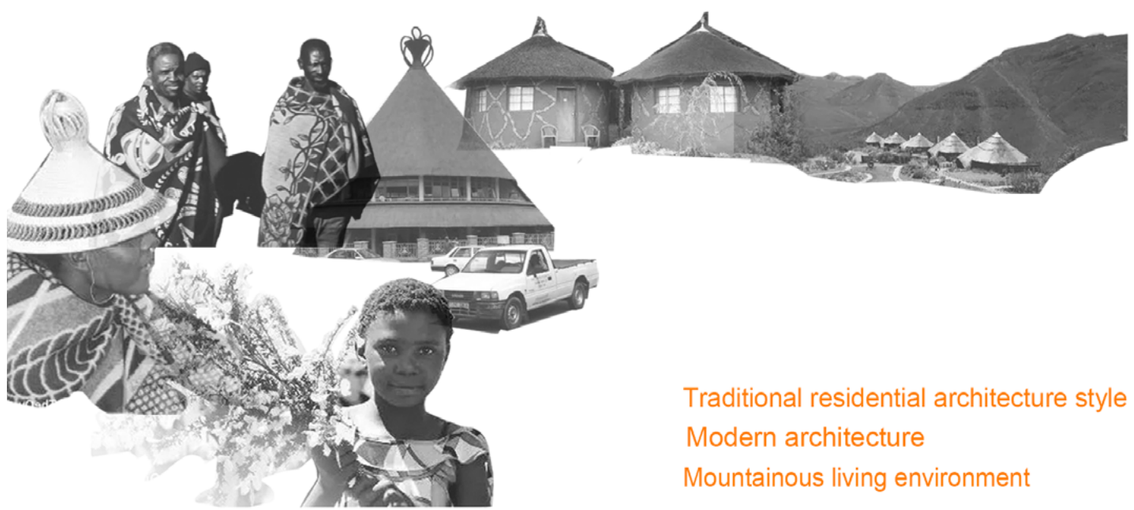
rise
In the City

Pushing the boundaries of design

Maseru, Lesotho

02.Sustainable and affordable housing design

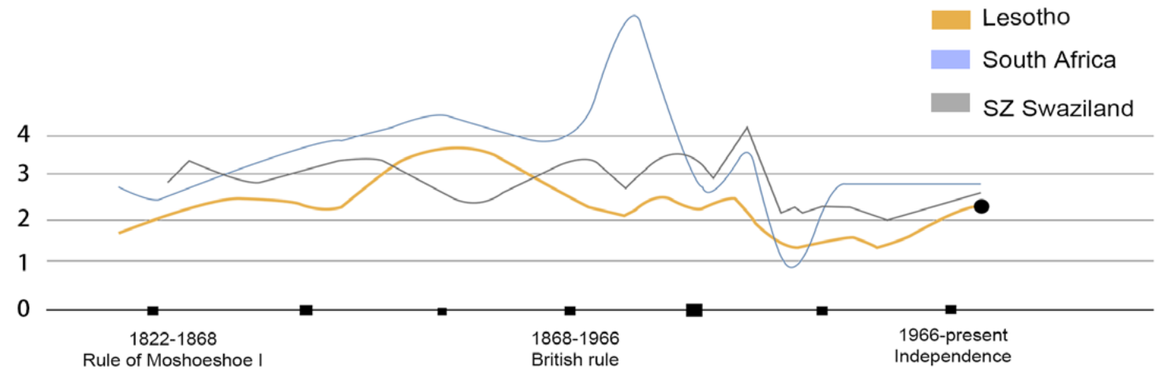
LOCAL CHARACTERISTIC SYMBOL



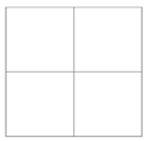
Traditional residential architecture style

