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The Approtech Training for Salcedo Eastern Samar

November 4-9, 2014 with the Plan International

photos by Plan International and Joshua Guinto

The Approtech Training for Salcedo Eastern Samar

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- Introduction
  - Appropriate Technology is a discipline with a mission of empowering the marginalized community to promote social justice and to heal the earth to promote sustainability.

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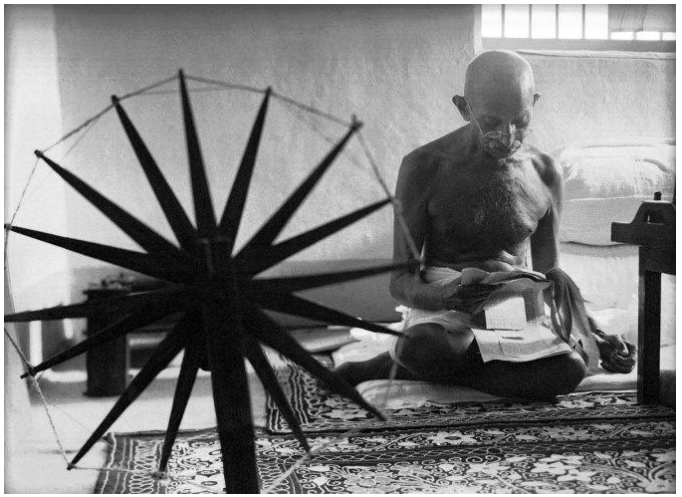
- It was inspired by the preachings of **Mahatma Gandhi** during the period of colonization of the British in India.

Gandhi used the spinning wheel to create jobs for millions and as an instrument of his revolt against the British Empire's monopoly on the textile industry. He further upheld that the machine should not be an instrument of oppression but rather be an instrument to empower and liberate the people .



- This thinking inspired Fritz Schumacher, a British economist with his work in India which he called *intermediate technology*. Schumacher's work was captured in his book "*Small is Beautiful*" in 1973 which has become among the most influential 100 books since World War II.

Even if you are a minority of one, the truth is the truth.

An ounce of practice is worth more than tons of preaching.

Mahatma Gandhi

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- The following technologies was built upon the technologies developed during the term of the author as the technical consultant to the Project ENCORE of the Save the Children in Bulacan from 2013 to 2014. Those technologies were further polished and infused with more innovations to respond to the needs of the communities in Eastern Samar.

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- The technologies are at best effective if made to operate in strict interconnectivity. The solar dryer will dry biomass debris including wood sticks, branches, leaves and grasses. It will be then converted into fuel and fed to the char making stove. The char produced from the stove can then be used as water filtering material or as part of the planting medium for container gardens. Plant wastes as well as fish gills and entrails and sea shells can be converted into liquid fertilizers and will help boost plant growth. Finally, the same solar dryer can dehydrate food and dry fish.

Solar Dryer

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Solar Dryer

On August 2013, the author built another smaller version using PVC pipes and plastic sheets. It has become very lightweight but more expensive.

On November 2014, during the training in Samar, the PVC pipes were replaced with bamboo slats.

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- **Solar Dryer**

- And so on August 2013, the author built a small version using PVC pipes and plastic sheets. It has become very lightweight but more expensive.

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- On July 2014, the author participated at the convention organized by the Solar Cooker International at Sacramento, California. He presented a poster about his work on solar dryers. One big lesson he learned is about the danger of using PVC materials for drying food items. He was advised to use UV stabilized plastic sheets for food items i and more earth materials for the frames such as bamboo.

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Following the lesson from the Sacramento Convention, all the PVC pipes were then replaced with bamboo slats during the training in Samar. However, there were no replacements yet found for the connectors. UV plastic sheets are not found at any shop in Samar or Leyte.

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A year before this training , the author has an ongoing project in the TS Yolanda affected areas in the Visayas Region.

Innovations were made to create another compact model. Metal connectors were found which enabled the construction to use rattan pipes instead of plastic PVC pipes. This greatly reduced the cost of each unit.

The supply of the metal connectors however is very limited. It was found on a local junk shop.

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On the second day of the training, the devices that was earlier fabricated at Danao, Cebu finally arrived. The shipment consisted of metal stove carbonizers, cabinet dryers and rain water funnels. Fabrication of these devices was through the support of Team Biwako, a groups of the author's friends in Japan who responded to the Yolanda disaster in the Visayas Region in 2013.

