For the TS Haiyan/Yolanda Affected Areas

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The Post Disaster Recovery Engine

The Post Disaster Recovery Engine

This document is a photo narrative that covers the activities from January 2013 to March 2014. It builds up from the lessons of the initial field tests in Tacloban held last December 2013. The lessons learned were used to improve the existing designs.

This stage were also faced with some setbacks but are now being addressed.

The Post Disaster Recovery Engine

The Solar Dryer Tower

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Solar Dyer

Lessons from the Field Tests in December 2013

1. It can serve drying needs of about three families.
2. While it is effective, it is also very expensive.
3. However, the project team does not directly work on the ground in the disaster areas. This project does not cover direct intervention to organize the families to come into a common clusters. This led the author to create another design specifically for one individual family.

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Solar Dyer

A new model was created by the author last January 2013.

It is a compact unit with much less capacity and possibly good for the drying needs of the family. It costs only one-fourth of the bigger model and can be manufactured quickly.

From Daet, the design was sent off to the manufacturing team in Cebu.

While fabricating the new design, new innovations were incorporated.

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Solar Dryer

Some of the members of the project team at work. The floor size was expanded from one square foot to two square foot.

Rattan poles were used instead of plastic PVC pipes.

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Solar Dryer

This was possible after the discovery of a supply of metal connectors from a junk shop in Cebu. The metal connectors allowed the connection of the rattan poles in different angles thus forming the frame for the dryer with ease.

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Solar Dryer

The plastic cover was assembled by sewing it together.

A second layer of plastic cover was also installed (*not in the photo*).

A shelf was constructed at the upper most part of the tower dryer. This will allow more heat to be generated at the lower portion. This lower portion, about 2/3 of the total volume of the dryer serves as the engine while the upper 1/3 serves as the load.

The shelf will allow drying with fish. It is expected that fish dried in this dryer is very clean. It will be safe from sudden rains, dust, flies as well as predators. Tests for this model is ongoing.

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Estufa Finca: The Bio Char Making Stove

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The BioChar Making Stove

Several lessons from the December 2013 field tests in Tacloban were identified.

The flame was very difficult to control.

There is too much holes driven for the primary air.

The inflow of the secondary air is blocked by the wrong attachment of the skirt.

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The BioChar Making Stove

After consultations with the designer, Mr. Art Donnely of Sea Char, several corrections were made.

1. The holes for the primary air was reduced to half the previous number.

2. The metal wrap around the stove was adjusted to ¾ inch the height thus allowing better flow of incoming air.

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The BioChar Making Stove

On the riser, inverted L shaped slits were poked on the sides and then folded inwards.

The result is a series of fins (with reference to the fins in the rocket stove by Larry Winiarski of Aprovecho Institute) .

The fins allowed better mixing of secondary air coming from the sides of the riser.

This also reduced the excessive draft thus prevented excessive flames on the sides of the pot. Without compromising the clean burn.

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The BioChar Making Stove

Furthermore, Roxanne, one of the team members found a piece of metal ring supposedly used as pot stands for tables. She inserted it on top of the riser which held the pots in place.

This improved the contact of the pot to the flames thus increased efficiency.

This piece however is only good for smaller pots.

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The BioChar Making Stove

For this photo, the pot used is smeared with heavy black sooth. This sooth came from cooking in a poorly designed stove. It was observed however that while cooking on this new stove the black sooth has started to turned to white ash. It indicates that the very hot flames is in fact burning off the particulate matters thus providing clean indoor air in the kitchen.

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After cooking, the hot ember was poured into a metal pan and then covered tightly where it is allowed to cool.

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The method was very effective that even dried leaves were charred perfectly.

