

Energy Indicators for Sustainable Development

Social Dimension

Presentation by Kathleen Abdalla

Workshop on Capacity Development for Mainstreaming
Sustainable Development Goals, Targets and Indicators
into Statistical Programmes in Selected Latin American
Countries

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Social Dimension



- Access to Energy
- Affordability
- Equity
- Safety
- Reliability

Access to Modern Energy Services

- 1.3 billion lack access to electricity– 18% of the world's population – 22% of developing countries' population
- 2.7 bn lack access to modern energy services for cooking and heating – 37.5% of the world's population
- Mostly in subSaharan Africa and Asia
- Mostly in rural areas

Access to Modern Energy Services

- Necessary for reducing poverty – income generation activities – mechanical power transport, telecommunication services
- Improving health – better nutrition and avoiding respiratory illnesses -- 4,3 mn premature deaths/year from indoor air pollution
- Essential for clean water, sanitation and health care
- Education for children – less likely to miss school
- Education for children – reliable and efficient lighting

Access to Modern Energy Services

- Situation in Latin America -- better than other developing country regions
- 23 mn without access to electricity –5% of population
- Many countries have electrification rates of over 99%
- Some have rates below 70%; only Haiti is below 50% at 28%
- Urban areas – 99% electrified
- Some say...
 - 18% of rural population lack access to electricity
 - 15% of rural population – rely on traditional biomass for cooking and heating

Indicators can influence...

- Policies at the national, provincial and local levels
- Investment in infrastructure
- Public Private partnerships
- Focus on environment

Need for Indicators

- Measurement brings attention to the issue/raises awareness among
 - policy makers
 - the public in general
 - experts in the field
 - investors
 - implementers

Social Dimension Indicators

Social				
Theme	Sub-theme	Energy indicator		Components
Equity	Accessibility	SOC1	Share of households (or population) without electricity or commercial energy, or heavily dependent on non-commercial energy	-Households (or population) without electricity or commercial energy, or heavily dependent on non-commercial energy -Total number of households or population
	Affordability	SOC2	Share of household income spent on fuel and electricity	-Household income spent on fuel and electricity - Household income (total and poorest 20% of population)
	Disparities	SOC3	Household energy use for each income group and corresponding fuel mix	-Energy use per household for each income group (quintiles) -Household income for each income group (quintiles) -Corresponding fuel mix for each income group (quintiles)
Health	Safety	SOC4	Accident fatalities per energy produced by fuel chain	-Annual fatalities by fuel chain -Annual energy produced

Social Dimension Indicators

- SOC1 – Accessibility – Share of households (or population) without electricity or commercial energy, or heavily dependent on non commercial energy
- Data needed
 - Households (or population) without electricity or heavily dependent on non-commercial energy
 - Total number of households or population

