

# A1 - ANNEX 1

## 1 THE “FOG COLLECTOR”

Fog collection is feasible thanks to the natural process of atmospheric water vapour condensation: when moisture encounters a cold surface, it turns in water droplets (the dew).

In addition, the structure of the “fog collector” allows it to gather the water produced by moisture condensation on its components. The classic “fog collector”, for instance, consists of a grid sustained by supports that are usually made of wood, treated bamboo, or stainless steel poles.

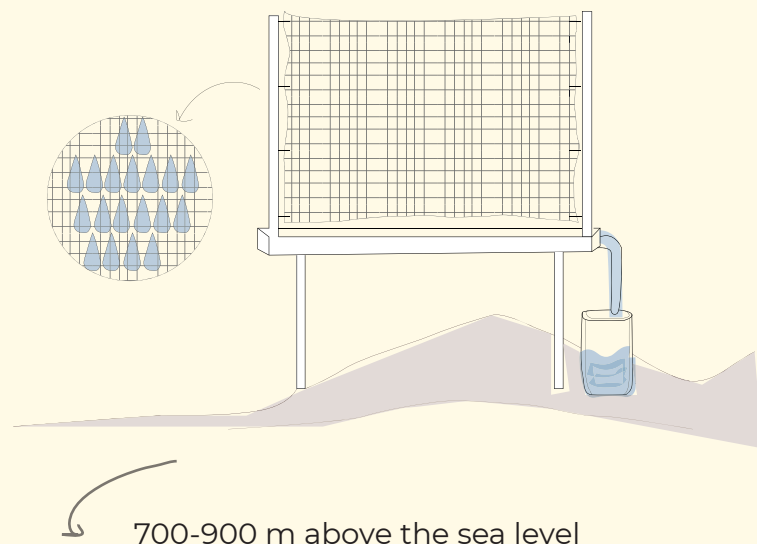
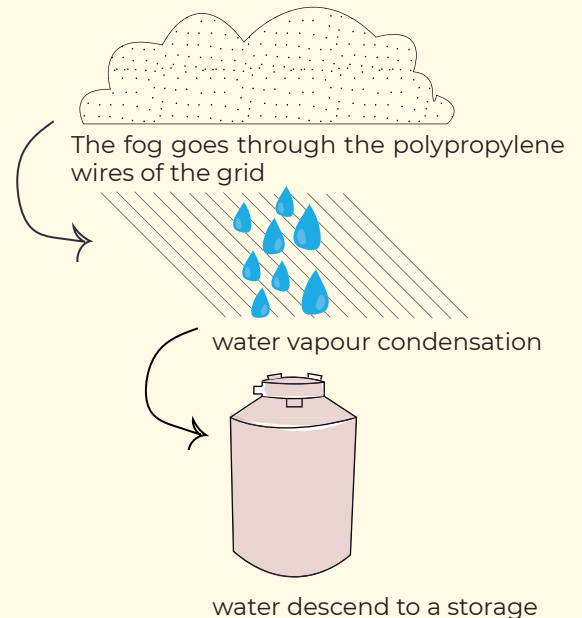
In more details, when the fog goes through the polypropylene wires of the grid, which are similar to nylon, it deposits into it's small cells. Consequently, gravity makes the small drops of water descend along a drainpipe, which is located at the bottom of the “fog collector”. After that, in order to avoid contamination, water is carried to a nearby storage component for household or irrigational use. However, water must be treated with a purification process, which uses sand and chloride, in order to be potable.

Furthermore, data from many reports worldwide suggest that the amount of water collected by the “fog collector” can vary from a minimum of two litres/m<sup>2</sup> when the fog is light to a maximum of 17 litres/m<sup>2</sup> in cases of dense fog. However,

It is fundamental to choose the right location for the collector in order to improve its performances. The amount of water gathered, in fact, can be maximised by positioning the collecting structure between 700 and 900 meters above the sea level and with a position perpendicular to the direction of the wind.