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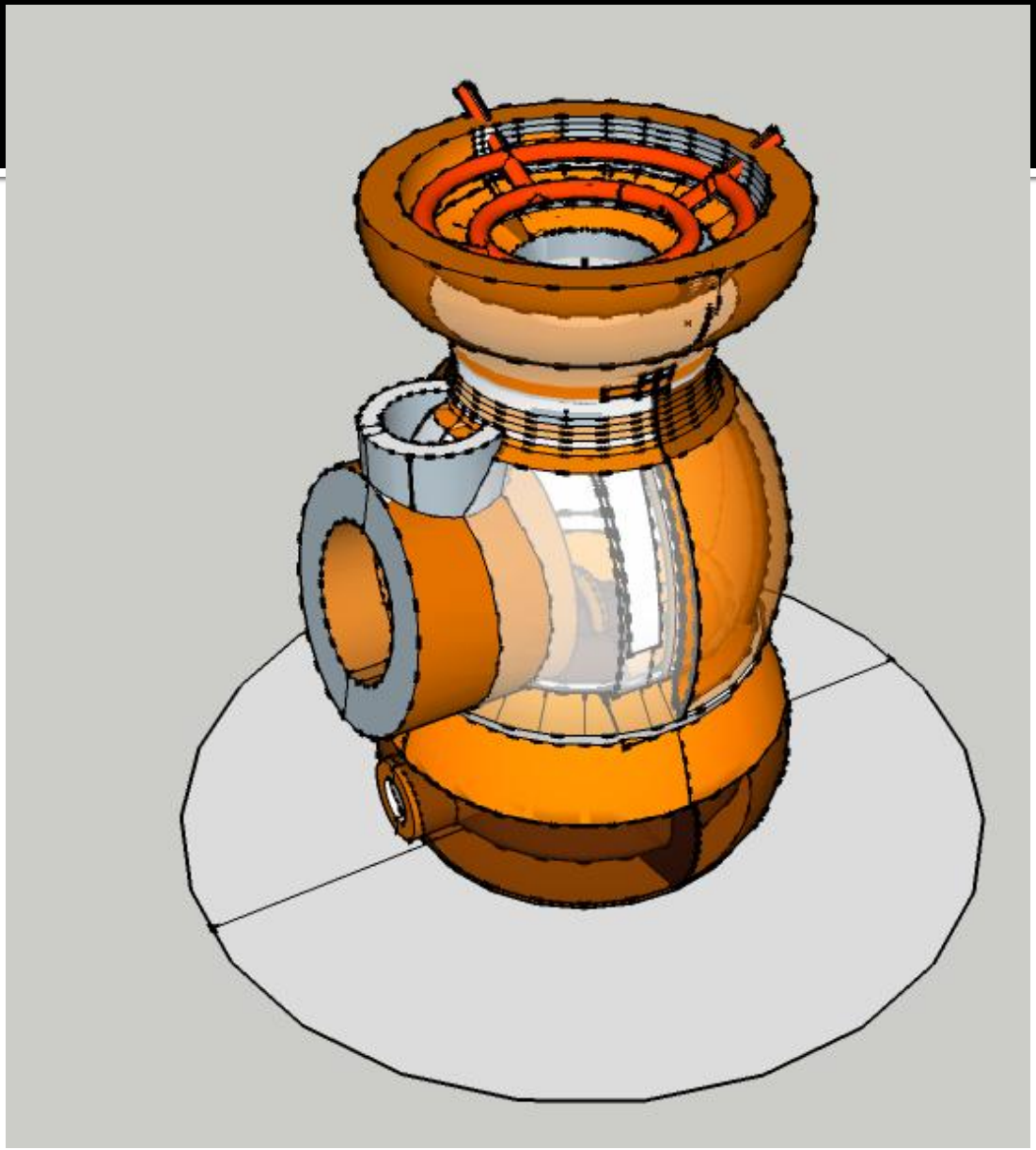
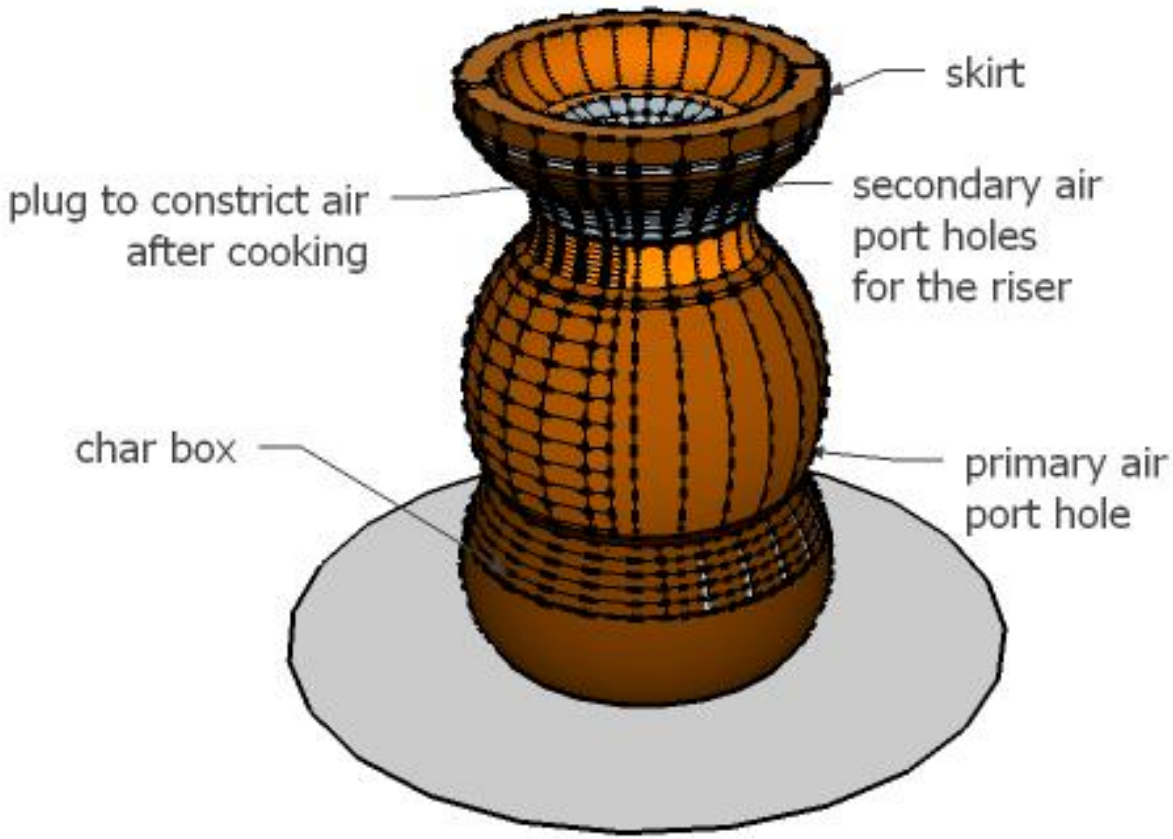
The Bio Char Making Stove

