

Treating Wastewater Produced from Household-scale Manufacturing Activities

by

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Households engaged in small-scale manufacturing activities produce wastewater ... **Wastewater is a resource** that can be collected, treated using natural processes, stored, and used for food production and horticulture.

Components of a simplified wastewater treatment plant:

- Biogas digester
- Settler
- Filters
 - Up-flow gravel filter
 - Planted gravel filter
 - Sand filter
- Polishing pond (lotus/fish pond)



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A simplified wastewater treatment plant composed of biogas digester, anaerobic filter, gravel filter, planted gravel filter and lotus pond is designed for low-income households with limited space.



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Simplified wastewater treatment technology for households provides the economic benefits of biogas generation, soil improvement, environmental protection, and new livelihoods from biodegradable solid wastes and wastewater management.

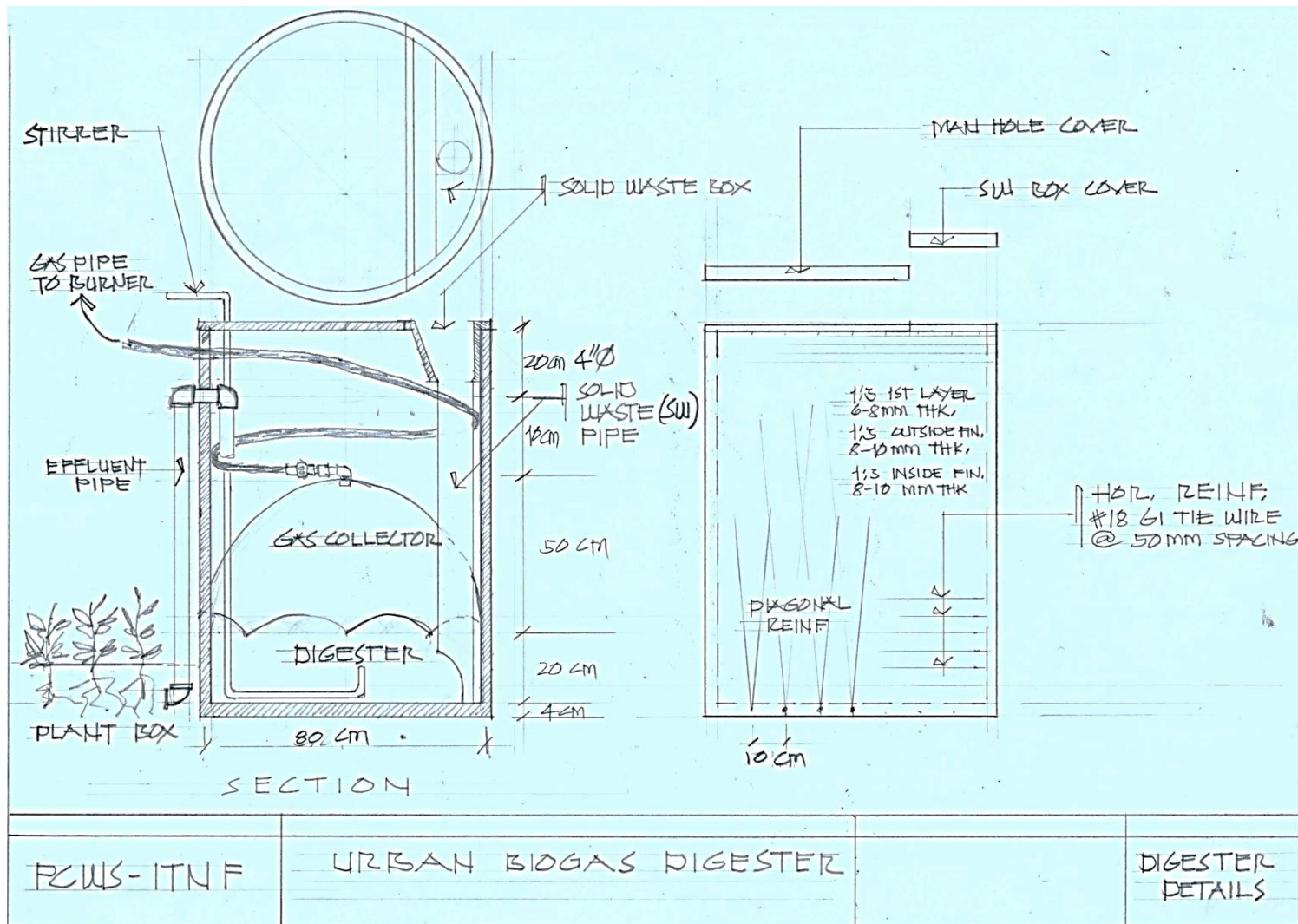


A small biogas digester could take in wastewater and biodegradable solid wastes then convert them through anaerobic process into methane gas for cooking.