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Ms. Mayumi Okiura of Team Biwako greets the participants during the graduation rites of the training.

The new cabinet dryers from Cebu were then assembled.


STANLEY

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The participants prepared vegetables for dehydration.

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And the squash was later laid over a piece of cloth. It was then covered with a large piece of paper to create a shade over the squash.

The dehydration was greatly delayed because of the poor air flow through the piece of cloth. The following day, it was replaced with a net bag for onions and had the squash dehydrated successfully without loosing its color.

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During the training in Samar, shredded kamote (sweet potato) were dried in this dryer.

After the day of drying, it was milled in a corn mill to become powder and then stored tight in a water bottle.

- *(Yoyo, Meglet…. Could you get a photo of this please?*

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Fresh fish that was earlier marinated with different flavours were then dried.

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Composting and Liquid Fertilizers

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Edgar Sanchez, the co facilitator of this training introduces fruits and plant materials that can be converted into liquid fertilizers.

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Participants try to read through the label of the liquid fertilizers prepared by Marlin Ople of Bulacan. Marlin was among the active participants to the skills training of Save the Children in Bulacan.

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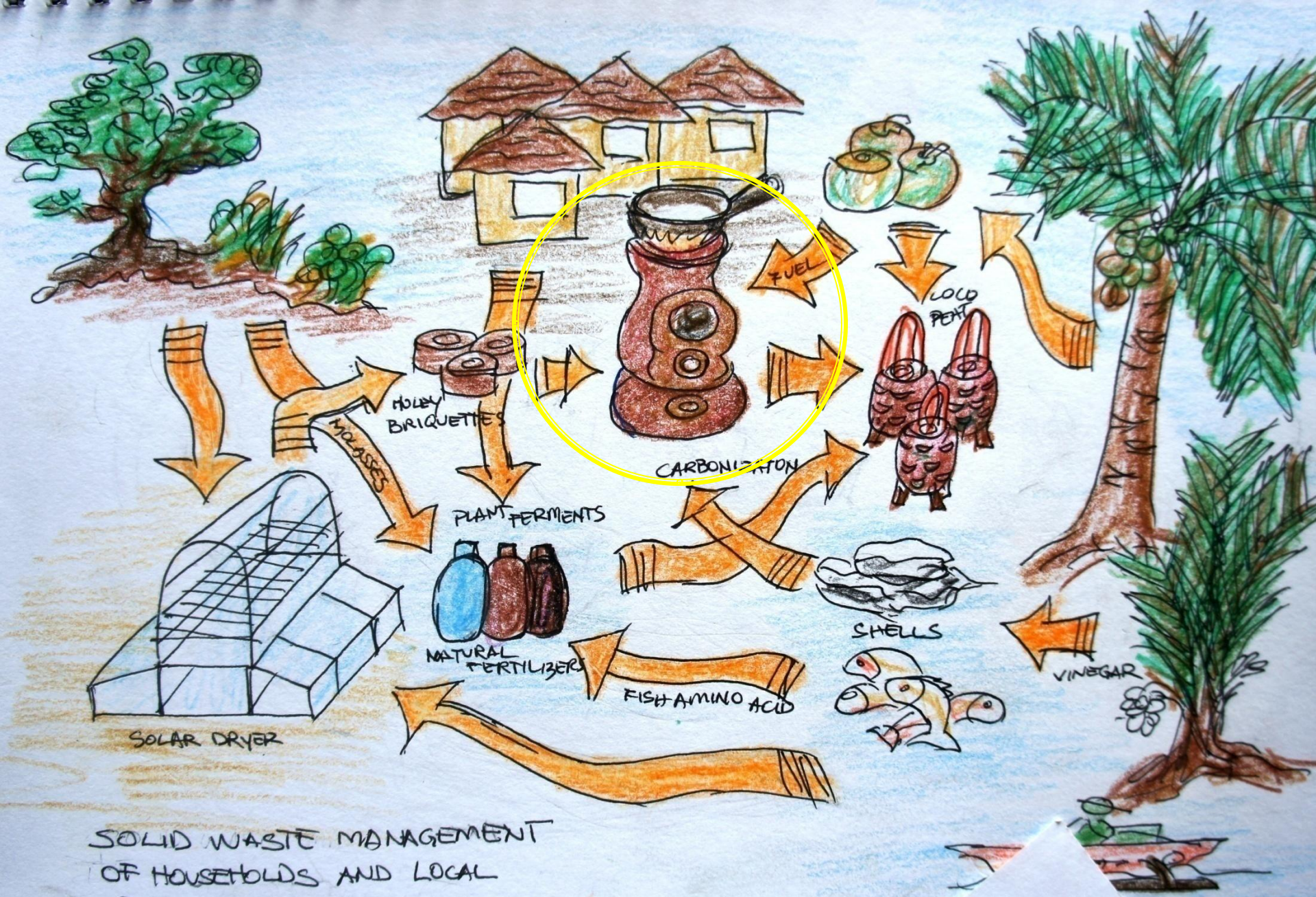
The Lego Brick Stove as a Stove Carbonizer