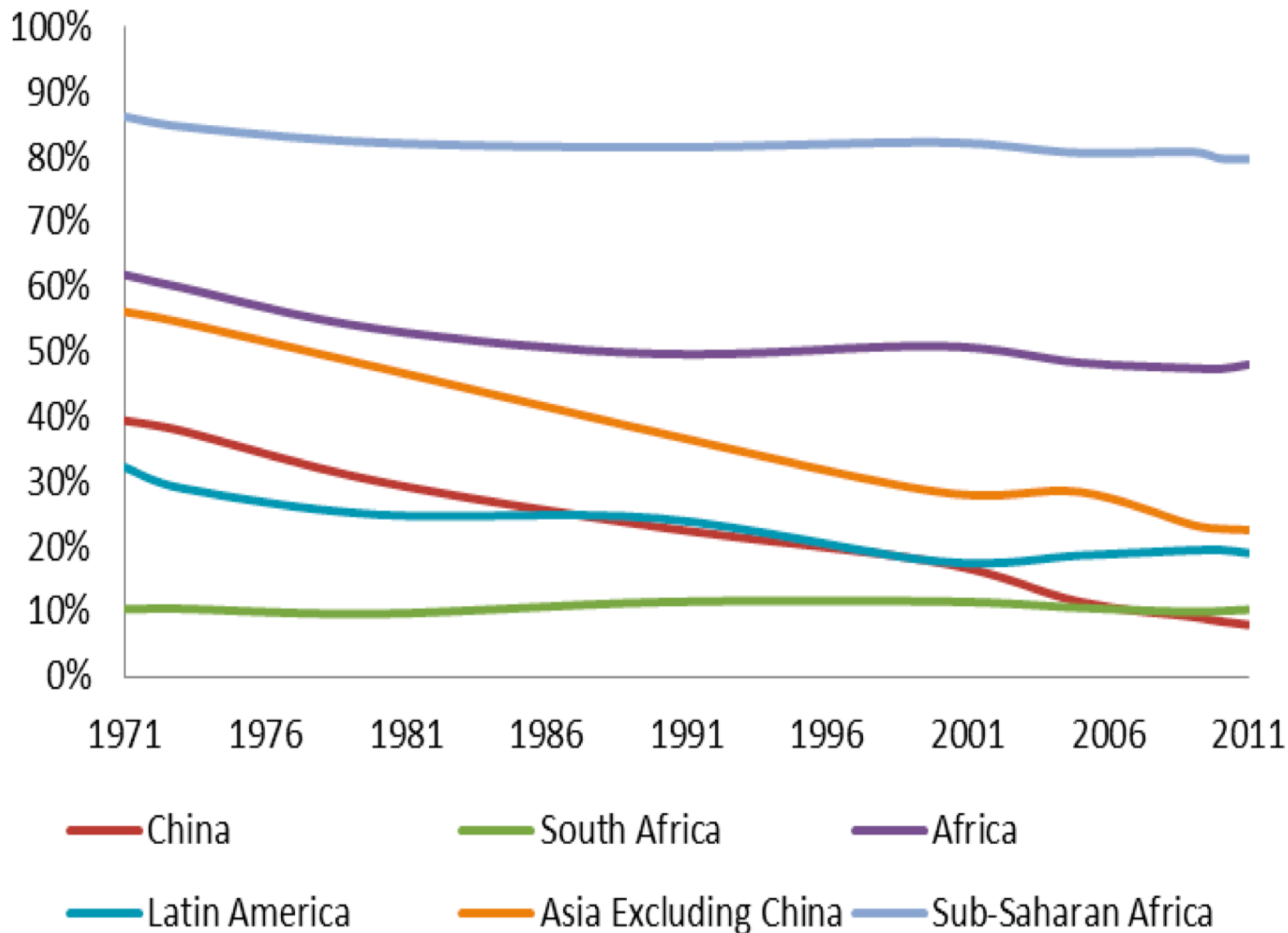
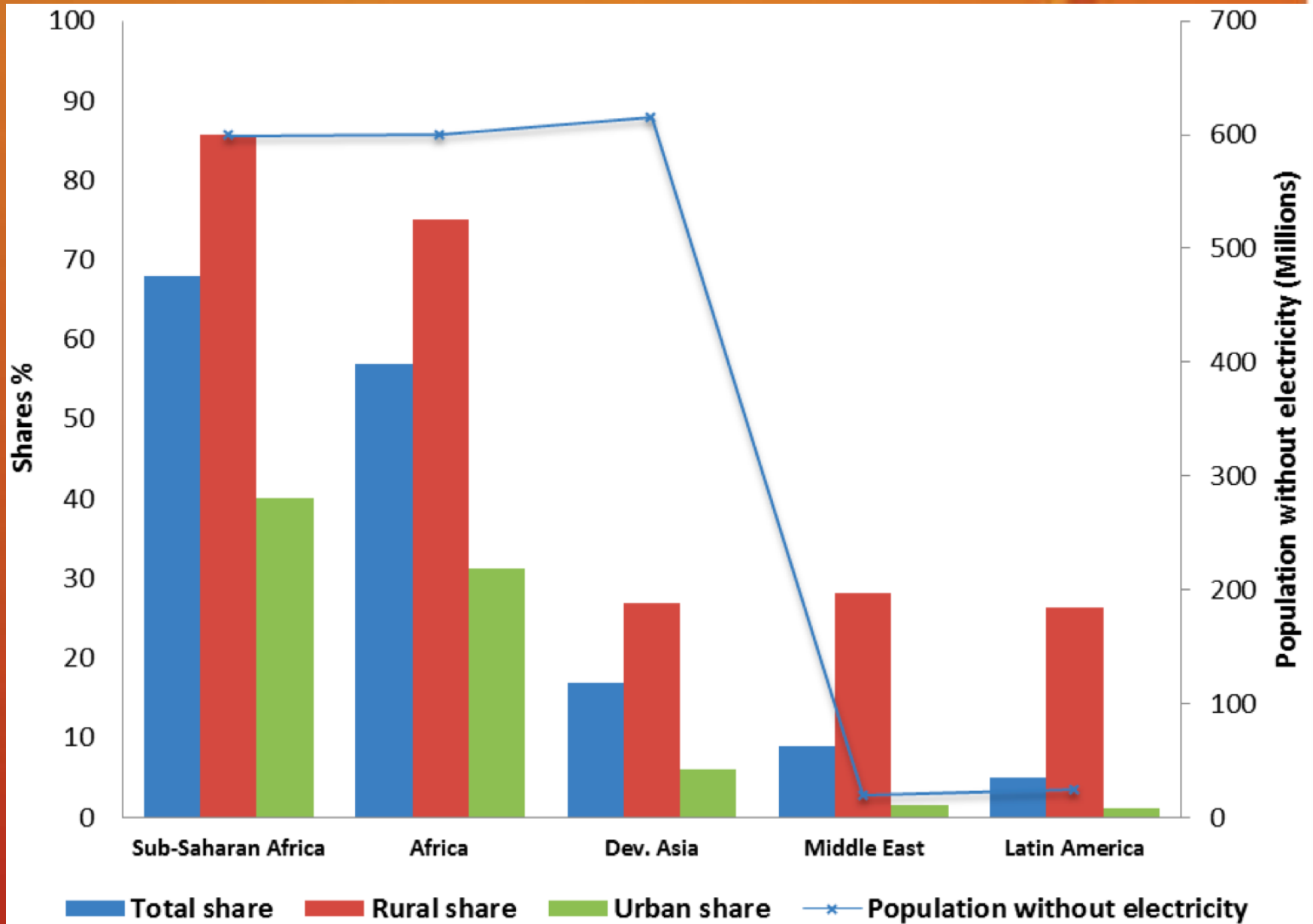