Modern architecture

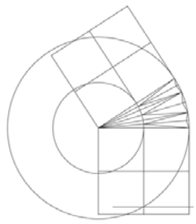
Mountainous living environment



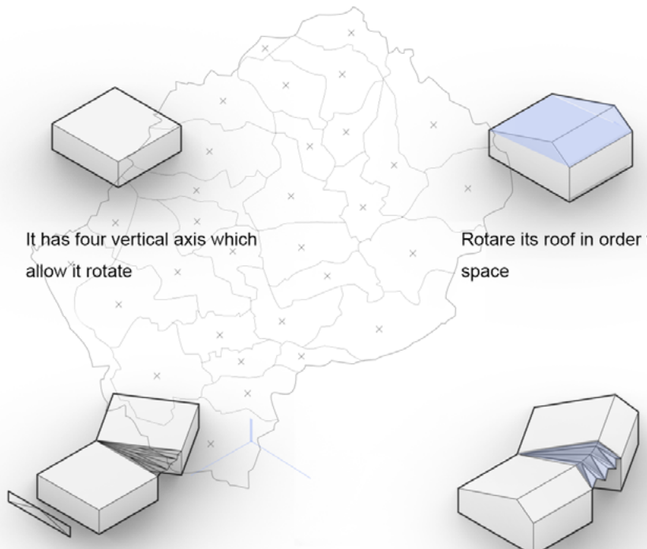
Massing evolution logic



rectangle as a single house sample



Rotate the house sample



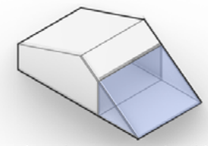
It has four vertical axis which allow it rotate

Rotare its roof in order to enlarge space

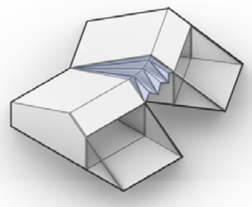
Connect two house

Folded canopy creates flexible space

Potential



Create volume and extend them into ground in order to enlarge space



Extended structure creates more potential space

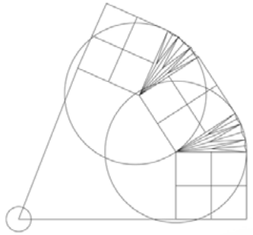
Project Cost Estimate

Construction fees:
2750 US dollars
Saved money:
500 US dollars

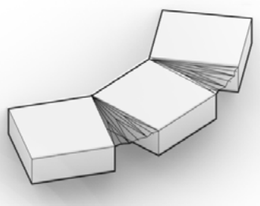
Flexible Space available

Construction fees:
2750 *2
= 5500US dollars
Saved money:
500 *2
= 1000 US dollars

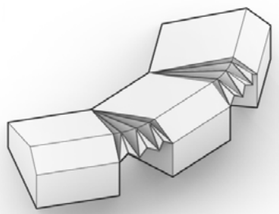
Displayable structura canopy available



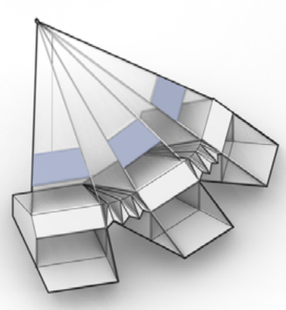
Wind collection



Connect three house



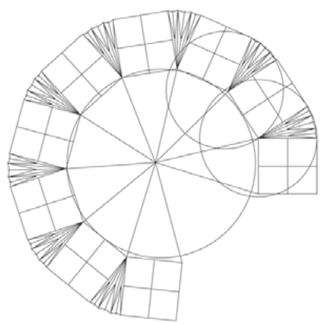
Folded canopy creates flexible space



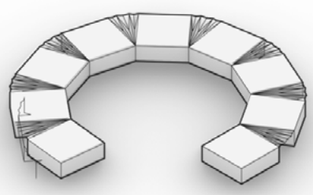
Saved money paid for wind collection equippemtn

Construction fees:
2,750 *3
=11,250 US dollars
Saved money:
500 *3
= 1,500 US dollars