### PRICE

*Polypropylene grid's price: 0.80 \$/m<sup>2</sup>*



## A2 - ANNEX 2

# 2 THE DRY TOILET

24% of the Peruvian population does not have access to public sewage treatment systems in their area. More than 2 million Lima citizens do not have access to adequate water and sanitation services. In Lima, the second driest capital city in the world, it is almost impossible to have a standard sewage treatment system. Traditional bathrooms, built over wells, will contaminate both the water and soil, making the spread of illnesses much easier.

### PRICE:

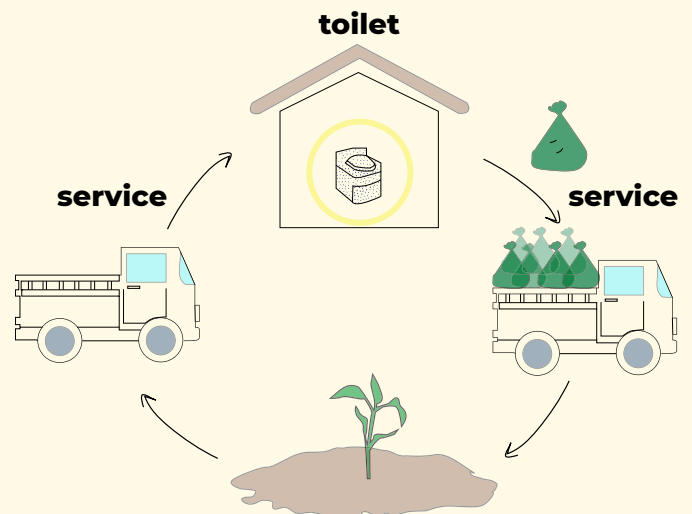
*Wc free + monthly maintenance fee.*

### The proposed system:

The proposed WC uses a special technology that separates solid and liquid waste. The user will have to cover their waste with sawdust in order to avoid insects and unpleasant smells. Following a small monthly fee, a waste management company will pick up and transport the material to a high quality organic compost production company for future agricultural use. This kind of WC can be installed in every part of the house.

The biggest advantages of the dry toilet in an arid climate are :

- water use optimization
- it is hygienic
- it does not produce waste
- it is inexpensive
- it does not produce sewage water
- the compost can be used for agricultural use.



## A3 - ANNEX 3

# 3 THE PHOTOVOLTAIC PANEL

### OPTIONS FOR USING:

- a. Up to 16 h if four 7 Watts LED light bulbs are turned on
- b. Up to 6 hours if LED TV 32" + decoder are used
- c. Up to 6 h in order to power a laptop
- d. Radio, TV, phone charging

### PRICE:

244\$

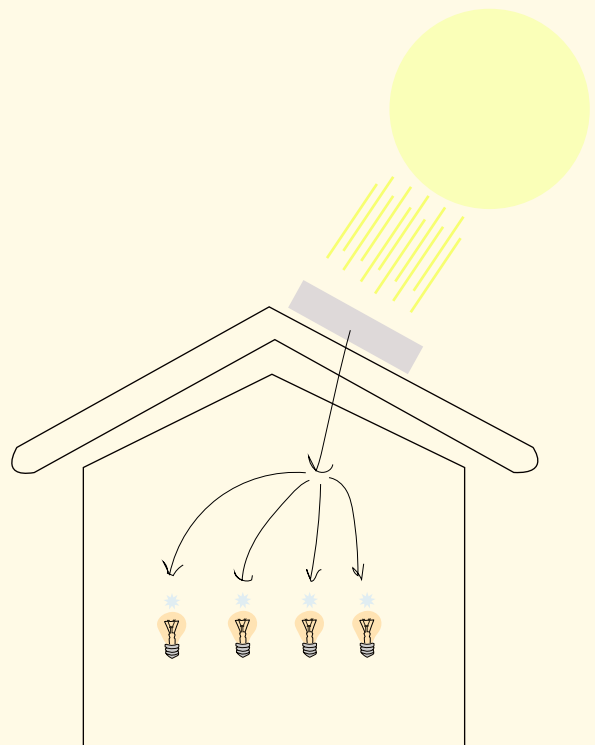
### INCLUDED COMPONENTS:

