D-Lab: Biogas

Objectives:

• Learn about how biogas digesters work
• When and where they are appropriate
• Important design considerations
• We’re going to build a small scale demo one
Biodigesters

[Pictures of biogas digesters removed due to copyright restrictions.]
What is a biodigester?

- A biodigester transforms animal manure and vegetable waste into gas for cooking and fertilizer for the crops.
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Bacteria produce methane in anaerobic conditions

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• Biogas Composition
  – CH$_4$: 50–75%
  – CO$_2$: 25–50%
  – N$_2$: 0–10%
  – H$_2$, H$_2$S, and O$_2$: trace

• Energy
  – 20 MJ/m$^3$

Courtesy of [stefanottomanski](https://www.flickr.com/photos/stefanottomanski) on Flickr.
Biodigester Parts

- Main Valve
- Safety Valve
- Gas Line
- Gas Reservoir
- to stove
- Inlet
- Outlet
- Trench
- Water & Waste
- Biodigester Bag
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• Common sources of problems
  – Leaks
  – Temperature
  – pH
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Questions?