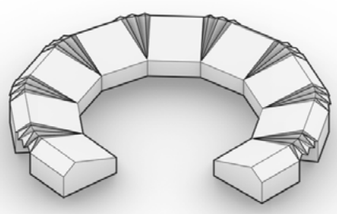
Solar panel available



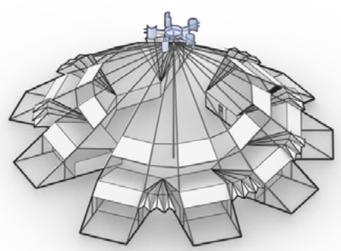
Energy station



Connect nine house



Folded canopy creates flexible space

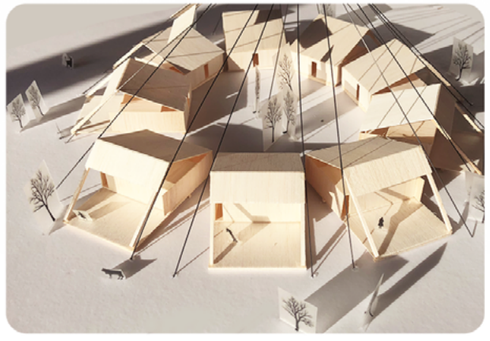


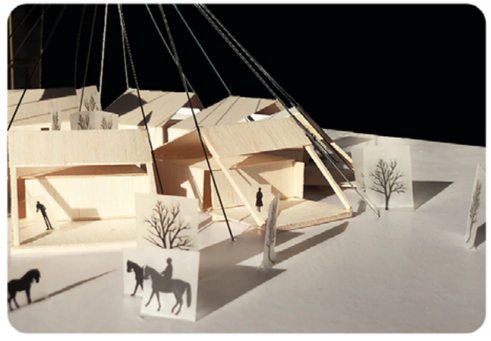
Saved money paid for the central energy station

Construction fees:
2,750 *9
=24,750 US dollars
Saved money:
500 *9
= 4,500 US dollars

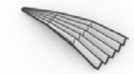
Wind and water collection systems available

