

The Challenge of Energy and Poverty Reduction



Dominique Lallement & Douglas Barnes
Energy and Water-ESMAP

April 20, 2005



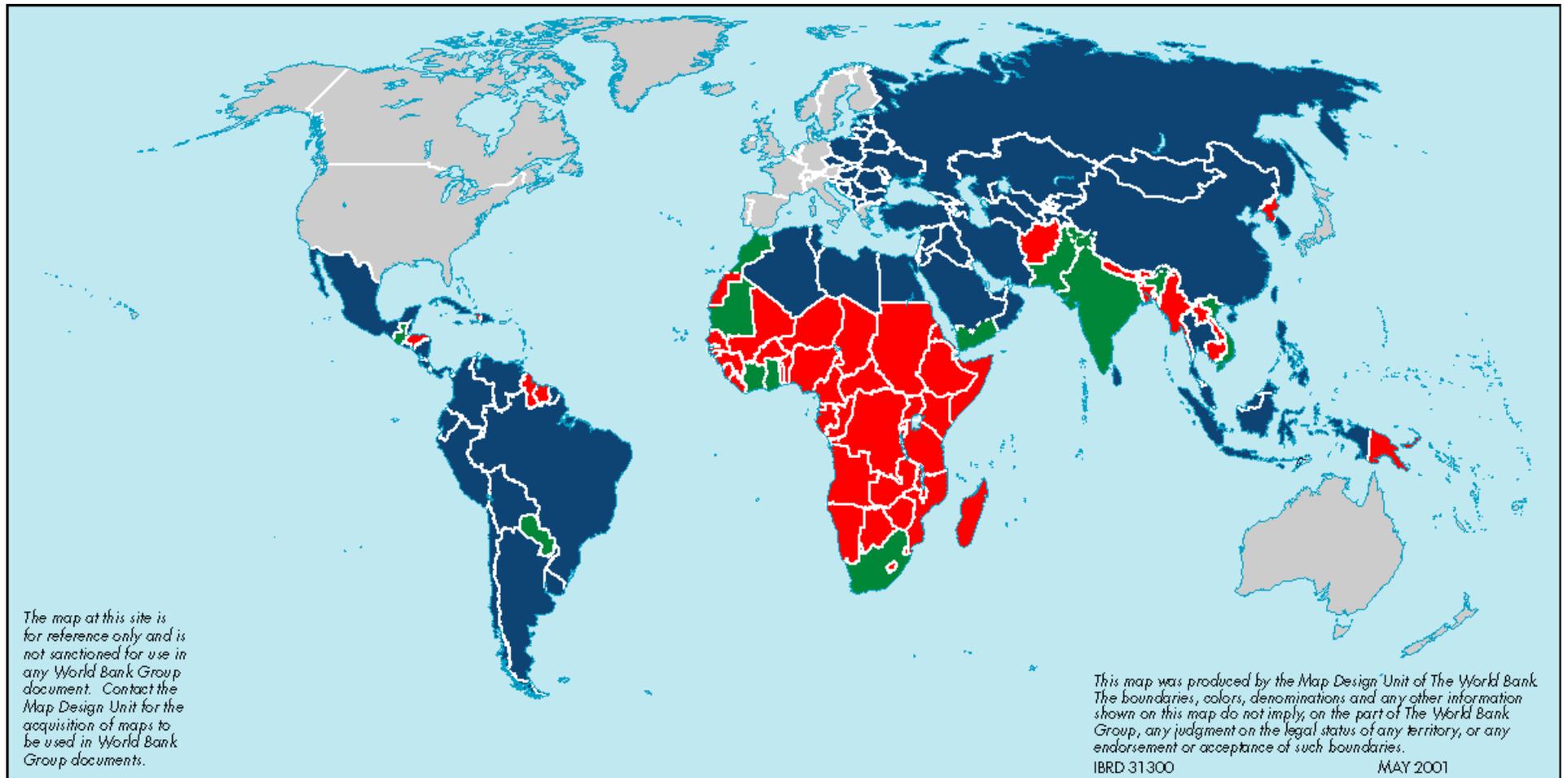
Presentation Outline

- The Challenge of Energy Vulnerability
- Energy and Poverty: Meeting the MDGs
- Measuring Impacts:
 - of Oil Prices on poorer countries and on the poor
 - of Energy Services on poverty reduction.

Presentation Outline

- **The Challenge of Energy Vulnerability**
- Energy and Poverty: Meeting the MDGs
- Measuring Impacts:
 - of Oil Prices on poorer countries and on the poor
 - of Energy Services on poverty reduction.

2-3 Billion people w/o modern energy, yet limited correlation between access to modern energy services and natural endowment of primary energy resources

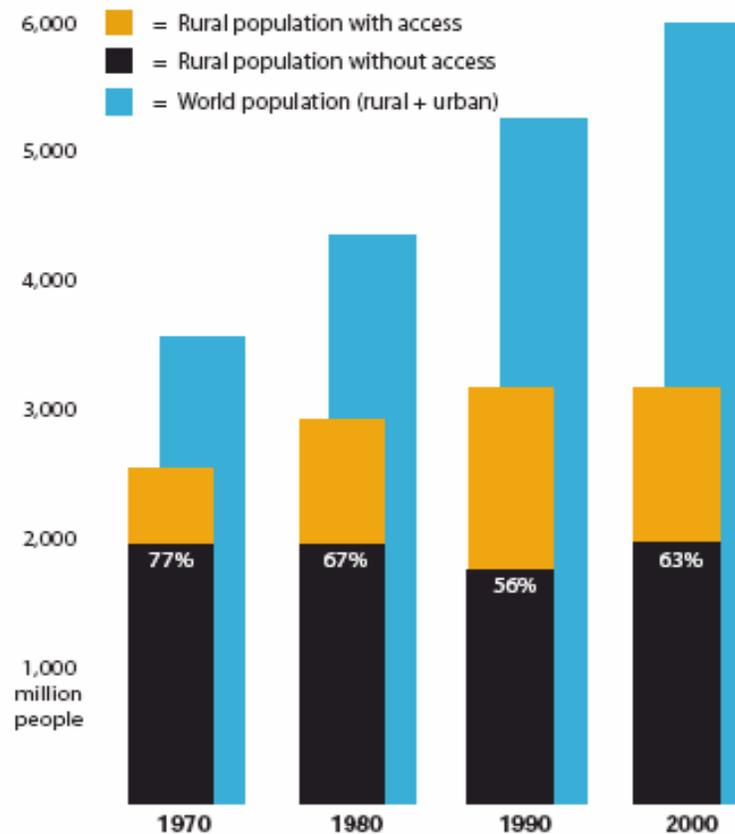


Red 3 - 33% Green 33 - 66% Blue >66%

Access to energy services: Progress?