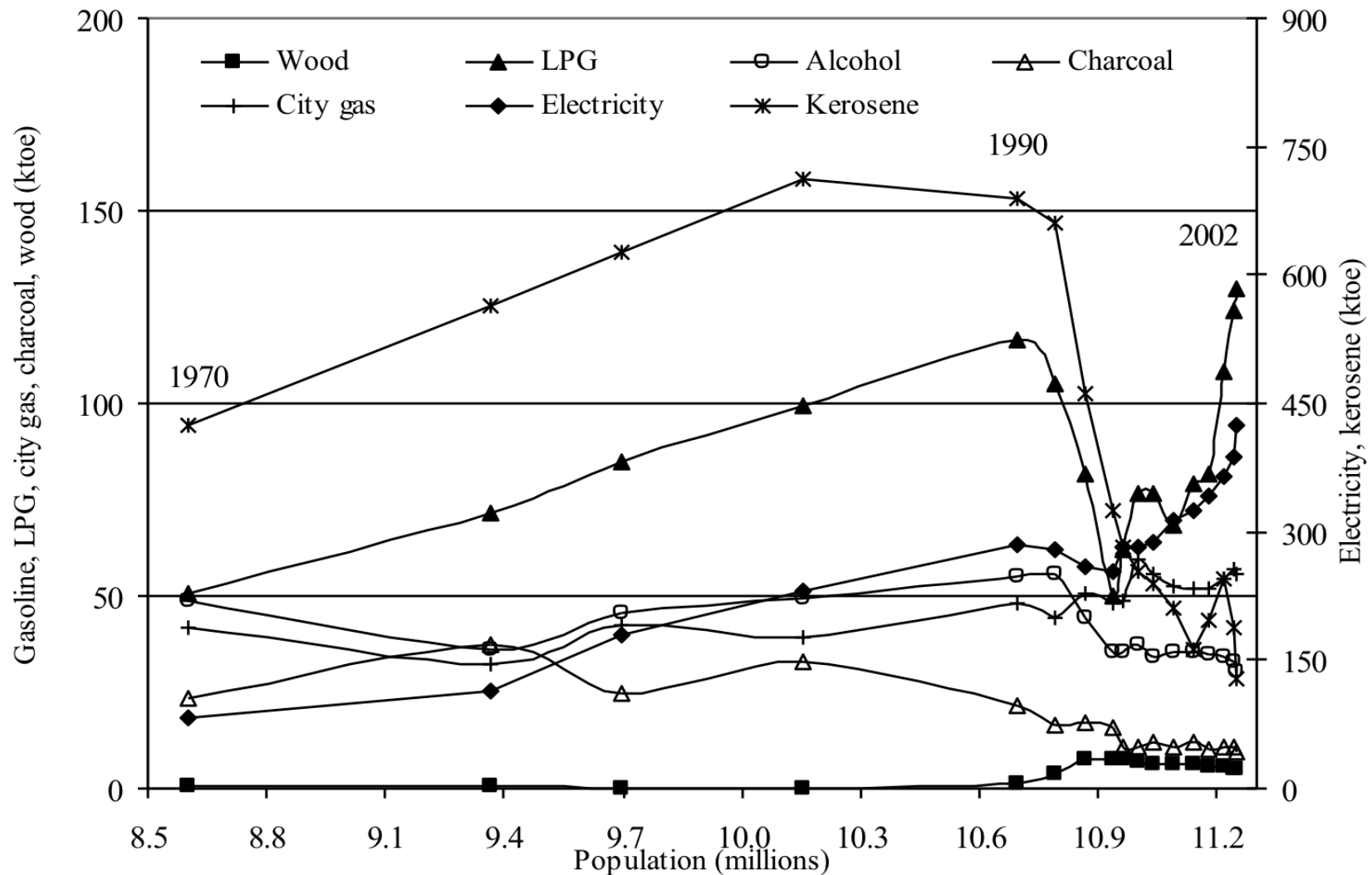