3D Interior and exterior

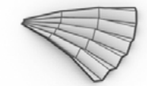




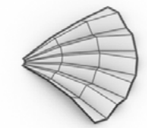
Flexible canopy transformation



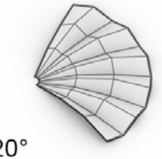
3O°



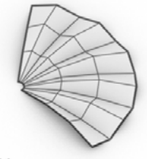
60°



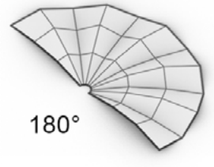
90°



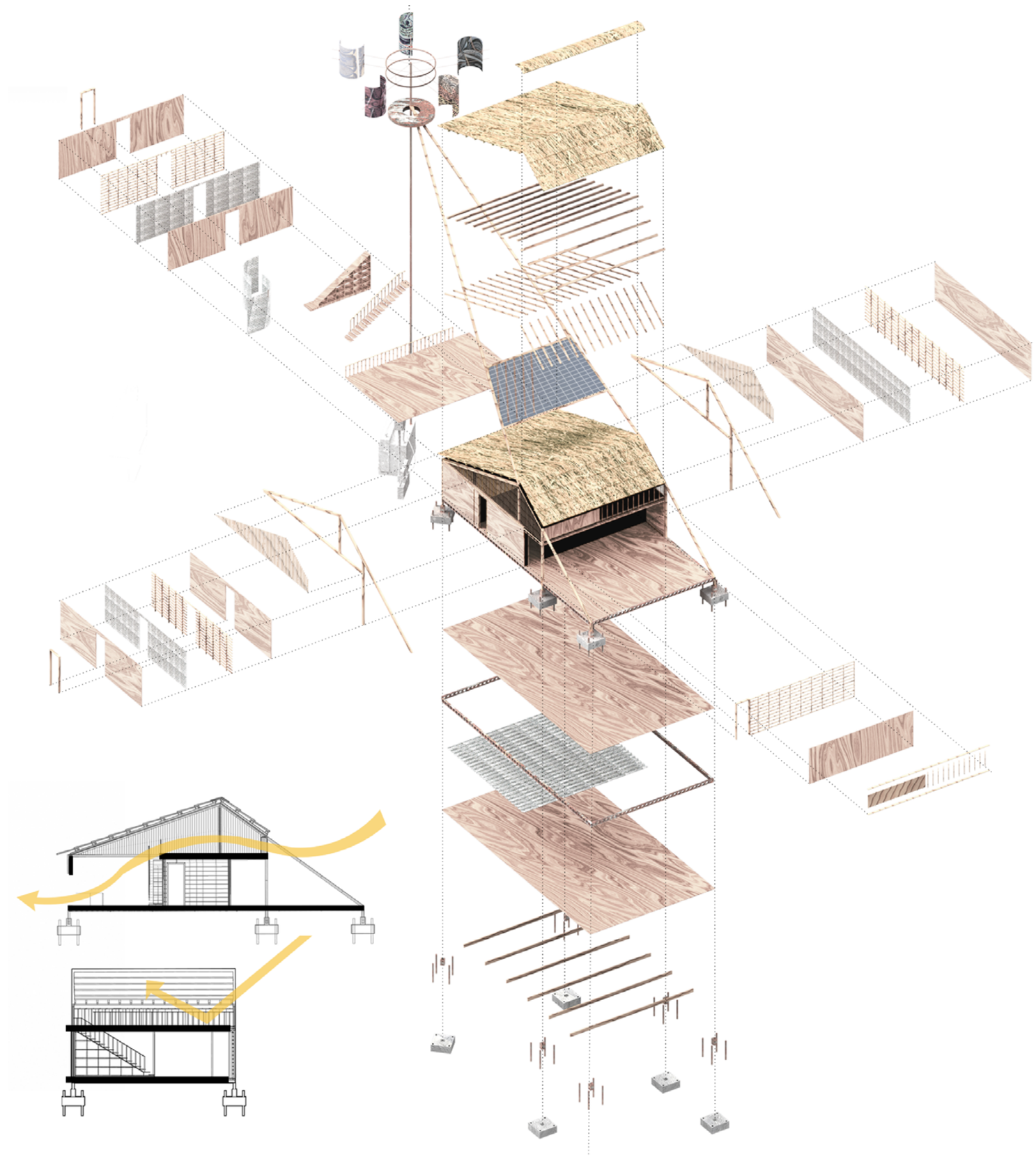
120°



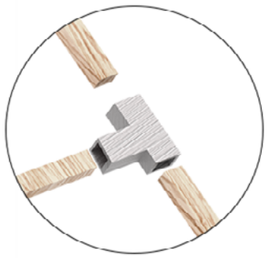
135°



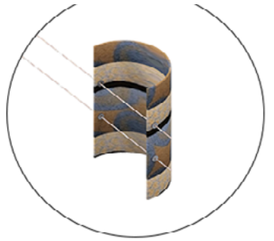
180°



The construction of the second floor loft floor and the structural joints



The place where the wood structure is joined



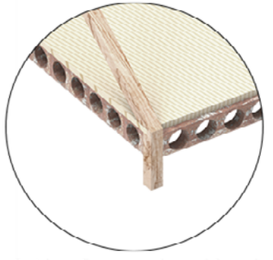