In spite of significant increases in electrification of developing countries, over 50 percent of the world rural population still do not have access to electricity.

NUMBER OF PEOPLE IN RURAL AREAS WHO LACK ACCESS TO ELECTRICITY



Source: *World Energy Assessment*; 2000 figures derived from *World Urbanization Prospects, The 2001 Revision*



Half of the World Relies
on traditional biomass –fuelwood and
dung – for heating and cooking needs.

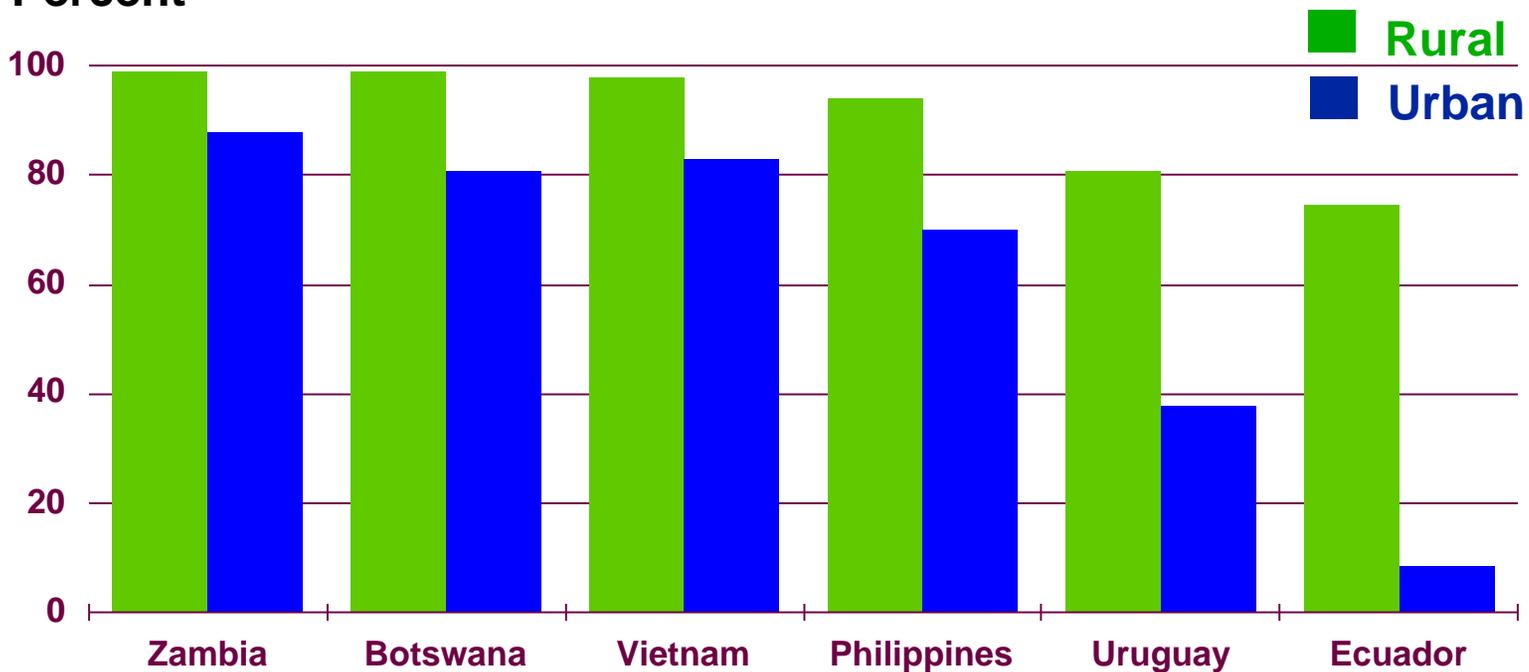
Women in some LDCs spend 1/3 of their
productive life transporting wood.

Indoor air Pollution kills more women
and children than malaria and
tuberculosis.

Biomass use is going to be prevalent for many years

Rural and urban biomass use in 6 countries

Percent



Biofuels problem: possible interventions

Problems are localized:

- Local deforestation, flooding, high labor costs for collecting fuelwood, indoor air pollution, high costs in urban areas (higher than commercial fuels)

Solutions:

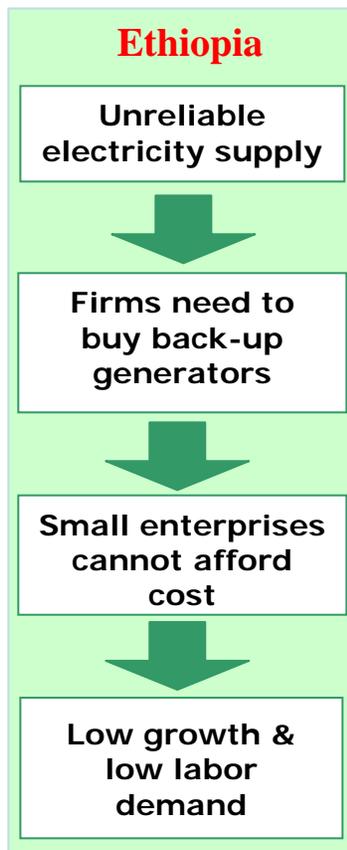
- Supply Side: Manage existing trees better through farmer agroforestry and farmer block planting, inter-fuel substitution (LPG)
- Demand Side: Efficient stove programs (also can vent indoor air pollution), efficient charcoal kilns. improved industry efficiency, switch to modern fuels

Presentation Outline

- The Challenge of Energy Vulnerability
- Energy and Poverty: Meeting the MDGs
- Measuring Impacts:
 - of Oil Prices on poorer countries and on the poor
 - of Energy Services on poverty reduction.