Figure 1: Share (%) of biomass in total primary energy supply (TPES) (IEA, 2013a)



Energy Use in household sector Cuba



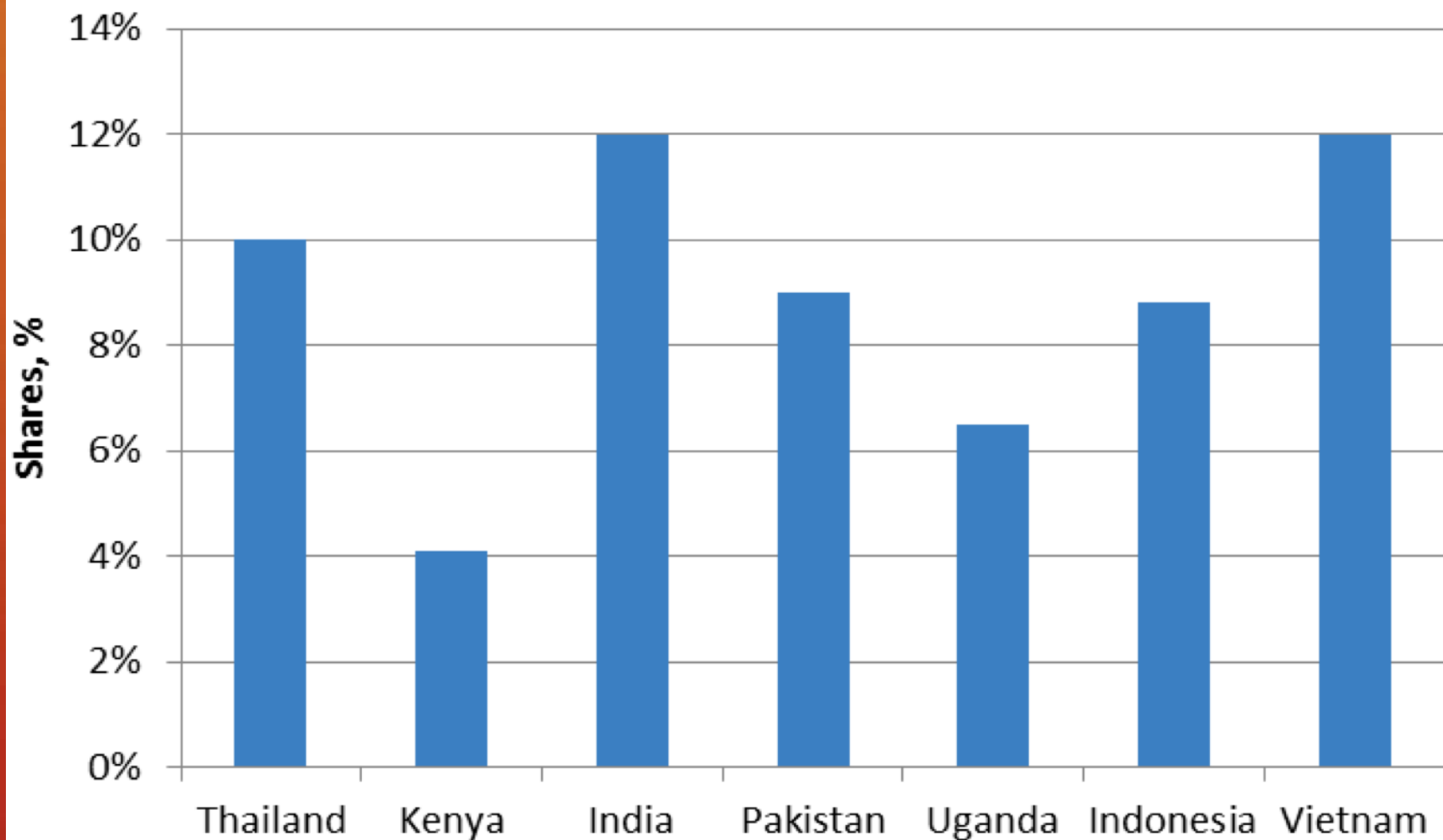
Change in share of population with electricity, selected countries (2005-2011)