Wind machine receiving plate

How wood structure joints

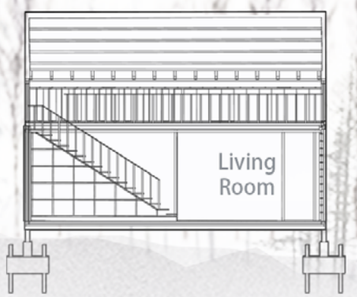
End joint of a strip of wood

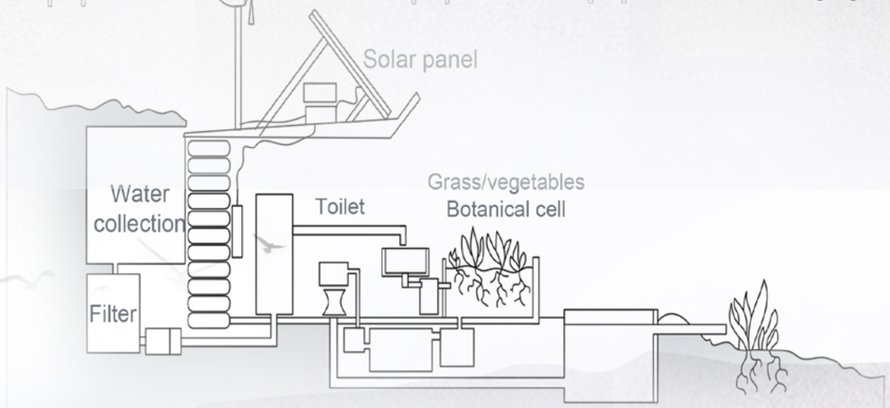
Reversible wooden window

End joint of a strip of wood



Outdoor floor panels and foundation joints

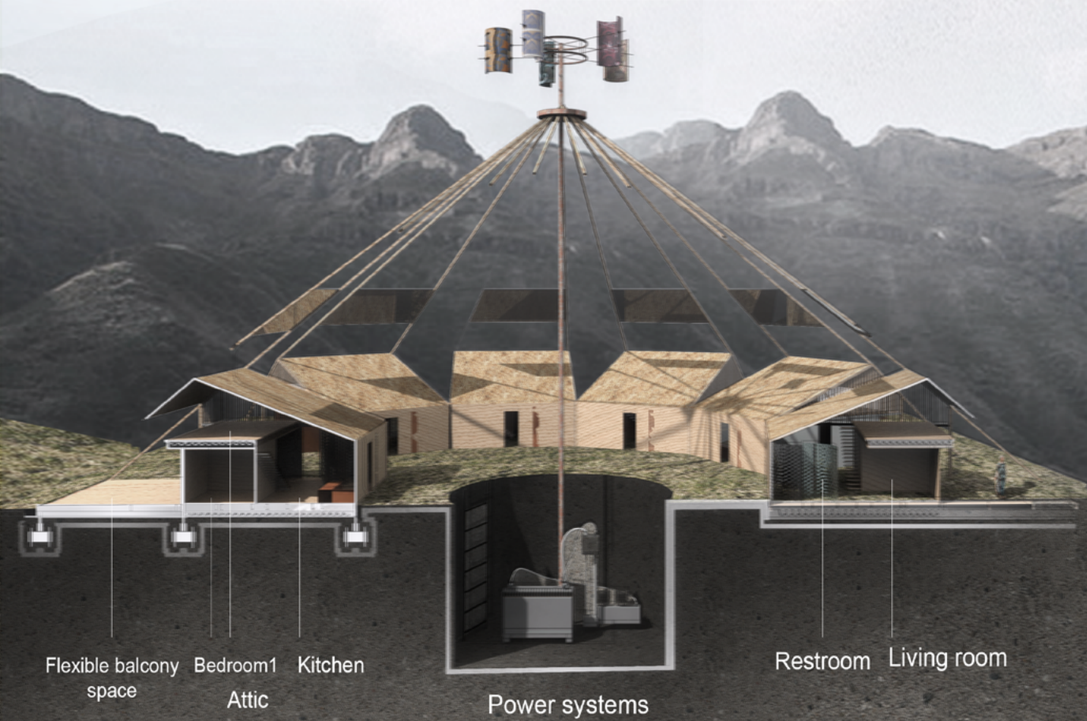




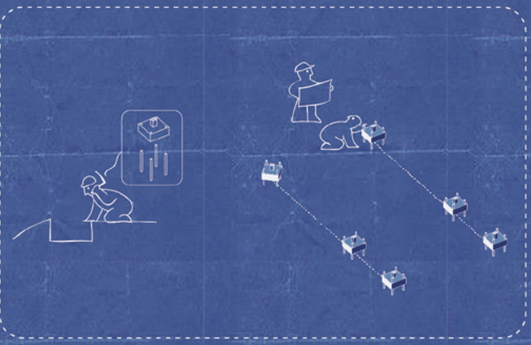
Local traditional custume

Sybolic logo

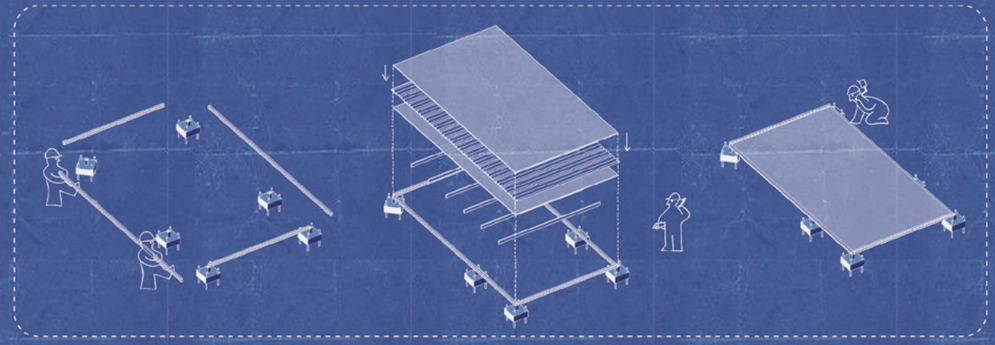
Spiral abstraction plan



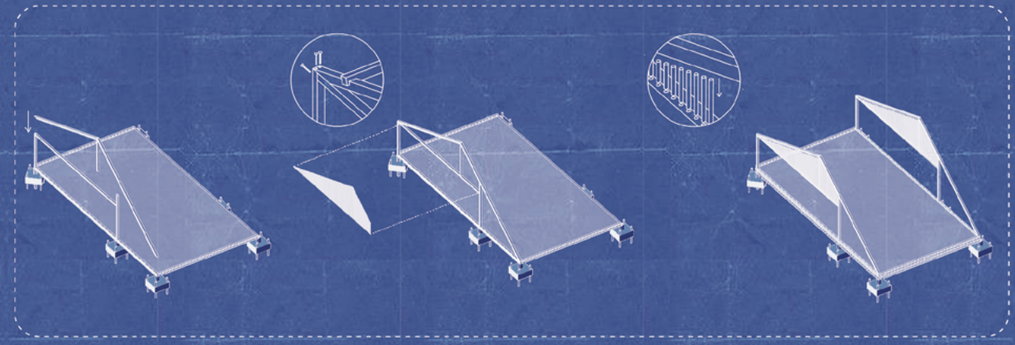
Indicative Construction Details



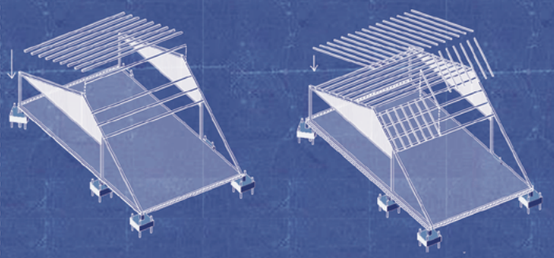