Energy is therefore key for Poverty Eradication: many dimensions

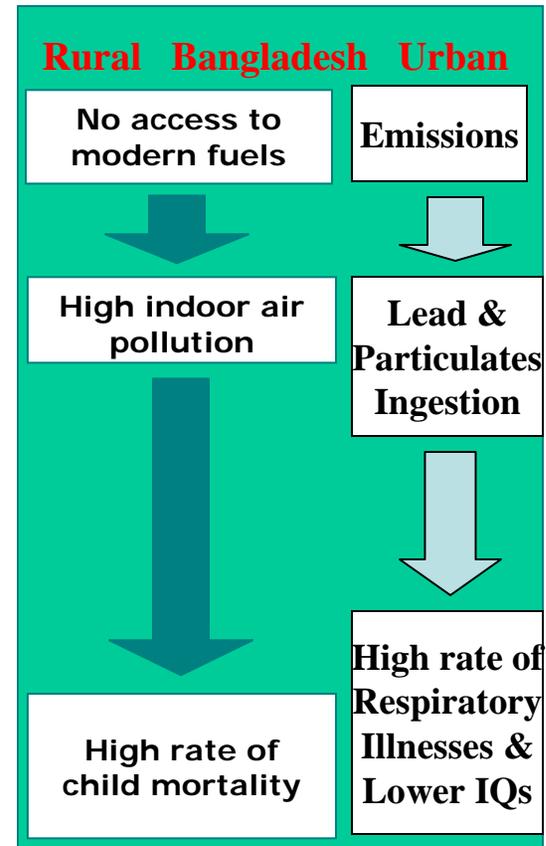
*Enterprise
Productivity/
Income Gen.*



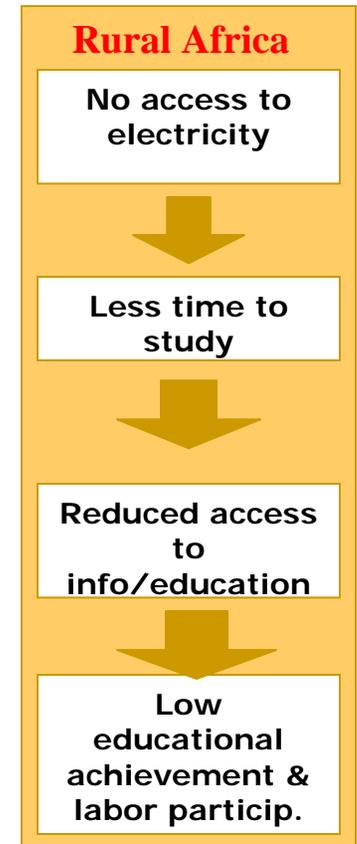
*Human
Productivity*



Health



Education



Energy and the MDGs

Energy

MDG 1: Eradicate extreme poverty and hunger

MDG 2: Achieve universal primary education

MDG 8: Develop global partnership

MDG 3: Promote gender equality and empower women

MDG 4: Reduce child mortality

MDG 5: Improve maternal health

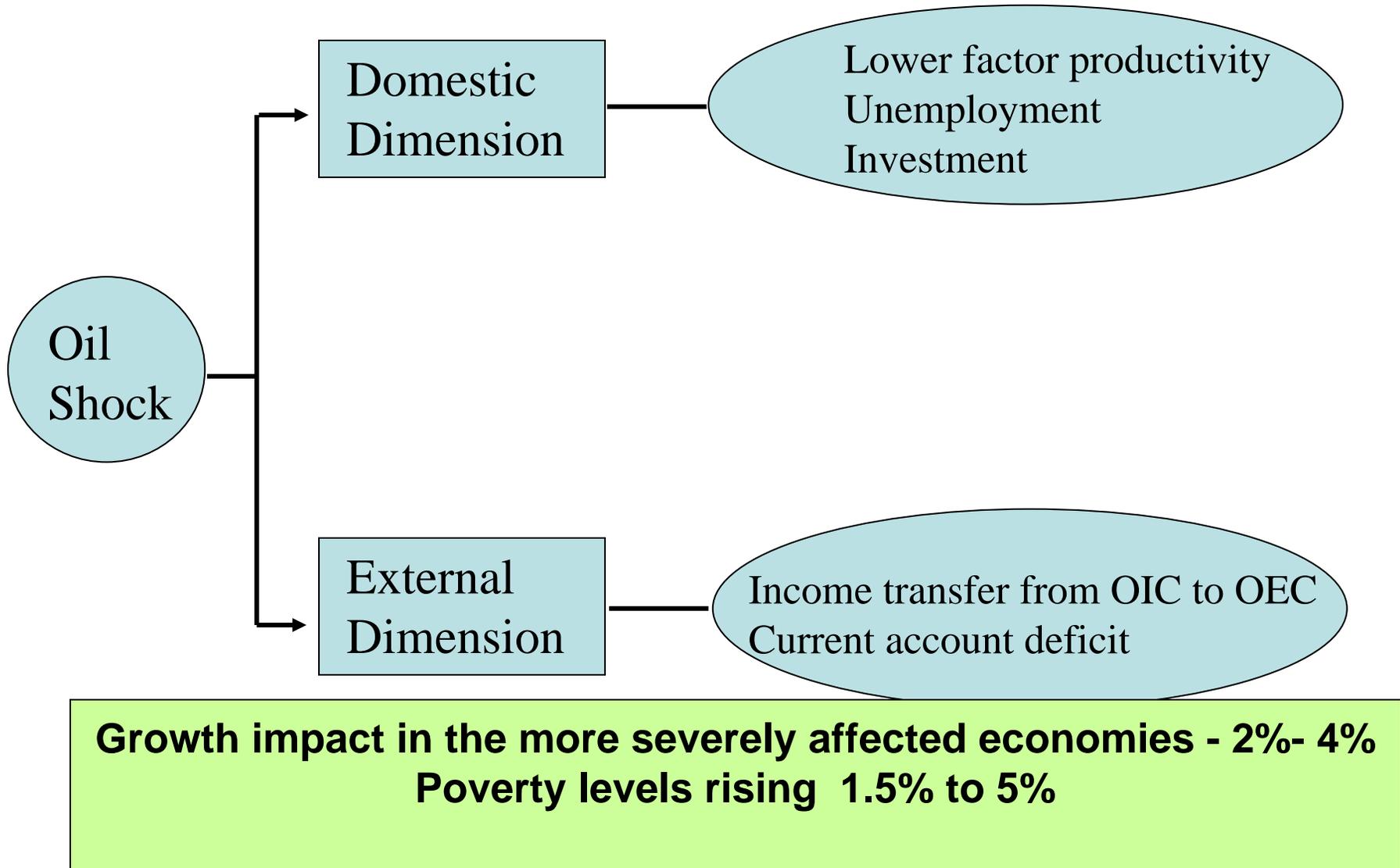
MDG 6: Combat HIV/AIDS, malaria and other diseases

MDG 7: Ensure environmental sustainability

Presentation Outline

- The Challenge of Energy Vulnerability
- Energy and Poverty: Meeting the MDGs
- Measuring Impacts:
 - of Oil Prices on poorer countries and on the poor
 - of Energy Services on poverty reduction.