A 50 W photovoltaic panel, battery 40 ah, inverter

### SIZE:

69cm X 54cm

The PV panels consist of photovoltaic cells that transform the incident solar radiation into electricity by the photovoltaic effect. Moreover, the right orientation and slope of the roof are key factors for the panel functioning, so that the best performances are obtained when the solar radiation encounters the panel with a 90° angle. As a consequence, latitude will strongly affect the orientation and slope of both the roofs (and panels). In Perú, for example, the panel must be orientated to the North, considering that it is located in the South Hemisphere and close to Equator line.



## WOOD

# ANNEX 4 - MATERIALS

### 1.0 Wood lumber



|      | PRICE (per unit)      | DIMENSION       | TYPE          | FINISHING     | USES   |
|------|-----------------------|-----------------|---------------|---------------|--|
| 1.1  | 9.90 soles (3\$)      | 2"x2"x8"        | radiated pine | natural color | - partitions<br>- light structures   |
| 1.2  | 18.20 soles (5.60\$)  | 1"x6"x10.5'     | radiated pine | natural color | - partitions<br>- light structures<br>- cladding<br>- furniture<br>- beams<br>- structures |
| 1.3  | 57.90 soles (17.7\$)  | 2"x8"x10.5'     | American pine | natural color | - partitions<br>- light structures<br>- cladding<br>- furniture<br>- beams<br>- structures |
| 1.4  | 44.90 (13.7\$)        | 2"x6" x 10.5'   | radiated pine | natural color | - partitions<br>- light structures   |
| 1.5  | 52.50 soles (16.1\$)  | 2"x4" x 16'     | radiated pine | natural color | - partitions<br>- light structures<br>- cladding<br>- furniture<br>- beams<br>- structures |
| 1.6  | 42.90 soles (13.1\$)  | 2"x4" x 14'     | American pine | natural color | - partitions<br>- light structures<br>- cladding<br>- furniture<br>- beams<br>- structures |
| 1.7  | 38.10 soles (11.70\$) | 1/2"x8" x 10.5' | radiated pine | natural color | - partitions<br>- light structures   |
| 1.8  | 36.90 soles (11.30\$) | 1"x 6" x 14'    | American pine | natural color | - partitions<br>- light structures<br>- cladding<br>- furniture<br>- beams<br>- structures |
| 1.9  | 31.70 soles (11.30\$) | 1"x 10" x 10.5' | radiated pine | natural color | - cladding<br>- mobili   |
| 1.91 | 27.90 soles (8.55\$)  | 1" x 8" x 10.5' | radiated pine | natural color | - cladding<br>- mobili   |
| 1.92 | 25.90 soles (7.9\$)   | 2" x 4" x 10.5' | radiated pine | natural color | - furniture  |
| 1.93 | 16.54 soles (5\$)     | 2" x 3" x 10.5' | radiated pine | natural color | - partitions<br>- structures<br>- roofs  |