It is expected that the metal stove will not last very long with intense use. And thus, the author have been busy fabricating the equivalent of the stove in terra cotta.




skirt
plug to constrict air after cooking
secondary air port holes for the riser
char box
primary air port hole

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The mould and the resulting bio char making stove in terra cotta. As of this writing two(2) test units of the stove were already produced and are in the process of drying.

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The Pocket Planter

The Post Disaster Recovery Engine

The Pocket Planter

This project has undergone major setbacks primarily because of the wrong choice of the worker to make the mould. The worker had a method that was very slow and much less effective and very costly. The mould had to be remade with a new set of workers.

This photo shows the team leader from another stone cast workshop with the author explaining the details of the equipment.

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The Pocket Planter

On the same evening, the new team moved quickly to make the new mould. It followed the original design of a tapered jar. Going further, it will be carved with a design of a pineapple thus giving it a tropical appeal. Two moulds will be prepared, one that is big with approximately 200 liter capacity and a smaller version with about 120 liter capacity.

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The Pocket Planter

As of this writing, source of coco peat and vermi cast were already identified. These materials will form part of the potting mix as a garden soil. It is expected to be come a nice piece of art which the users will be proud to use and hold as a display in their house yards.

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The Rain Water Auto Selector

The Post Disaster Recovery Engine

The Rain Water Auto Selector

The prototype created by the author was sent of to the team in Cebu last January.

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The Rain Water Auto Selector

Manufacturing of this instrument is already in progress.

There is still a debate in the team whether to paint the parts or not. Having each part with color will enable the users to appreciate the mechanisms of the instrument at work. Bu the bigger consideration is the possible effect of the paint on the water quality.

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The Bio Char Water Filter

The team had difficulties in coming up with a innovative design that is low cost and can be manufactured quickly. Consultations had to be made with the adviser on this project, Mr. Josh Kearns of Aqueous Solutions.