General Framework



Impact on Financing Needs

Top 10 IBRD/Blend Countries - Financing Needs (end- 2004)

	Financing Needs US\$ million)	Financing Needs/RES (marginal)
Korea Republic of	8,316	
China	7,693	2.58%
India	5,386	7.52%
Thailand	2,823	7.26%
Turkey	2,255	7.95%
Brazil	2,104	5.56%
South Africa	1,697	21.71%
Ukrain	1,317	29.84%
Poland	1,147	3.85%
Pakistan	1,134	12.89%
Chile	836	5.45%
top 10 IBRD/Blend countries	34,708	6.42%

Top 10 IDA Countries Only

	Financing Needs US\$ million	Financing Needs/RES (marginal)
Sri Lanka	286	17.31%
Bangladesh	247	14.35%
Kenya	202	18.91%
Georgia	148	74.92%
Armenia	146	33.15%
Honduras	144	9.40%
Moldova	123	45.75%
Ghana	115	18.08%
Senegal	114	17.89%
Nicaragua	93	20.52%
Top 10 IDA only countries	1,618	18.80%

How do Oil Shocks Impact the Poor ?

- Balance of payments deterioration leads to deflation and loss of GDP
- Reduction in world growth leads to further GDP loss
- Domestic prices of hydrocarbons rise (if not subsidized) worsening cost of living and welfare.
- Avoidance of price increase (subsidy increase) leads to increased deficit/reduced public spending
- Disproportionate effect of GDP slowdown on poor
- Poor may be disproportionately hit by fuel price increases (country and fuel specific): some oil products are consumer goods (LPG, Kerosene); transport costs, slowdown in growth & employment.

Calculated Percentage Changes in Household Expenditure in Yemen following Average Fuel Cost Increase of 62%

	Kerosene	LPG	Direct Diesel	Indirect Diesel	Total
Decile 1	2.4	6.5	0.4	5.1	14.4
Decile 2	1.3	4.8	0.1	4.9	11.1
Decile 3	1.0	5.1	0.8	4.6	11.5
Decile 4	0.9	4.3	0.8	4.4	10.4
Decile 5	0.6	4.8	1.0	4.7	11.1
Decile 6	0.5	4.2	0.4	4.7	9.8
Decile 7	0.5	4.1	1.3	4.3	10.2
Decile 8	0.5	3.5	1.4	4.3	9.7
Decile 9	0.2	3.1	1.3	3.9	8.5
Decile 10	0.1	2.0	1.6	3.4	7.1

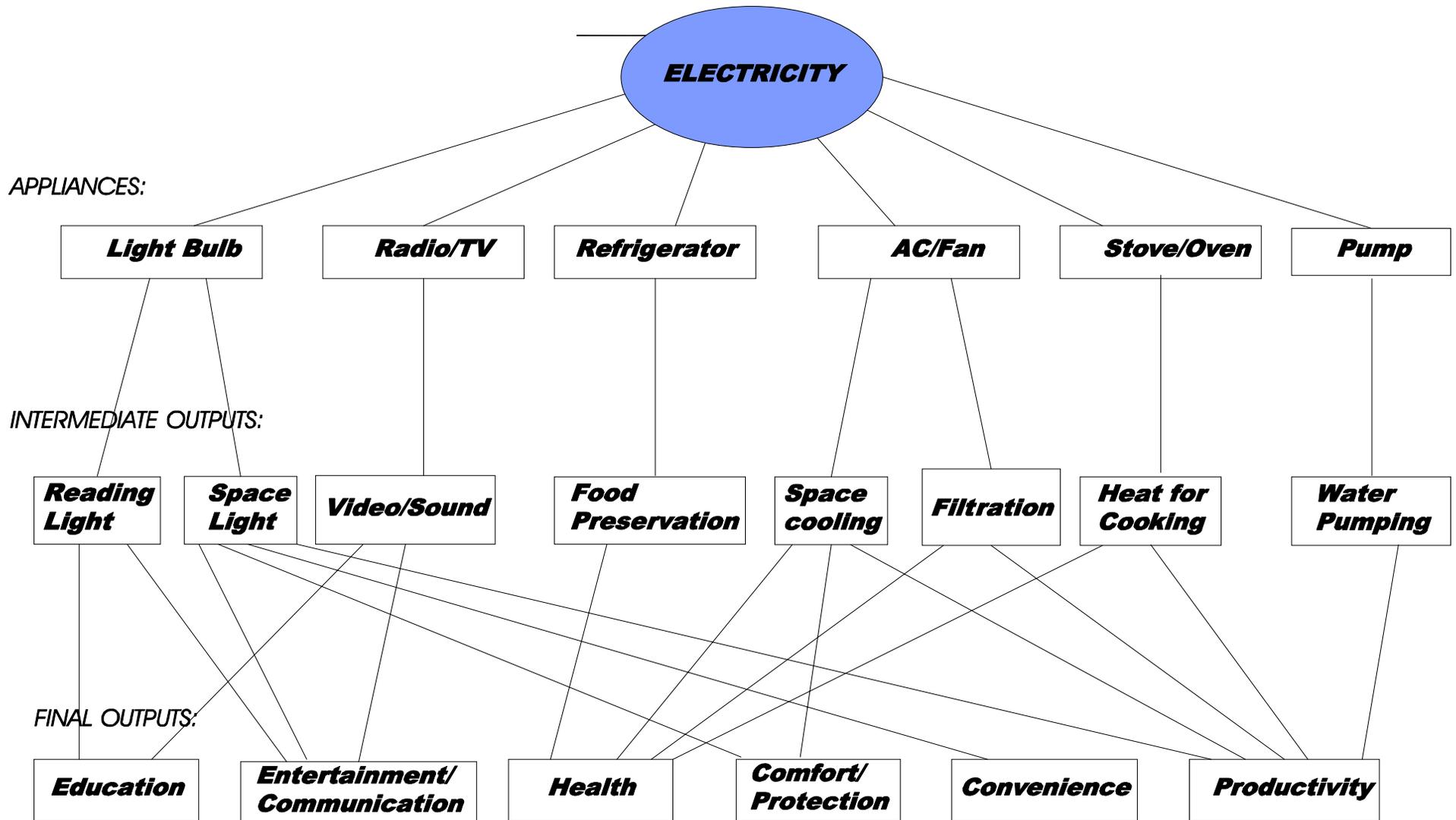
General Findings on Fuel Use by Income Groups