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The new design was inspired from the work of Sea Char, a Seattle Based NGO who have an extensive field work in Costa Rica.

Photo courtesy of Sea Char

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The Sea Char, in the spirit of open sharing of technologies with this consultant provided the technical details of the construction of a stove called Estufa Finca.

It is a metal stove that produces clean flame and afterwards char. The char, better referred to as bio char may be used as water filtering material or to improve garden soils.

Photo courtesy of Sea Char.

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After consultation with Sea Char, the mistakes were rectified and the stove now runs very clean with better control.

The stove can produce biochar.

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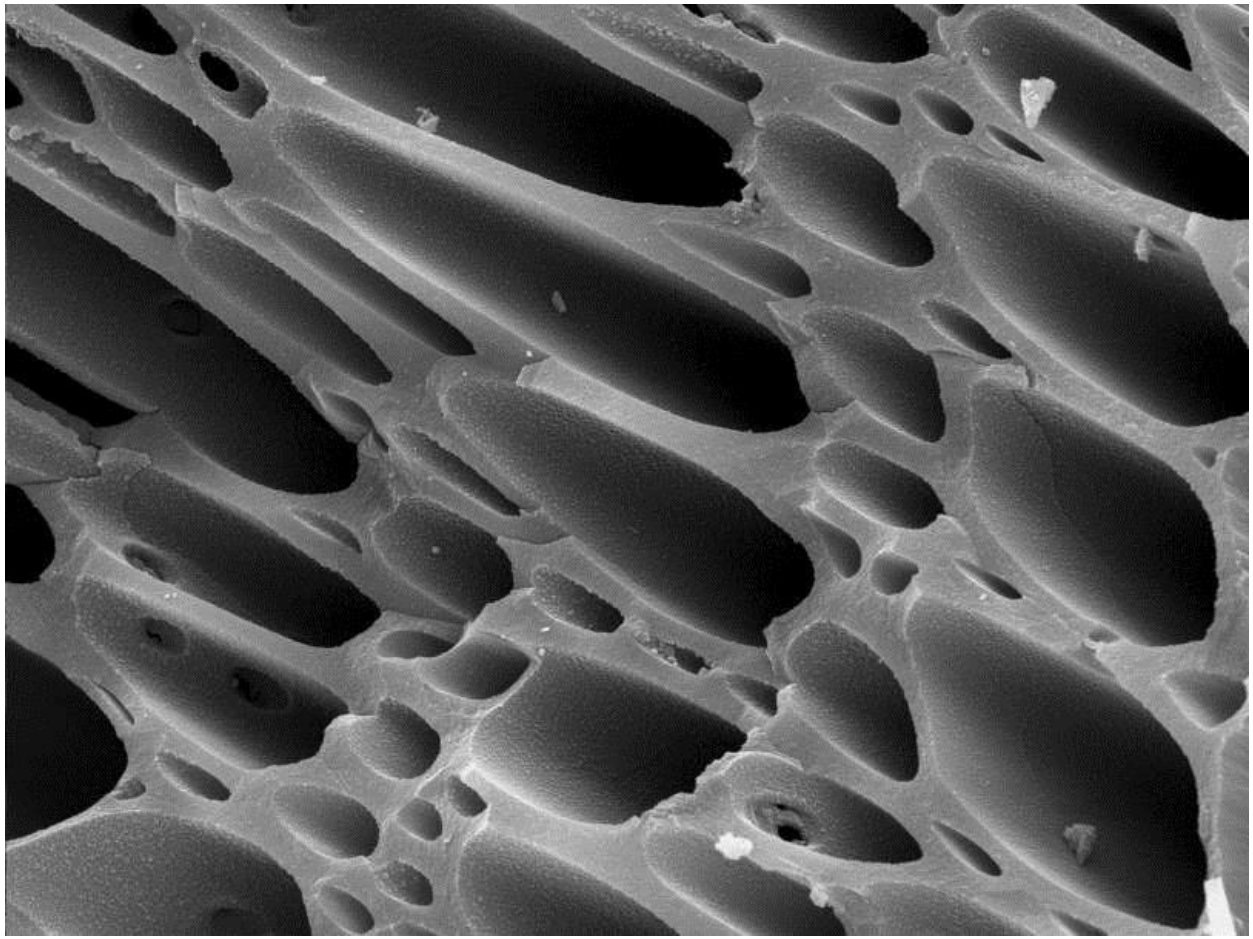
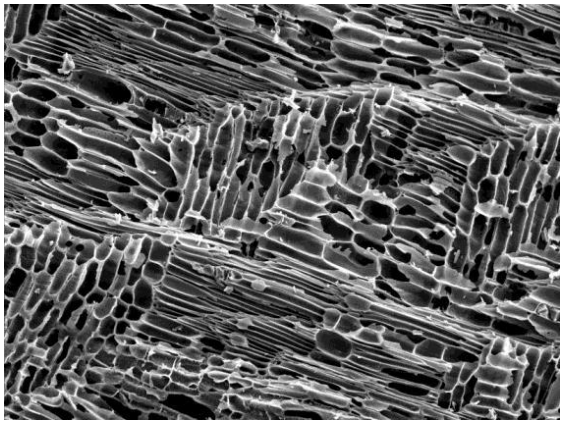
This photo shows the image of the biochar produced from gasification as seen from electron microscope. Notice the highly porous materials which makes the char become a highly adsorbing material for cleaning water, air as well as serve as a micro habitat for beneficial soil microorganisms.