Step1 Dig the foundation pit, bury the foundation, draw the line in the field



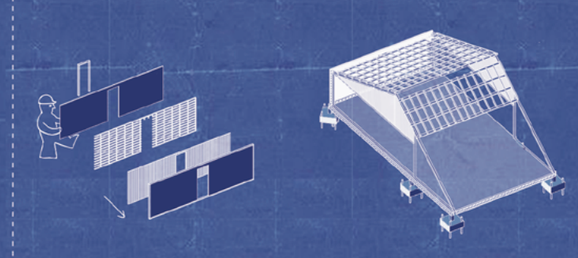
Step2 Build the structural support of foundation steel girder, and make three layers of waterproof and thermal insulation board, and add the surface layer to confirm the horizontal vertical



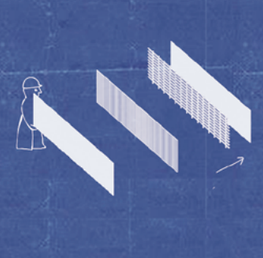
Step3 Lap the wall frame structure support system and install the blinds of the movable side wal



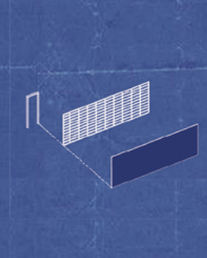
Step4 Set up roof support system



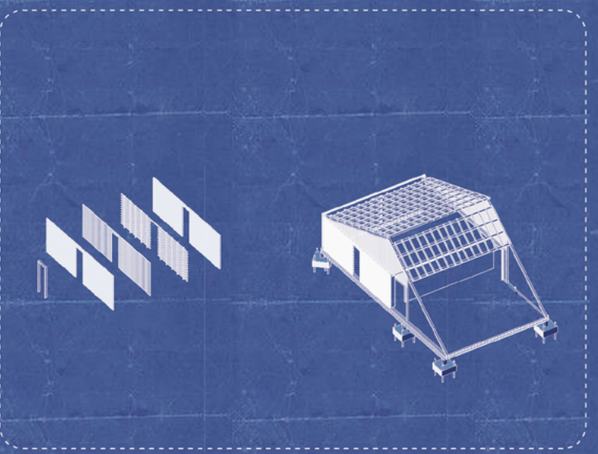
Step5 Set up multiple layers of front wall