- Six country study (South Africa, Vietnam, Guatemala, Ghana, Nepal and India) confirmed that kerosene is most important for lowest income groups, and more so for rural
- Lowest quintiles show up to 4% of HE on kerosene – so 50% price rise is equivalent to 2% fall in real income from this commodity
- LPG varies between countries - in some countries it is a fuel for the better off (India, Nepal, Vietnam) – in others of poorer groups - Brazil

Presentation Outline

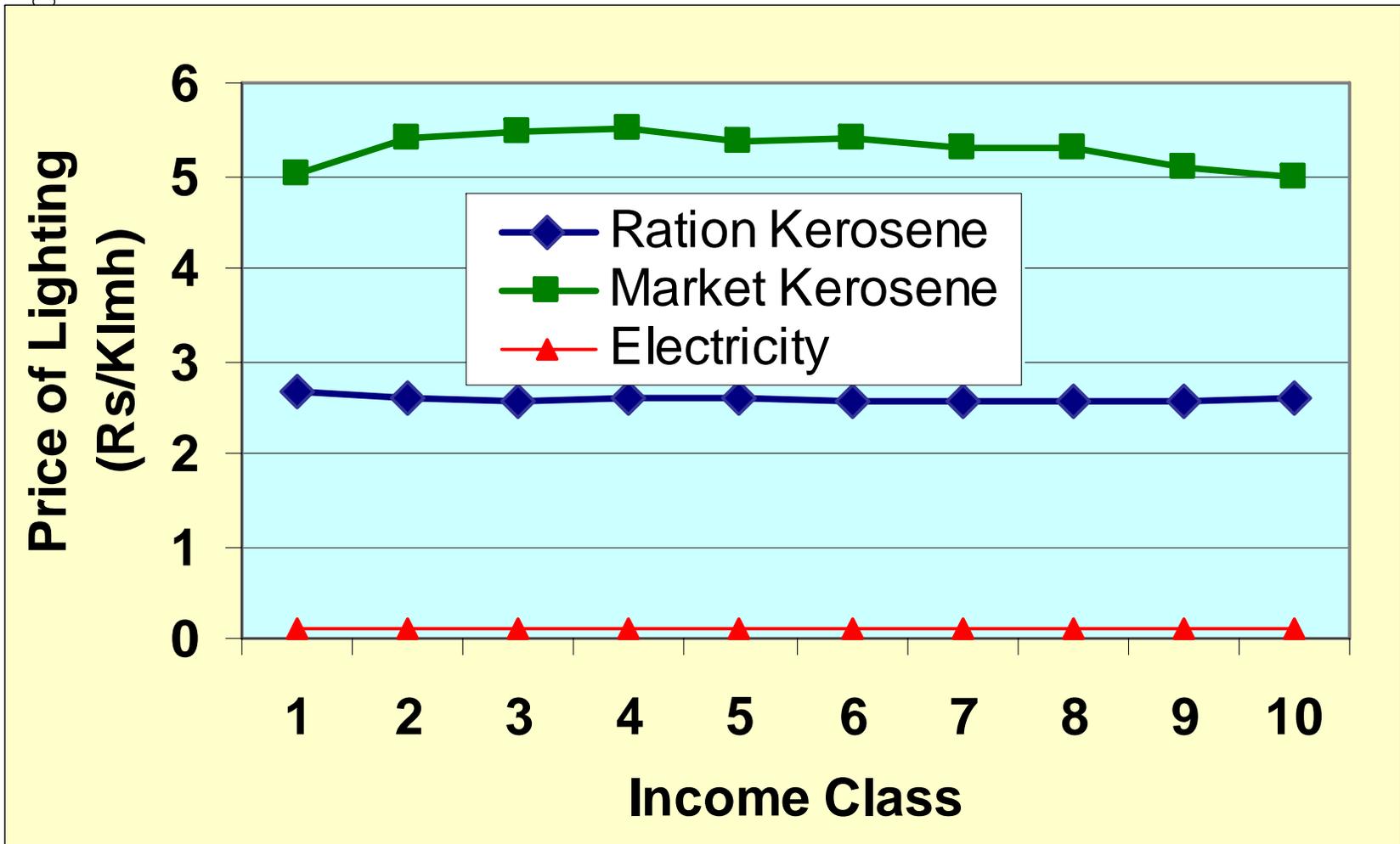
- The Challenge of Energy Vulnerability
- Energy and Poverty: Meeting the MDGs
- **Measuring Impacts:**
 - of Oil Prices on poorer countries and on the poor
 - **of Energy Services on poverty reduction.**

