Using materials from course lectures, readings and independent research in combination with a profile that represents a partner community, your team of regional energy specialists will propose an appropriate energy system for your village.

Each of you will be assigned an area of specialization (biogas, biodiesel, photovoltaic, micro-hydroelectric, wind) to research. You will also be assigned to a village and will need to become familiar with the environment and resources of your village as well.

As a group you will develop a recommendation for an energy system for your village. It may use a single technology or it may be a hybrid system.

You should *PROPERLY* CITE ALL SOURCES and list *ALL* ASSUMPTIONS that you have made in designing your system. Also, please include any graphical data that you deem relevant from your homer analysis in the body of your report. In addition please attach HOMER's html report readout for your final system configuration(s) to your report as an appendix.

Upload your report and your .hmr files to the class website under Village Energy Assessment assignment.

**A HARD COPY of your team's report is due in class on October 26.**

**Resources:**

- Practical Action (the organization formerly known as the Intermediate Technology Development Group) has a number of useful technical briefs that can be found at: http://practicalaction.org/?id=technical_briefs_energy
- NASA's Surface Solar Energy Data Set provides monthly average solar radiation data for everywhere on earth at http://eosweb.larc.nasa.gov/sse/.
- The HOMER help file contains a table of monthly solar data for selected worldwide locations.
- The South African Renewable Energy Resource Database provides solar, wind, hydro, and biomass resource data at http://www.sabregen.co.za/. (Permission Required)
- Wind Atlases of the World has links to wind maps and profiles from... all over the world. Not all are created equal in terms of wealth of data. http://www.windatlas.dk/

- Other resources found online or in hard copy may be needed. It is recommended that you attach your list of references on your final report, and be cognizant of the reliability of the data that you find, especially online.

**Village:**

**Team Members:**

Biogas specialist.....
Micro-hydro specialist.....
Biodiesel specialist.....
Photovoltaic specialist……..
Wind specialist.....

**Fully describe your village's energy system:**

**Financial summary:**

Initial capital US$ _____
Cost of electricity: _____ US$/kWh

**Additional questions:**

- Were there any energy options that were clearly viable or not viable for your village? Explain.

- Use the sensitivity analysis and superimposition in HOMER to reconsider your system if the primary load doubled or tripled, and if the availability of one of the renewable resources your group chose (e.g. biogas, hydro, or solar energy) decreases between 1% and 20%. How does this change your system? Cost of electricity? Perform a second sensitivity analysis that your team thinks is critical to understanding your village's system's vulnerability or capacity. Justify this analysis.

- What would be your concerns about the implementation and sustainability of this system? [Note: The Smillie text may have some good lessons learned to think about here!]

List of all assumptions, data and references used (add additional space as needed):

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