|       | PRICE (per unit)     | DIMENSION         | TYPE          | FINISHING     | USES   |
|-------|----------------------|-------------------|---------------|---------------|--|
| 1.94  | 14.20 soles (4.35\$) | 1" x 4" x 10.5'   | radiated pine | natural color | - furniture<br>- cladding  |
| 1.95  | 13.90 soles (4.2\$)  | 2" x 3" x 8'      | radiated pine | natural color | - partitions<br>- light structures<br>- cladding<br>- furniture<br>- beams<br>- structures |
| 1.96  | 11.06 soles (3.4\$)  | 2" x 2" x 10.5'   | American pine | natural color | - partitions<br>- light structures<br>- cladding<br>- furniture<br>- beams<br>- structures |
| 1.97  | 10.20 soles (3.10\$) | 1/2" x 2" x 10.5' | radiated pine | natural color | - partitions<br>- light structures   |
| 1.98  | 9.90 soles (3\$)     | 2" x 2" x 8'      | radiated pine | natural color | - partitions<br>- light structures   |
| 1.99  | 9.40 soles (2.8\$)   | 1" X 3" x 10.5'   | radiated pine | natural color | - cladding   |
| 1.991 | 14.20 soles (4.35\$) | 1" x 4" x 10.5'   | radiated pine | natural color | - partitions<br>- light structures<br>- divisions<br>- roof                                |
| 1.992 | 13.90 soles (4.2\$)  | 2" x 3" x 8'      | radiated pine | natural color | - cladding   |
| 1.993 | 11.06 soles (3.4\$)  | 2" x 2" x 10.5'   | radiated pine | natural color | - partitions<br>- light structures<br>- divisions<br>- roof                                |
| 1.994 | 3.9 soles (1.2\$)    | 1" x 1" x 6'      | radiated pine | natural color | - partitions<br>- light structures<br>- divisions<br>- roof                                |

## WOOD

### 2.0 OSB plank



|     | PRICE (per unit)     | DIMENSION                   | TYPE                  | FINISHING     | USES                        |
|-----|----------------------|-----------------------------|-----------------------|---------------|-----------------------------|
| 2.1 | 74.20 soles (22.7\$) | 1.22x2.44<br>thickness 18mm | structural wood panel | natural color | - roof<br>- wall<br>- floor |

## BAMBU'

### 3.0 Poles Bamboo Guayaquil



|     | PRICE (per unit) | DIMENSION                 | TYPE            | FINISHING     | USES  |
|-----|------------------|---------------------------|-----------------|---------------|---|
| 3.1 | 42 soles (13\$)  | 5 - 10 cm diameter x 6m   | premium quality | natural color | - columns<br>- beams<br>- joists<br>- trusses |
| 3.2 | 25 soles (7.6\$) | 7.5 - 10 cm diameter x 6m | basic quality   | natural color | - fences<br>- boundaries                      |

## FIBROCEMENT

### 4.0 Fibre Cement slabs

The orientation of the plates must be opposite to the wind direction.

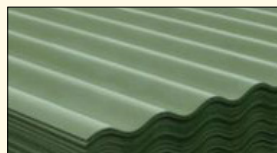
4.1



4.2



4.3



|     | PRICE (per unit)     | DIMENSION           | TYPE         | FINISHING   | USES   |
|-----|----------------------|---------------------|--------------|-------------|--|
| 4.1 | 40.50 soles (12.5\$) | 1.10m x 3.10m x 4mm | Fibre Cement | gray color  | - roofing of houses<br>- warehouses<br>- Industrial plants |
| 4.2 | 41.50 soles (12.7\$) | 1.10m x 3.10m x 4mm | Fibre Cement | red color   | - roofing of houses<br>- warehouses<br>- Industrial plants |
| 4.3 | 46.60 soles (14.3\$) | 1.10m x 3.10m x 4mm | Fibre Cement | green color | - roofing of houses<br>- warehouses<br>- Industrial plants |

## FIBROCEMENT

### 5.0 Fibre Cement slabs

They must be installed on wooden structures or galvanized steel profiles with vertical uprights separated at a maximum distance of 0.61 m between axes.