Possible Effects of Electricity for Development

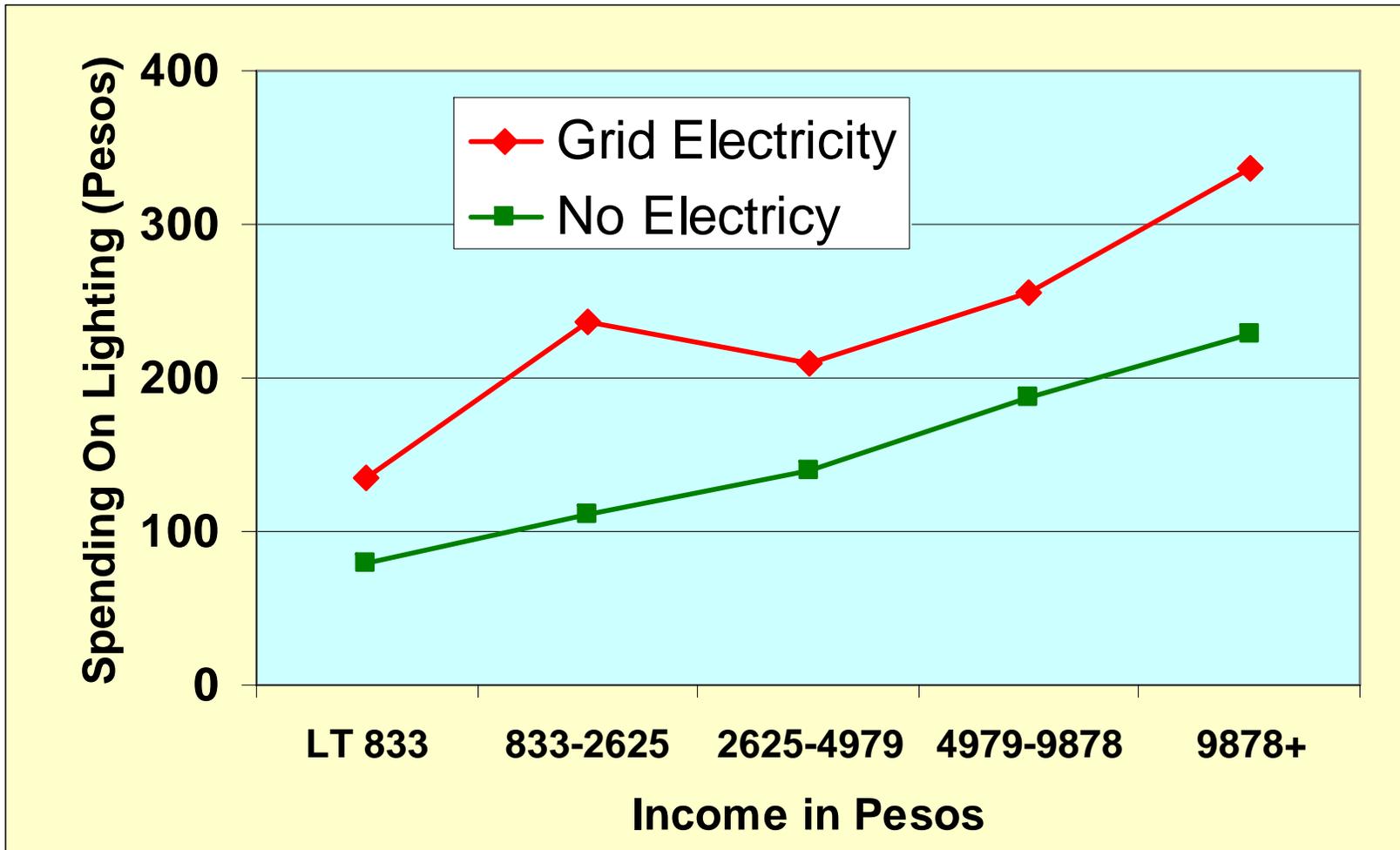




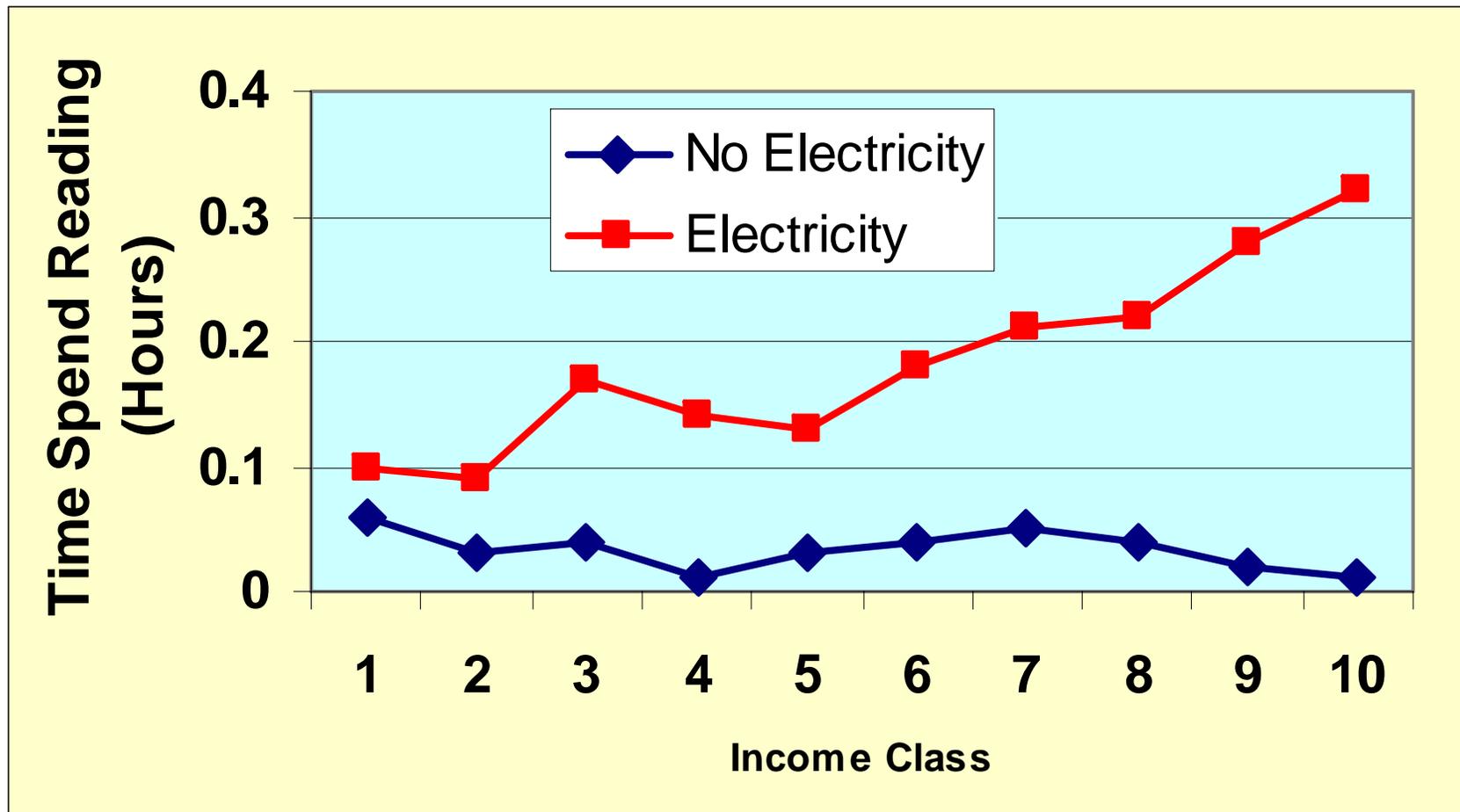
The Price of Lighting--India Kerosene and Electricity



