Outline of a Research Agenda
Research Goals

- Advance state of the art during 2-3 years;
  - Researchable topics (theory, data); adequately contained
  - Reasonable cost

- Important Contributions
  - Theory
  - Policy
  - Human welfare

- Coherent package and vision
  - Minimal scatter
Overview

0. Context
   - What is “energy transitions?”
   - Micro patterns (rural surveys);
   - Macro patterns (macro data sets)

1. Assessment of benefits

2. Micro descriptions of transitions

3. Modeling activities
1. Review of Costs & Benefits

Focus on benefits (multiplier effects)?
- Health
- Time use
- Industrial productivity
- Etc.

→ task for 7 Nov: fill out list; reframe task.
2. Micro studies of “transition”

- Complement review of existing literature on benefits & costs
- Style of research:
  - rich descriptions of stylized facts
  - Focus on causal relationships. What causes selection of transition fuels, technologies and practices?
  - Common protocol
  - multiple case studies

→ task for 7 Nov: protocol & case studies
2. Micro studies (continued)

Organizing framework:

Commercial Activity
--agriculture;
--light industry;
--household
--remittances

Household income

Energy transitions
--new services;
--new fuels
--new end-use
   technologies

??
2. Micro Studies (Continued):
Case studies

- TVEs in China;
- Commercialization of agriculture (location? Crop? Process?)
- Introduction of energy market reforms (location?)
- Introduction of new energy services (location?, public/private?)
- Piggy back on existing case studies and surveys (which ones?)
  - Spice drying?
  - Improved cookstoves?

→ Task for 7 Nov: list of case studies
2. Micro studies (continued): Protocol

Each micro-study should consider...
- Source and magnitude of income change;
- Role of financing institutions and origins;
- Role of energy service suppliers;
- Impact on...
  - time budgets
  - productivity
    - Cost per unit of energy service (energy productivity)
    - Cost per unit of labor service (labor productivity)

→ Task for 7 Nov: Protocol elements
3. Modeling

Optimization/simulation modeling

Purpose: understand factors that affect technology and fuel choice
Purpose: extend use of available modeling tools

Achievable advances:

- 1. Better system for projecting impact of change in income on demand for types of energy services (outside MARKAL framework);
- 2. Illustrative Scenarios
  - Base case;
  - No grid;
  - Externality (inform with results from #1 and #2)
- 3. Which countries?
  - South Africa, India (?), China (?), Brazil (?), Bangladesh (?), etc. [ALGAS countries?]
3. Modeling (cont.)

- GE/growth models
  - Need empirical base on multiplier effects
  - Derive framework from “new growth theory?”
  - Attempt models in 2-3 years—after #1 and #2 proceed.
Summary of Tasks

- Critique: Major elements and structure

  - Within each task:
    - 1. Review of benefits
      - Which benefits and multiplier effects??
      - Reviews of costs? Which ones?
    - 2. Micro studies
      - Case studies: which ones?
      - Protocol: which questions/topics
    - 3. Models
      - Income-service relationships?
      - Scenarios?
      - Countries?