http://www.geos.ed.ac.uk/facilities/sem/Biochar.html Slides: Neil Lumanlan, PEF 22April 2014

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This metal char making stove was designed to be built quickly in response to emergency. It was meant to produce char after cooking.

This photo shows one of the participants roasting the sea shells as it is being prepared for fermentation with vinegar. The concoction will produce a rich calcium carbonate fertilizer that will improve the plant's ability to produce seeds, fruits and stronger cell wall.

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The metal stove however will degenerate quickly due to intense use. In anticipation of this, he built an equivalent model using clay.

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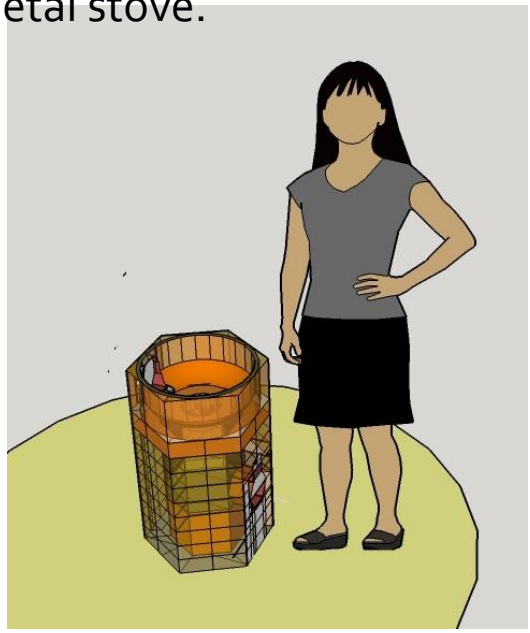
The Terra Cotta Stove Carbonizer that was earlier designed and built by the author was then replicated by the trainees. It is expected to last for several years while providing safety against accidental burns in otherwise handling the metal stove.



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Part of the lessons is about how to produce a low mass clay using a mixture of saw dust and ash water.

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Another important lesson is about how to make the mould for each piece of the lego stove.