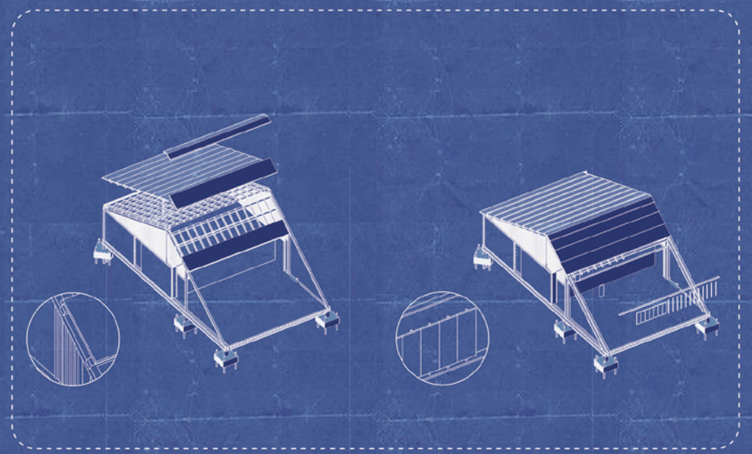
Set up multiple layers of left wall



Set up the frame of doors

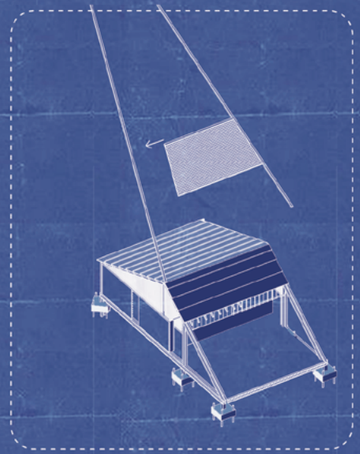


Step6 Set up insulation layers of the left wall

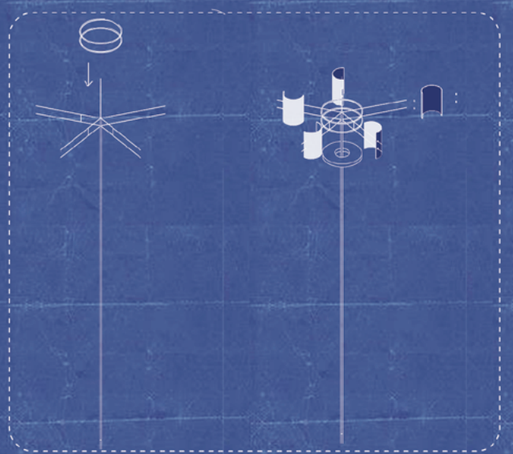


Step7 Install the roof roof insulation grass

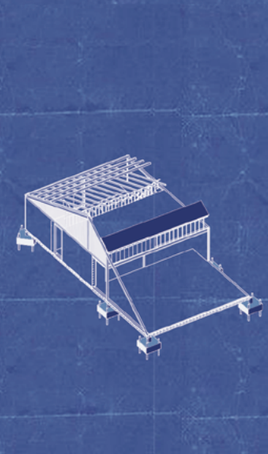
Install the flexible ventilational window system



Step8 Set up solar panel



Step9 Set up wind collection and generation devices



DONE!

After studying the history, culture and geography of Lesotho, we learned that its climate was cold in winter and hot in summer.

The inspiration for the whole look comes from a famous local hat.

Our design takes a square of 7*7 meters as the prototype unit body, and after a series of deformation, the living space of the second floor is formed.

A group village is formed by rotating simple monomers and surrounded by a spiral shape, which saves building materials and brings a variety of possibilities for future use.

While using local materials, solar panels are designed for each individual unit, as well as wind energy collection and power generation devices across the village, to share energy.

Project Cost Estimate

Number	Item name	unit	Number	unit cost	Combined cost
1	Level the site and clear the surface	㎡	52	11.73	609.98
2	Foundation pit and trench earth	m³	3	58.65	175.96
3	Play a stake	stick	12	199.95	2399.40
4	Floor timber beam construction	㎡	1.2	1273.02	1527.62
5	timber floor	m³	48	117.30	5630.59
6	Wall steel structure	t	0.3	10730.63	3219.19
7	Exterior enclosed boards	㎡	85	97.97	8327.92
8	Floor anti-corrosion wood beam structure	m³	0.6	1295.23	777.14
9	timber floor panel	㎡	26	117.30	3049.90
10	Wooden floor structure	㎡	65	117.30	7624.76
11	Wood stair	㎡	3.6	446.55	1607.60
12	Wooden handrail	m	10.2	157.29	1604.40
13	Wood windows and doors	㎡	4.5	391.90	1763.56
14	Grass roof surface	㎡	65	58.65	3812.38
15	Interior wall panel	㎡	60	38.66	2319.42
16	Total				44510.47