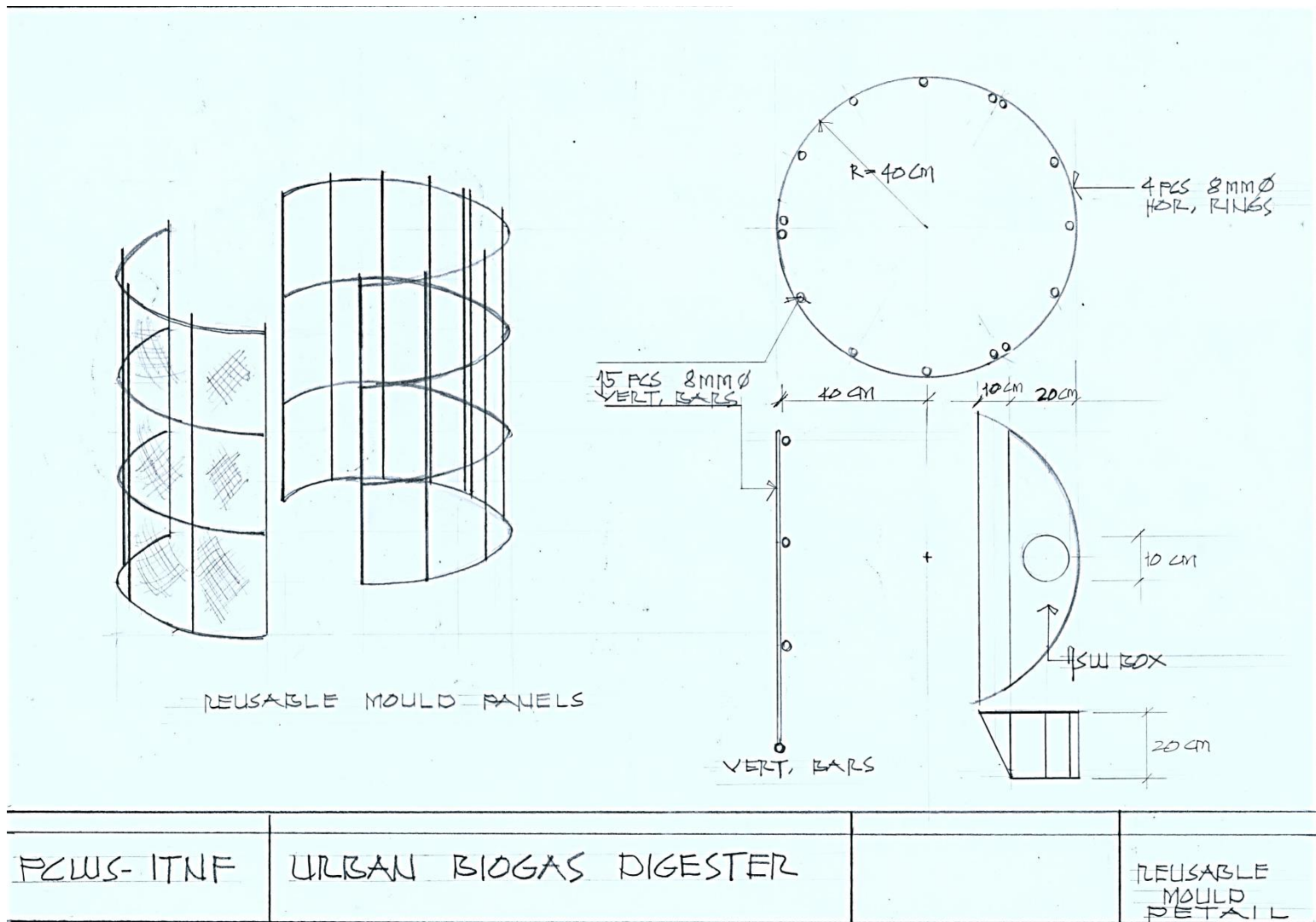
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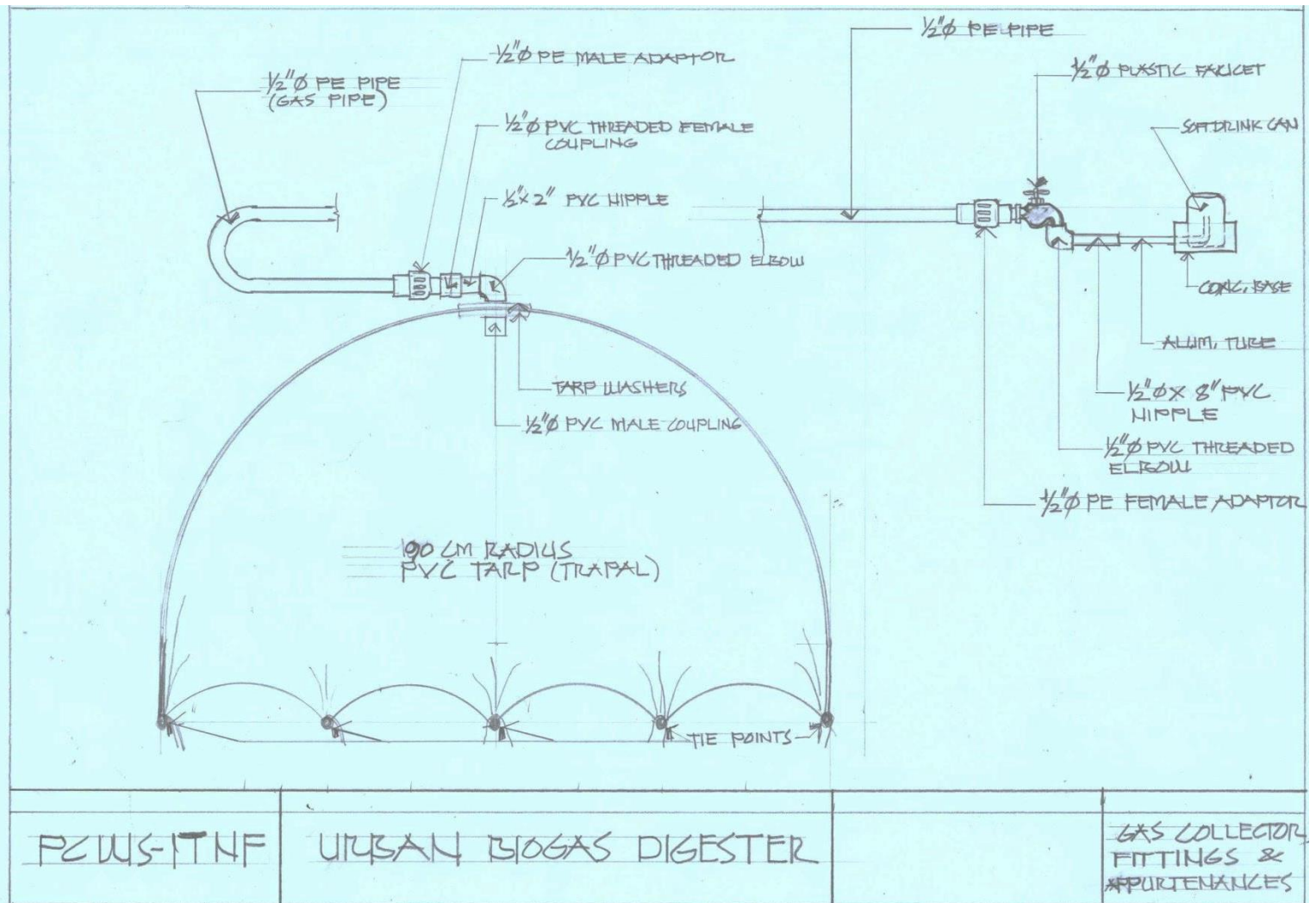
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Cost of Ferro-cement Biogas Digester Construction