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The Bio Char Water Filter

On February 2014, Mr. Kearns furnished the team a new design of the filter. It is one that much smaller and with a capacity of about 30 liters per day. It maintained the filtering components namely the slow sand filter and that of the bio char.

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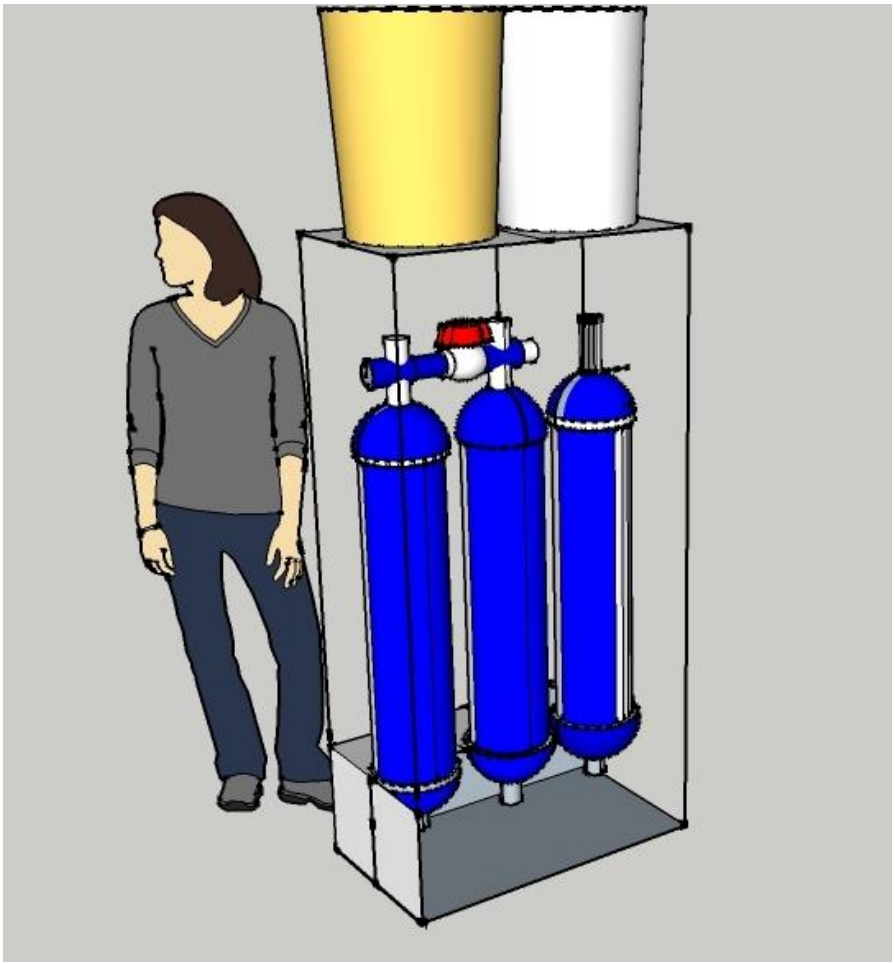
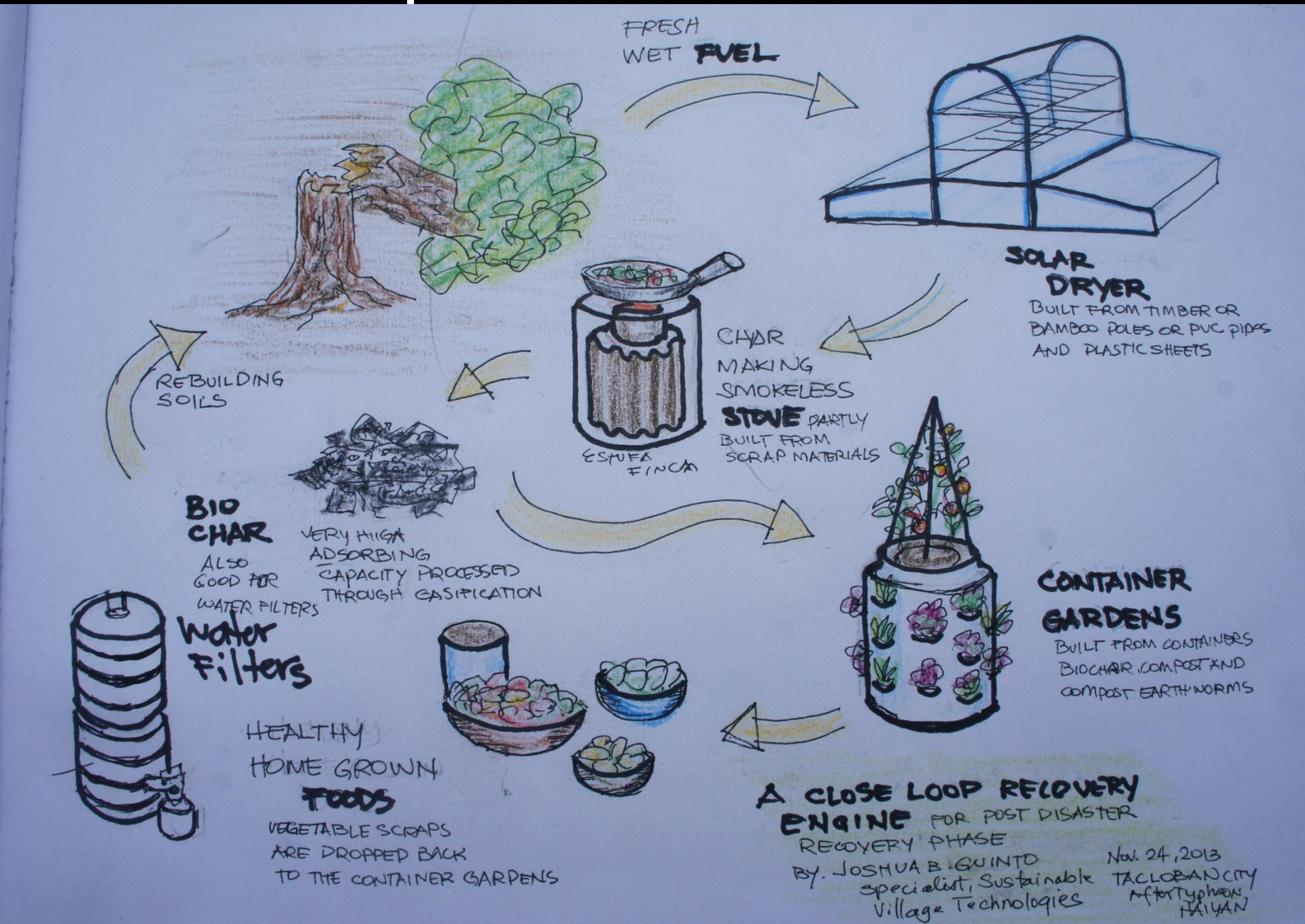
The Bio Char Water Filter

As of this writing, the design is being drafted with google sketch up as Mr. Kearns also requested such a drawing for his instructions manual. Fabrication of the prototype will commence in a few days.

Right photo shows the sketches as it is being drawn.




FRESH
WET FUEL
SOLAR DRYER
BUILT FROM TIMBER OR BAMBOO POLES OR PVC PIPES AND PLASTIC SHEETS
CHAR MAKING SMOKELESS STOVE PARTLY BUILT FROM SCRAP MATERIALS
ESTUFA FINCA
REBUILDING SOILS
BIO CHAR
ALSO GOOD FOR WATER FILTERS
VERY HIGH ADSORBING CAPACITY PROCESSED THROUGH GASIFICATION
Water Filters
CONTAINER GARDENS
BUILT FROM CONTAINERS BIOCHAR COMPOST AND COMPOST EARTHWORMS
HEALTHY HOME GROWN FOODS
VEGETABLE SCRAPS ARE DROPPED BACK TO THE CONTAINER GARDENS
A CLOSE LOOP RECOVERY ENGINE FOR POST DISASTER RECOVERY PHASE
BY. JOSHUA B. GUINTO
Specialist, Sustainable Village Technologies
Nov. 24, 2013
TACLOBAN CITY
After Typhoon HAIYAN

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