TRIBES IN THE SKY

Residential Design For Lesotho

LOCAL CHARACTERISTIC SYMBOL

Traditional residential architecture style

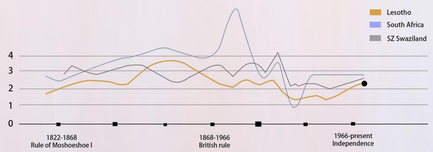
Modern architecture

Mountainous living environment

The capital city of Lesotho is Maseru.
Lesotho is a landlocked country in southern Africa and is completely surrounded by South Africa.
The population of Lesotho is around 2 million.
Lesotho is also known as the "Kingdom in the sky" due to it's attitude, it is the only country in the world which is entirely above 1000m.

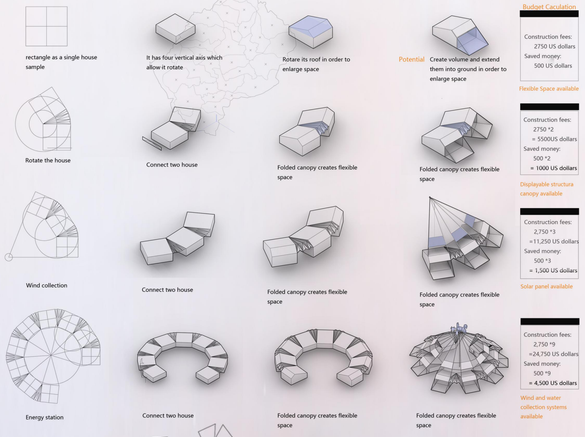
Maseru is located on the Caledon River and it lies directly on the Lesotho-South Africa Border

Local people



site plan 1:200

Massing evolution logic



Budget Calculation

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Solar panel available

Construction fees:
2,750 *9
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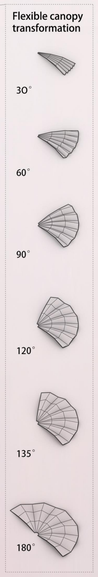
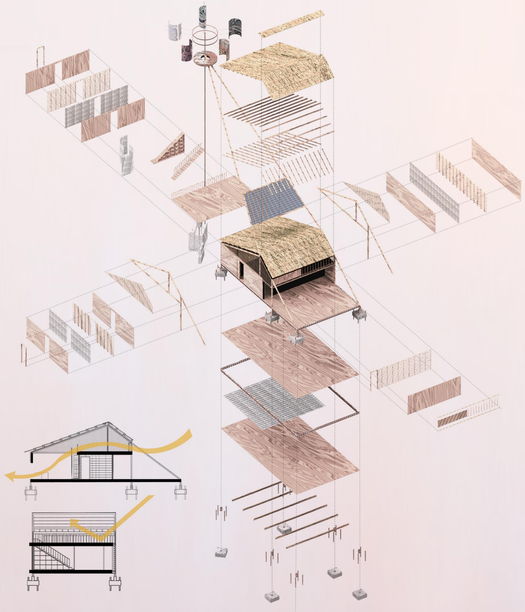
Wind and water collection systems available

Flexible canopy transformation



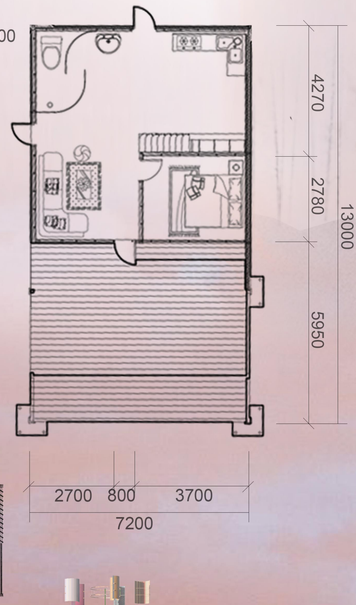


Local traditional custume

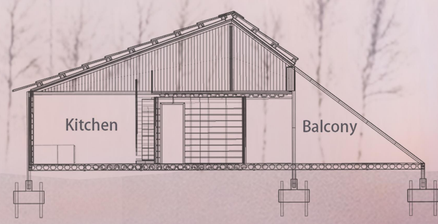
Sybolic logo

Spiral abstraction plan

floor plan 1:100



section1 1:100



section2 1:100