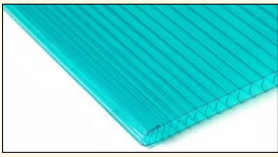
|     | PRICE (per unit)     | DIMENSION                          | TYPE            | FINISHING     | USES  |
|-----|----------------------|------------------------------------|-----------------|---------------|---|
| 5.1 | 33.05 soles (10\$)   | 1.22m x 2.44m<br>thickness<br>6mm  | Fibre<br>Cement | gray polished | - secondary walls<br>- ceilings   |
| 5.2 | 44.92 soles (13.7\$) | 1.22m x 2.44m<br>thickness<br>8mm  | Fibre<br>Cement | gray polished | - low-height exterior<br>walls<br>- interior walls<br>- areas subject to shocks<br>and humidity |
| 5.3 | 61.20 soles (18.7\$) | 1.22m x 2.44m<br>thickness<br>10mm | Fibre<br>Cement | gray polished | - exterior walls  |
| 5.4 | 75.37 soles (23\$)   | 1.22m x 2.44m<br>thickness<br>12mm | Fibre<br>Cement | gray polished | - exterior walls<br>- roofing base  |
| 5.5 | 40.87 soles (12.5\$) | 1.22m x 2.44m<br>thickness<br>6mm  | Fibre<br>Cement | gray polished | - ceilings  |
| 5.6 | 53.85 soles (16.5\$) | 1.22m x 2.44m<br>thickness<br>8mm  | Fibre<br>Cement | gray polished | - eaves<br>- interior walls<br>- areas subject to shocks<br>and humidity                        |
| 5.7 | 69.75 soles (21.3\$) | 1.22m x 2.44m<br>thickness<br>10mm | Fibre<br>Cement | gray polished | - facades<br>- external walls   |
| 5.8 | 87 soles (26.2\$)    | 1.22m x 2.44m<br>thickness<br>12mm | Fibre<br>Cement | gray polished | - facades<br>- external walls<br>- roofing base   |

## POLYCARBONATE

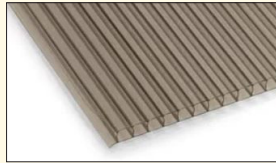
### 6.0 Polycarbonate alveolar sheet

Excellent light transmission, flexibility, lightness, transparency and resistance to high temperatures, high resistance to impacts.

6.1



6.2



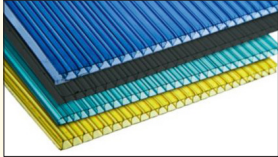
6.3



6.4



6.5



|     | PRICE (per unit)      | DIMENSION           | TYPE           | FINISHING        | USES                               |
|-----|-----------------------|---------------------|----------------|------------------|------------------------------------|
| 6.1 | 167.37soles (51.5\$)  | 1.05m x 2.90m x 6mm | Alveolar sheet | turquoise        | - roofs<br>- walls<br>- structures |
| 6.2 | 138.50 soles (42.6\$) | 1.05m x 2.90m x 6mm | Alveolar sheet | bronze           | - roofs<br>- walls<br>- structures |
| 6.3 | 121.17 soles (37.3\$) | 1.05m x 2.90m x 6mm | Alveolar sheet | transparent      | - roofs<br>- walls                 |
| 6.4 | 103.85 soles (32\$)   | 1.05m x 2.90m x 6mm | Alveolar sheet | white            | - roofs<br>- walls                 |
| 6.5 | 159.90 soles (49.2\$) | 1.05m x 2.95m x 6mm | Alveolar sheet | different colors | - roofs<br>- walls<br>- partitions |

## POLYCARBONATE

### 7.0 Corrugated sheets Polycarbonate

It has protection against Uv rays. Resists wind and snow load.

7.1



|     | PRICE (per unit)     | DIMENSION             | TYPE              | FINISHING   | USES                        |
|-----|----------------------|-----------------------|-------------------|-------------|-----------------------------|
| 7.1 | 69.90 soles (21.5\$) | 0.81m x 3.05m x 0.6mm | corrugated sheets | white color | - greenhouses<br>- pergolas |



## METAL SHEET

### 8.0 Sheet metal plate

The orientation of the plates must be opposite to the wind direction.