A. Materials

- Mold Fabrication:	PhP 1,160.00
- Digester:	PhP 870.00
- Pipes, Fittings, Appurtenances:	PhP 708.00
- Burner:	PhP 119.00

B. Labor

- Mold:	PhP 1,150.00
- Digester:	PhP 1,875.00



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Ferro-cement technology

- Construction technology that uses closely-spaced mortar and small diameter reinforcement such as wires and meshes
- Costs 65-85% less than conventional reinforced concrete
- Enables the use of reusable mould.
Reusable molds facilitate curved shapes = stronger structures



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Settler with Filter...



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Filters...

- Up Flow Gravel Filter
- Planted Gravel Filter



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Sand Filter integrated into the Lotus Pond...



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The process of treating wastewater can beautify shared living spaces and at the same time enables household members to grow vegetables and ornamental plants.



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A low-cost wastewater treatment facility for houses with limited resources can take various forms and designs based on available space and other resources, as well as whether the community is water logged or flood prone.



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- **Building the community's capacity to construct, operate, sustain, innovate and scale-up low-cost wastewater treatment systems can become a shared goal.**



... A household or community will be able to think about possible livelihood options contributing to poverty reduction.



It is hoped that this initiative could encourage other innovative community-based researches, ideas and analysis that would benefit especially those with limited resources.



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IMPLICATIONS and RECOMMENDATIONS

- Enforcement of Clean Water Act using this simplified low-cost wastewater treatment technology.
- Backyards and corridors can be converted into useful spaces for aesthetics, waste management, horticulture, food production and environmental protection efforts.
- Protect the land, especially wetlands, for good. Guard against profit-hungry companies looking to move in and destroy natural infrastructures such as precious wetlands.
- Sustainability of water and sanitation infrastructures -- such as a simple wastewater treatment facility -- would also need social infrastructures such as citizens that are aware and protective of the land, people powered efforts initiated by households and communities, etc. Even a small area of land can make a massive difference as it can link together protected forests, wetlands and other vital ecosystems that have survived.



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IMPLICATIONS and RECOMMENDATIONS

- Going green requires significant shifts in mind set, policy, and most importantly, significant financing.
- Take this initiative forward ... Support and finance efforts for more pilot testing and up-scaling of practical technologies useful to low-income households and communities with limited resources.



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This research initiative is part of PCWS-ITNF's interrelated activities of a bigger effort combining policy recommendation, awareness raising, capacity building, hygiene promotion, environmental protection, and strengthening partnerships to ensure access to potable water and improved sanitation in communities.

THANK YOU!



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