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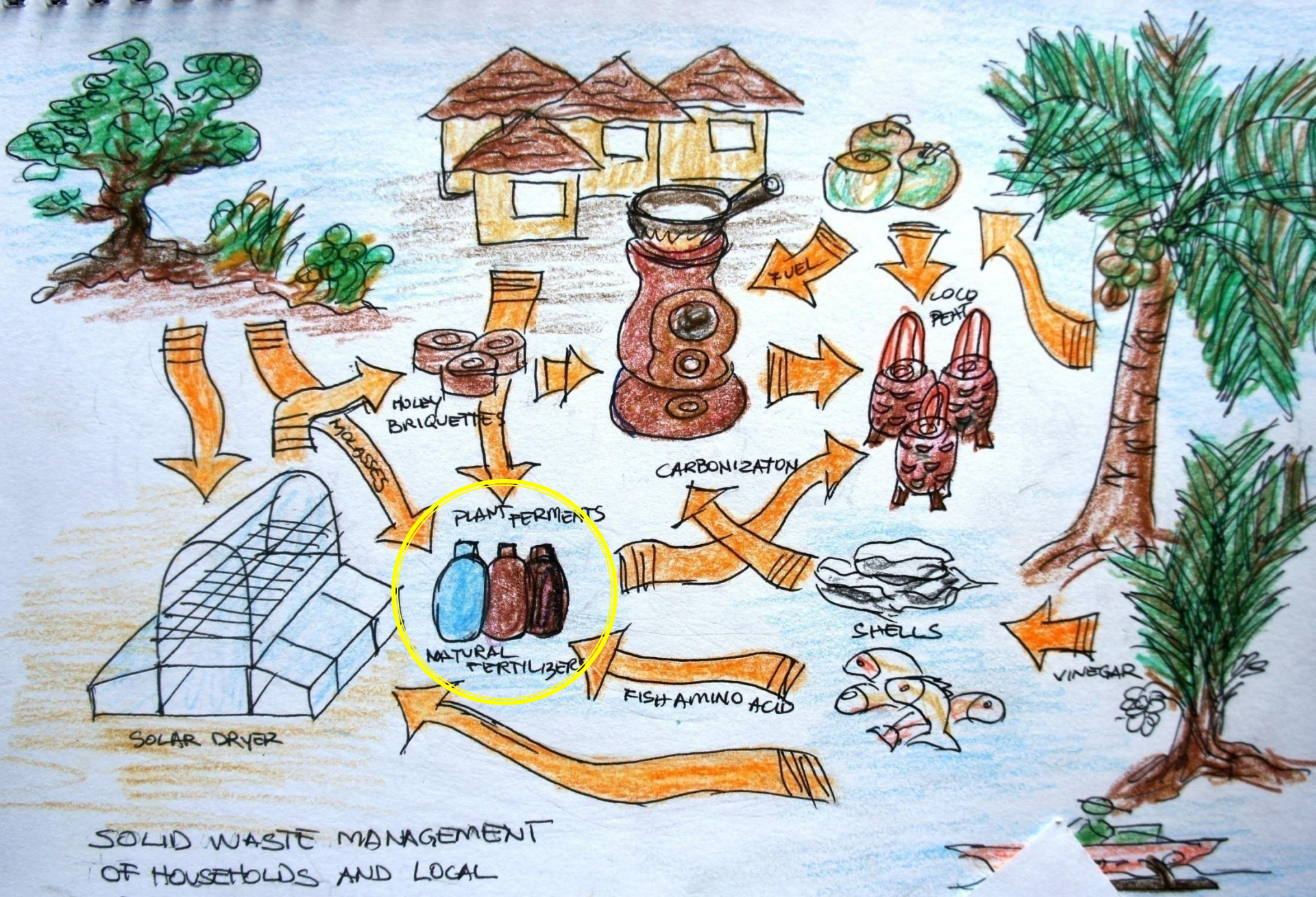
A replica of the drum carbonizer earlier built by the author was also constructed. It was meant for carbonizing rice husks. It will later serve as a provisional kiln for baking the lego bricks.



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The Holey Briquettes turned Into Seedling Briquettes

From holey briquettes that was intended for cooking, it was later transformed to become a medium for growing seedlings.

Photo by Rok Oblak

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Seedling Briquettes using waste biomass materials instead of black potting bags. This is part of the community's campaign to raise seedlings to help recover their forests and mangroves areas that were severely devastated by Typhoon Haiyan. The activity was greatly inspired by the work of Community Forests International at Pemba Island in Tanzania.

Photo source: Brennan Daily

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