Rural Energy, Equity and Sustainable Development: a worm’s eye view of perspectives and policy gaps

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Energy Access & MDGs

- Most development literature recognizes that access to modern energy services is critical for equitable and sustainable development.

- Rio+20 Declaration commits to “facilitate support for access to these services by 1.4 billion [mostly rural?] people worldwide who are currently without them…”

- yet Energy Access is NOT one of the MDGs and…

- Rural Energy and inequity in energy access are not directly and specifically addressed in international/national development policies
Energy & MDGs

- 8 MDGs; 18 targets; 48 indicators
- Energy is thought to be covered under MDG7: Environmental Sustainability
- MGD7/Target 9: integrating sust. dev. into country policies
- 3 Indicators in MGD 7/Target 9:
  - energy use/output (kgOe/$1000 GDP)
  - % population using solid fuels
  - CO₂ emissions/capita
Important but Missing!*

- 42% National MGD Reports do not mention Energy!
- of 93 Reports mentioning, 74 only under MGD7
- 21% Reports give energy use data by fuel type/source
- data by gender, poverty, access, location very rare
- only 12% give disaggregated rural-urban energy data
- only 1 country (Albania) has an energy indicator to measure progress towards poverty reduction (MGD1)

*UNDP Review of National MGD Reports 2007
Slow recognition... no focus yet!*

- energy services are cross-cutting, impact all MDGs
- focus mostly on energy supply and infrastructure
- energy access for poverty reduction mostly ignored
- Rio+20 deals with Energy, but only in general terms
  - must address access, especially for poor
  - sustainable energy mix
  - promote modern energy services for all incl. electrification, cooking and heating (cooling?)

- UN Secy Gen initiative on Sustainable Energy: access, energy efficiency, renewable energies
Equitable Energy Access will not happen by itself

• ≈1.6 bn globally have no electricity (0.6 bn in India)
• ≈2.5 bn people rely on trad. cooking fuels
• ≈2m people/year (?) die due to indoor air pollution
• World Pop. expected >9 bn by 2050 (3 bn still Rural!)
• equity in energy access needs to be addressed specifically, directly and in a targeted manner
• “trickle-down” energy access will not work…
• …nor will market mechanisms (as in Rio+20)
India: Electricity Access in Rural areas

- 56% rural hh (24% villages!) have no electricity
- Rural Electrification targets are mostly about greater Electricity supply: but how much?
  - RGGVY target: ALL villages (above 100 pop.) by 2012 (now 2020)
  - ≈79 m. hh (additional); 23m. in Phase-1
  - @ 1 Unit/hh/day “lifeline” consumption, a purely ad hoc guesstimate
  - ≈14 GW add’l generation capacity
  - demand likely to be much higher (3x-5x) for hh consumption alone: some govt estimates ≈100 Units/hh/month
Problems in Rural Electrification

• inadequate supply
• competing demands from cities, industries: those with more power (.PERMISSION), get more power (APPROVE)
• poor infrastructure for distribution, will get further strained if consumption gets higher
• NO PROPER ESTIMATE OF RURAL DEMAND!
• institutional constraints
  ▶ loss-making SEBs
  ▶ low incentive for rural electrification
  ▶ viability issues
Other Issues in Rural Electrification

• decentralized distributed generation (DDG) much discussed: some SPV and Biomass Gasification models available, but truly viable and widely replicable models are few (so far!)

• grid power-like systems enabling diverse uses eg. home-based income generation are desirable

• domestic-lighting-only systems eg lanterns, appear limited in scope and likely to be temporary
Rural Industries: totally ignored, invisible

- ≈25 m. Rural Non-Farm Enterprises in India (est.)
- not covered in any government study or scheme!
- no estimate of demand!

CTD: +18% mech. effy.

CTD: +22% thermal effy.

CTD Jaggery-making Systems
Rural Non-Farm Enterprises

• India has 70% (mostly poor) rural pop.
• even with rapid urbanization, ≈50% in 2050
• declining agri jobs; jobless growth in industry
• RNFS crucial for rural employment/incomes, poverty eradication, bridging rural-urban divide, slowing urbanization (higher emissions)
• but Rural Industries pay highest energy costs!
• ...about Rs.12/Unit for Diesel Engines/Gen’s in absence/irregularity of electricity
Some Examples of CTD Energy-efficient m/c’s for RI

- Oil Expression
- Horti Dehyration
- Potter’s Wheel
- LPG Pottery Kiln
Energy for Rural Industries

• National Rural Livelihoods Mission (-2017)
  ▪ 2.8 m Self-Help Groups (SHGs)
  ▪ 28m hh
  ▪ 1.6m Rural Micro-Enterprises targeted

• demand ≈25 bn. kWhr (back-of-envelope) assuming 50% thermal, others ≈5kVA load

• ≈9 GW add’l. generation capacity (min.)

• not v. significant compared to total but:
  • requires to be built in to Rural Energy plans
  • has significant impact on rural incomes, poverty
  • potentially transformative
Some Posers

- rural demand for modern energy services consistently mis-/under-estimated
  - low uptake expected, pent-up demand ignored

- tacit assumption that Rural Energy systems should be different from conventional systems
  - pressure on improved trad. devices
  - tendency to look for off-grid systems
  - no provision for commerce, industry or habitat

- fond expectation that Rural Areas will provide Energy Services (Bio-fuels, Energy Plantations) and Environmental Services (sinks, low-carbon energy use) to compensate for urban-industrial profligacy
Some other Propositions

• high rates of Urbanization taken as given
  ▪ few planned efforts to check/reverse trend
  ▪ will require investment in rural infrastructure incl. energy services with payback in sust. dev.
  ▪ per-capita emissions much higher in urban areas

• Rural Transformation and paradigm shift re rural energy need to be seriously addressed

• fair burden-sharing for GHG emissions control needs rural-urban equity within nations just as it requires equity between developed and developing nations
  ▪ some sectors of the economy, and some sections of society, need to reduce energy/emissions so that those of other sectors/sections can rise to fair share
for some examples of Rural Enterprises and appropriate technologies

please visit Stall #??

NGOs Activities Showcase
IIT-B, Convocation Hall
10 December 2012  4:45-6:15pm
Thank You!

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