

27.2.97.

To:

Dr. M.Khalid Shams.

From:

Prof: Amulya Reddy.

Dear Dr. Khalid Shams,

Thank you for a most interesting and enlightening visit to the Gramcen Group on 25/2/97. I particularly appreciate the time spared by Professor Yunus and you and your colleagues including Dr. Dipal Banua.

The visit motivated me to think more about "Energy Services as an Instrument of Poverty Alleviation". I have jotted down some ideas which may be of some interest to you. If you want to pursue them with me, please let me know. As I indicated to you, it is the mission of IEI to promote the different production and use of energy for sustainable development, and the discharge of that mission is my interest.

With best regards

Yours sincerely,

Amulya Reddy.

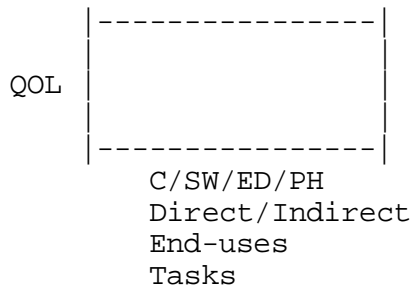
President, IEI,
25/5 Borebank Road,
Bangalore - 560 046.
Tel/Fax : +91-80-554 8426
Email: Amulya@iei.globemail.com

Regime I- QOL decoupled from income//
 Regime II - QOL coupled to income // Income coupled
 improvement of QOL
 depends on which
 sex income & what
 income is used for

Efficient improvements may actually lead
 Improvements of Energy Services through efficient
 improvements to lower operating costs of devices
 (eg kerosene lamps vs electric lights)
 Efficient devices may have higher capital costs
 but capital cost can be converted into op.costs
 through innovation financing.

5. Impact of energy(∂ QOL) depends on end uses of energy
 --- on tasks that energy
 ∂E performs

6. Direct/elastic impact of energy ----- Cooking (C)
 Lighting (L)
 Safe water (SW)
 Indirect/"inelastic" impact of energy-- Electric drives(ED)
 - Motors
 - Pumps
 - Compressors
 - Process Heat (PH)
 -Processing Industries



7. Sources Fuels -- Cooking -- Stoves
 Process--Boilers/Furnaces/ kilns
 Electricity --Lighting - Lamps
 Electric Drives -Motors-Pumps-Compressors

8. Rural Energy Systems) we must not look only at supply
 for Poverty Alleviation) we must look at whole cycle from
 (Rural Poor Energy source to Energy Source
 via Fuels/Electricity, end use
 device

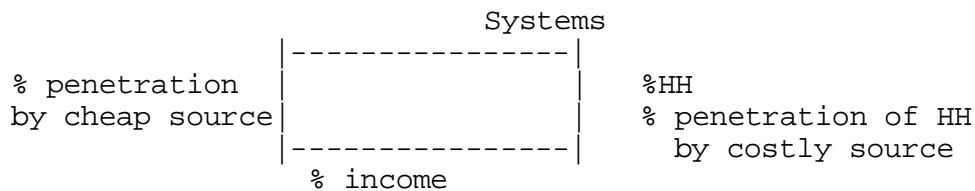
---- Energy Sources
 (Fuel Efficient
 & + End use Device
 Electricity)

----- Supply ----- Demand -----

9. Criteria for Choice of Energy Sources (Fuels & Electricity)
- Other things being equal, Decentralized /Locally available sources in order to strengthen self-reliance and to empower people/communities
 - Renewable sources in order to promote environmental resources
 - compatible with high efficiency and use devices
 - facilitate access by rural poor in - isolated homesteads- (low housing density)
- Home/HH systems

If Economic of scale > Distribution Costs-Micro Utilities
If Economic of scale < Distribution Costs- Home systems
Micro Utilities increase access by rural poor

Compact settlements -
(high housing density)
Micro utilities
Community- Scale



Are micro-utilities pre-empted by household systems that commandier capital, energy resources, enterprenuership?

10. Criteria for Choice of End-use Device (Stoves, Lamps, Thermal devices, Drives etc)
- Accessible to Rural Poor -- Low enough first cost?
operating cost
-- Same/lower operating cost than traditional device after finance to convert initial cost into operating cost.
 - environmentally sound
 - directly improves QOL
 - generates income which(if used constructively) improves QOL
 - other things being equal, benefits women
11. Elitist Energy Source -- that which is inaccessible to rural poor (i.e. is accessible only to rural elite)
- Elitist End-use device -- that which care only be afforded by rural elite (i.e., is beyond the means of rural poor)

Operating costs of traditional devices (eg. kerosene lamps)	Operating costs of improved devices (electric lights)	Maximum expenditure on energy (say 15%)
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----- window of
----- technological -----
----- opportunity -----

12. Elitist end-use (sources & devices)

- bypass the rural poor
- do not alleviate poverty
- make negligible contribution to energy system
- hardly mitigate negative environmental impacts

BUT

- they can offer a high-profit market for profit making enterprises.

13. Important questions

- Do elitist sourced devices-prompt possibility of dissemination of sources/devices for rural poor?
- Is there a level playing field for elitist sources/devices for rural poor?
- Hijack capital that would otherwise be used for poverty alleviation?
- Are banks biased towards elitist devices?
- Direct resources that would be used for the rural poor? This is what happens when household size biogas plants use up what could be used by community-scale plant

14. Cost-effective Technological Sources/Devices for various Tasks

TASK	PRESENT	NEAR TERM	MEDIUM TERM	LONG TERM
Cooking	Wood stoves	Improved Stoves	LPG/Biogas/ Electric?	Gas/NG stoves
Safe water	Surfaces/ water	Well Filtered water	?	?
Lighting	Kerosene Lamps	Electric Light	Fluorescent / Compact Fluorescent Lamps	?
Drives	Human/animal	Motors	Improved	

			motors	
Appliances	-	Electric Appliances	Electric Appliances	Electric Appliances
Process Heat	-	Electric furnaces	Induction furnaces	Biofricts, Solar
Transport	Human/Animal/bicycles	Petroleum NG fueled vehicles	Bio-mass vehicles	Fuel cells driven vehicles
Electricity	Grid	Bio-mass based generation	Bio-mass generation/ PV/ small hydel/ solar thermal	Fuel cells base wood power
Fuels	Wood	NG/LPG, Improved wood stoves	Biofuels	Ciofuels

15. Characteristics of Technologies

PRESENT	NEAR TERM	MEDIUM -LONG TERM
Environmentally unsound	Environmentally sounder	Environmentally sustainable
Inefficient flow productivity	More efficient	Efficient
Traditional - no longer optional	Greater access	Access
"Western" - not accessible to poor because expensive	More cost effective	Cost effective
Employment generation - little	Empowerment (self defence) of rural areas	Lead balance shifted to rural areas

16. Programme of Energy for Poverty Alleviation

BANK	ENERGY ENTERPRISE(S)
Loans for purchase of energy efficient devices to improve QOL directly via income generation (stoves, lamps, drives, boilers/furnaces/kilns etc)	*Marketing of energy efficient devices * Joint ventures build up decentralized renewable energy systems compatible with high efficiency devices accessible to rural poor
Leasing/financing of energy efficient devices so that unacceptable first cost becomes acceptable operating cost	* Establishment & Development of micro-utilities run by women * Commercialisation of decentralized renewable energy sources & energy efficient devices

Above items can be elaborated.

Amulya Reddy