8.1

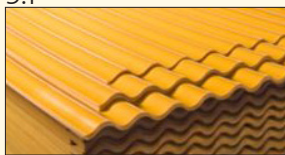


|     | PRICE (per unit) | DIMENSION            | TYPE                   | FINISHING        | USES   |
|-----|------------------|----------------------|------------------------|------------------|--|
| 8.1 | 22.9 soles (7\$) | 0.80 x 3.60 m x 20mm | corrugated metal sheet | galvanized steel | - roofing of houses<br>- warehouses<br>- Industrial plants |

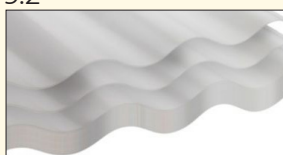
# POLYPROPYLENE

## 9.0 Polypropylene roof

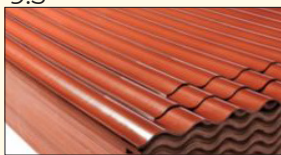
9.1



9.2



9.3



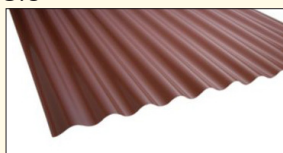
9.4



9.5



9.6



9.7



|     | PRICE (per unit)      | DIMENSION             | TYPE                          | FINISHING         | USES   |
|-----|-----------------------|-----------------------|-------------------------------|-------------------|--|
| 9.1 | 70.90 soles (21.8\$)  | 1.10m x 3.05m x 1mm   | corrugated polypropylene roof | translucent amber | - roofing of houses<br>- warehouses<br>- Industrial plants |
| 9.2 | 55.90 soles (17.20\$) | 1.10m x 3.05m x 1mm   | corrugated polypropylene roof | translucent white | - roofing of houses<br>- warehouses<br>- Industrial plants |
| 9.3 | 25.90soles (8\$)      | 1.10m x 3.05m x 1.1mm | corrugated polypropylene roof | red color         | - roofing of houses<br>- terraces<br>- schools             |
| 9.4 | 30.90 soles (9.5\$)   | 0.83 x 1.83 m x 1mm   | corrugated polypropylene roof | transparent       | - roofing of houses<br>- warehouses<br>- Industrial plants |
| 9.5 | 27.90 soles (8.6\$)   | 1.10m x 3m x 1.2mm    | corrugated polypropylene roof | red color         | - roofing of houses<br>- warehouses<br>- Industrial plants |
| 9.6 | 14.90 soles (4.6\$)   | 1.10m x 3.05m x 0.9mm | corrugated polypropylene roof | dark red color    | - roofing of houses<br>- warehouses<br>- Industrial plants |
| 9.7 | 49.90 soles (15.3\$)  | 1.10m x 3.10m x 1mm   | corrugated polypropylene roof | white color       | - roofing of houses<br>- warehouses<br>- Industrial plants |

## WATER TANK

### 91.0 Water Tank 350L

91.1



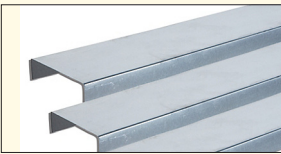
|      | PRICE (per unit) | DIMENSION     | TYPE       | FINISHING                   | USES             |
|------|------------------|---------------|------------|-----------------------------|------------------|
| 91.1 | 190 soles (58\$) | 68.5cm x 98cm | water tank | polyethylene, UV resistance | water collection |

## METALLIC PROFILES FOR DRYWALL

### 92.0 Steel rail

Metallic profiles are the structural components of a drywall construction.

92.1



|      | PRICE (per unit)    | DIMENSION        | TYPE                  | FINISHING     | USES  |
|------|---------------------|------------------|-----------------------|---------------|---|
| 92.1 | 6,20 soles (1,90\$) | 90 x 25 mm x 3 m | Steel rail<br>Drywall | silver colour | - partitions<br>- walls<br>- roof<br>- ceiling<br>- mezzanines<br>- facades |

## METALLIC PROFILES FOR DRYWALL

### 93.0 Metal stud

Metallic profiles are the structural components of a drywall construction.

93.1



|      | PRICE (per unit)    | DIMENSION        | TYPE                  | FINISHING     | USES  |
|------|---------------------|------------------|-----------------------|---------------|---|
| 93.1 | 8,04 soles (2,46\$) | 89 x 38 mm x 3 m | Metal stud<br>Drywall | silver colour | - partitions<br>- walls<br>- roof<br>- ceiling<br>- mezzanines<br>- facades |