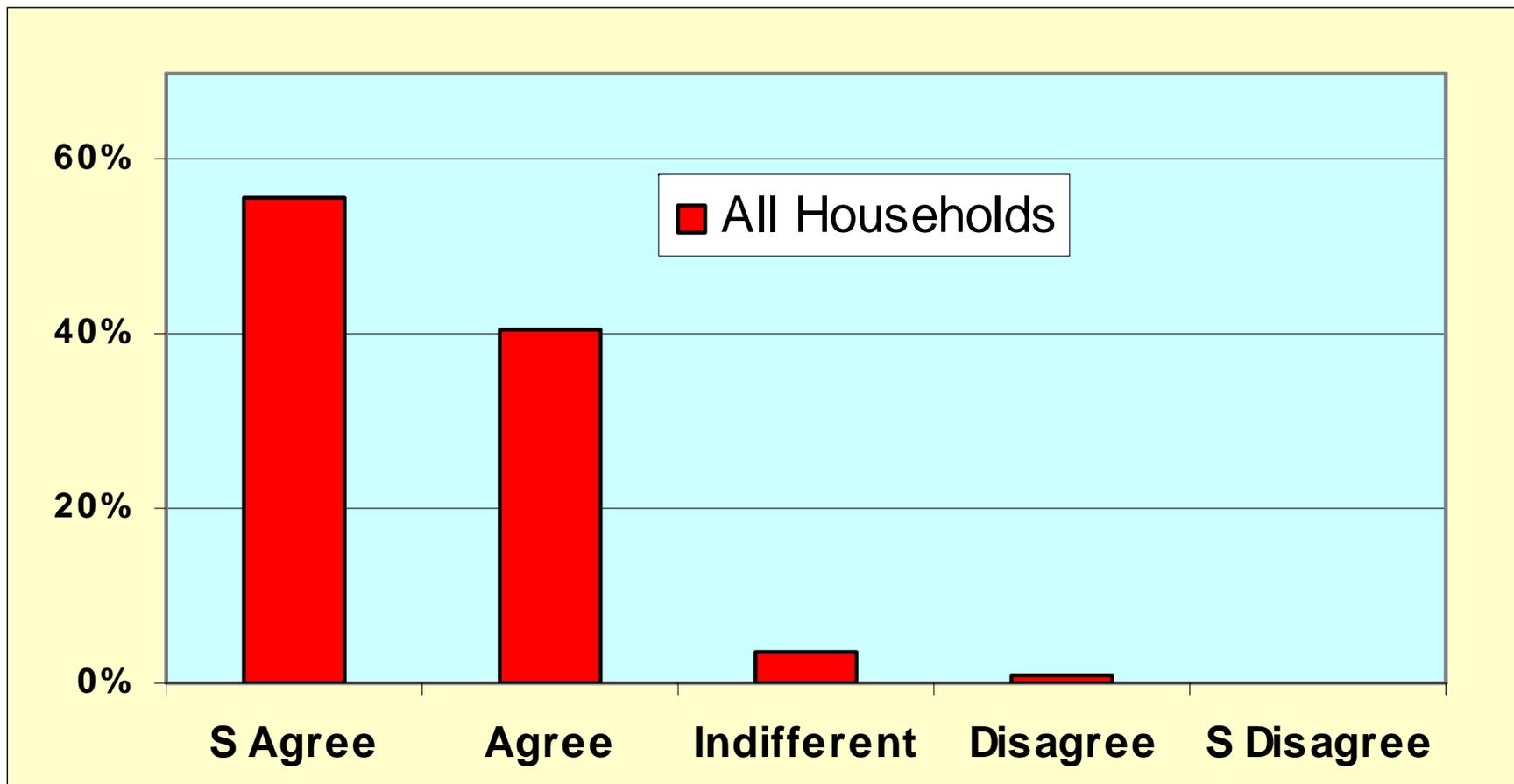
Impact Philippines: Spending on Lighting



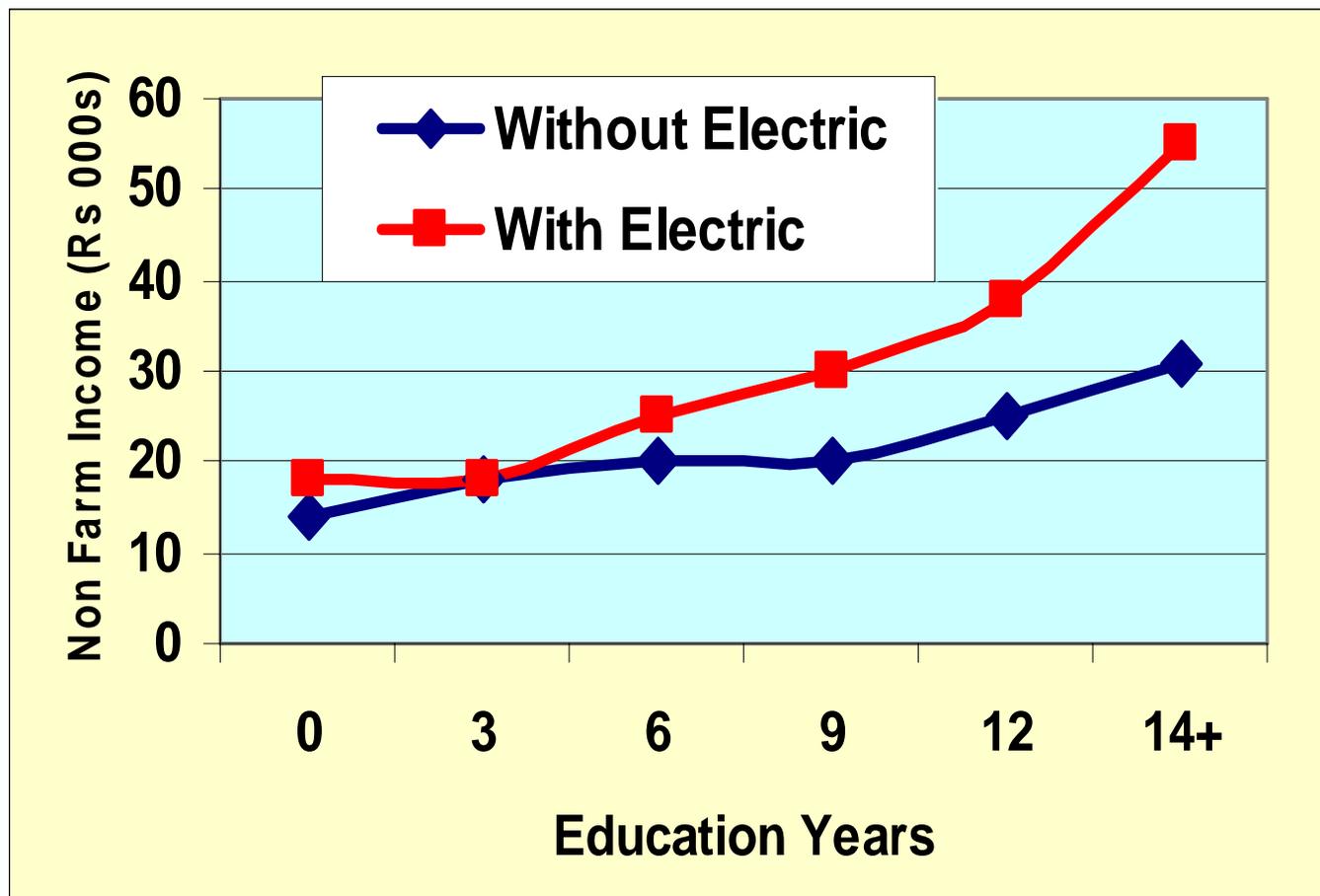
Rural India Women's Time Spent Reading Last 24 Hours



Vietnam: Having Electricity is Important for Children's Education

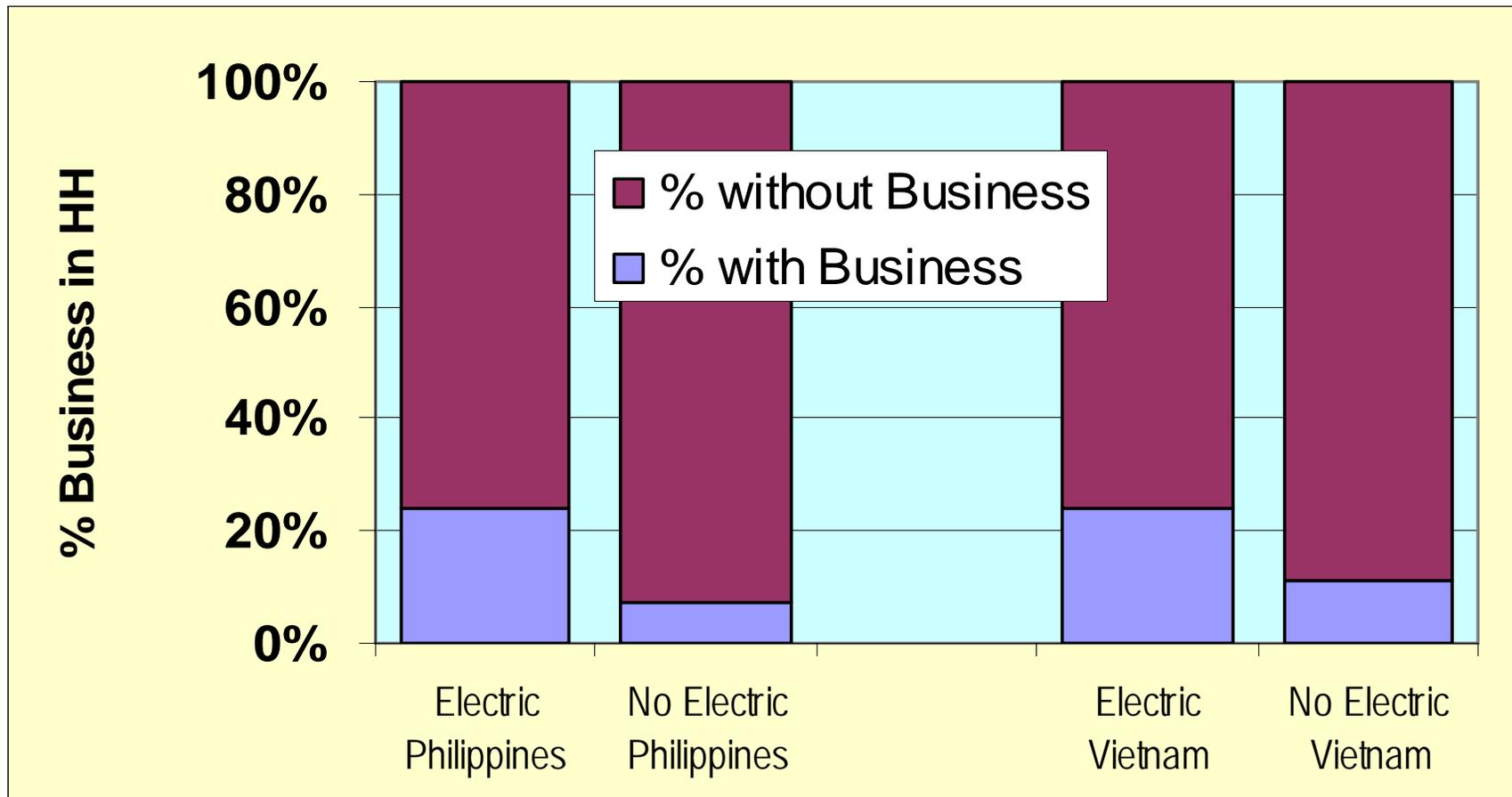


India—Non Farm Income Relationship with Education and Electricity



Households with Business Income

Rural Philippines & Vietnam



Conclusion

- Recognize that the benefits of “modern” energy are high, especially for poor
- But we need to measure them objectively
- Survey instruments and market assessments are available
- Poverty assessments welcome help, but will not pay for it
- LSMS can be a significant resource, and now will include an energy module

Thank You!

[www. Esmap.org](http://www.Esmap.org)