Social Dimension Indicators

- SOC2 – Affordability – Share of household income spent on fuel and electricity
- Data needed
 - Household income spent on fuel and electricity
 - Household income (total and poorest 20% of population)

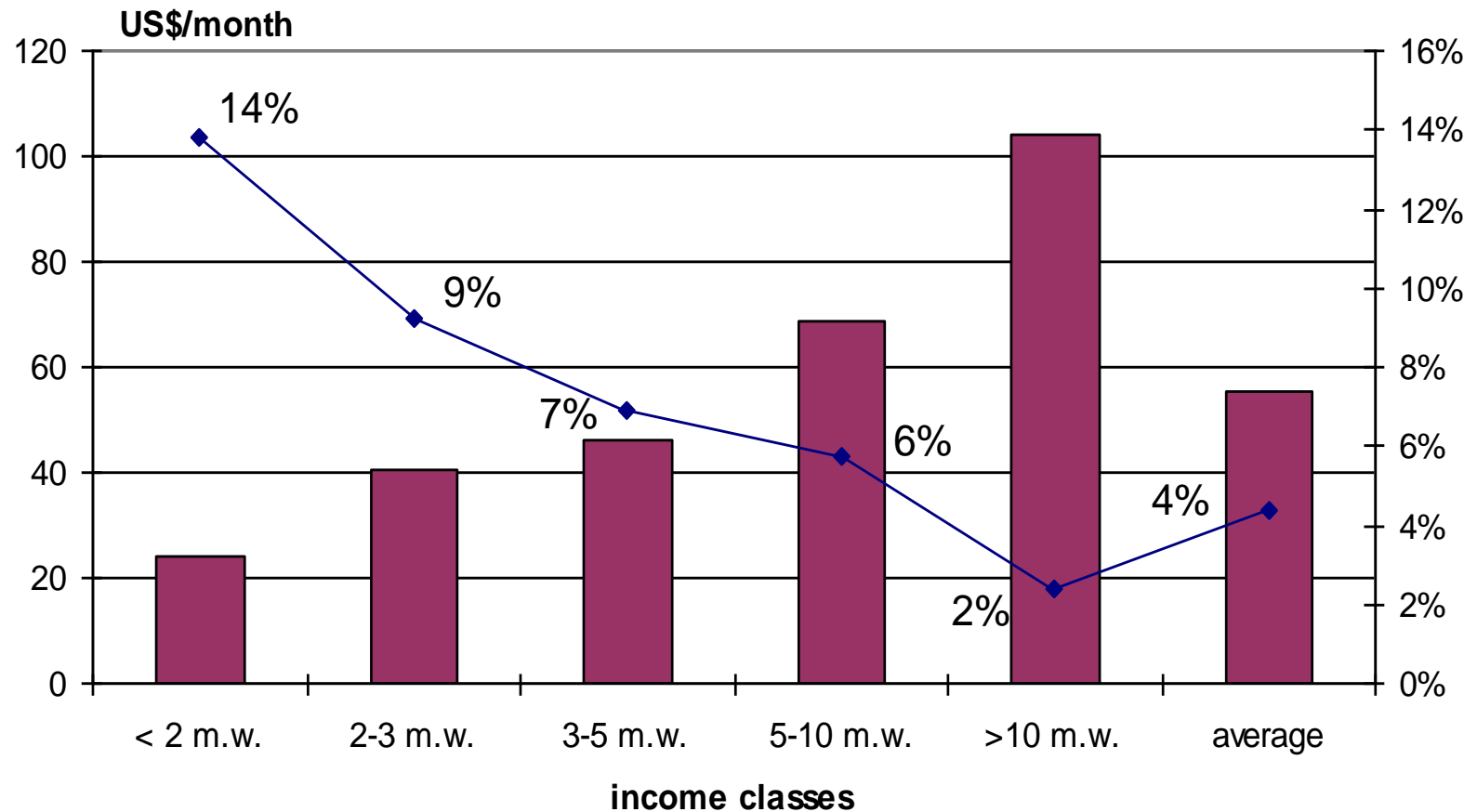
Share of household expenditures for fuel and electricity in selected countries, 2010



Social Dimension Indicators

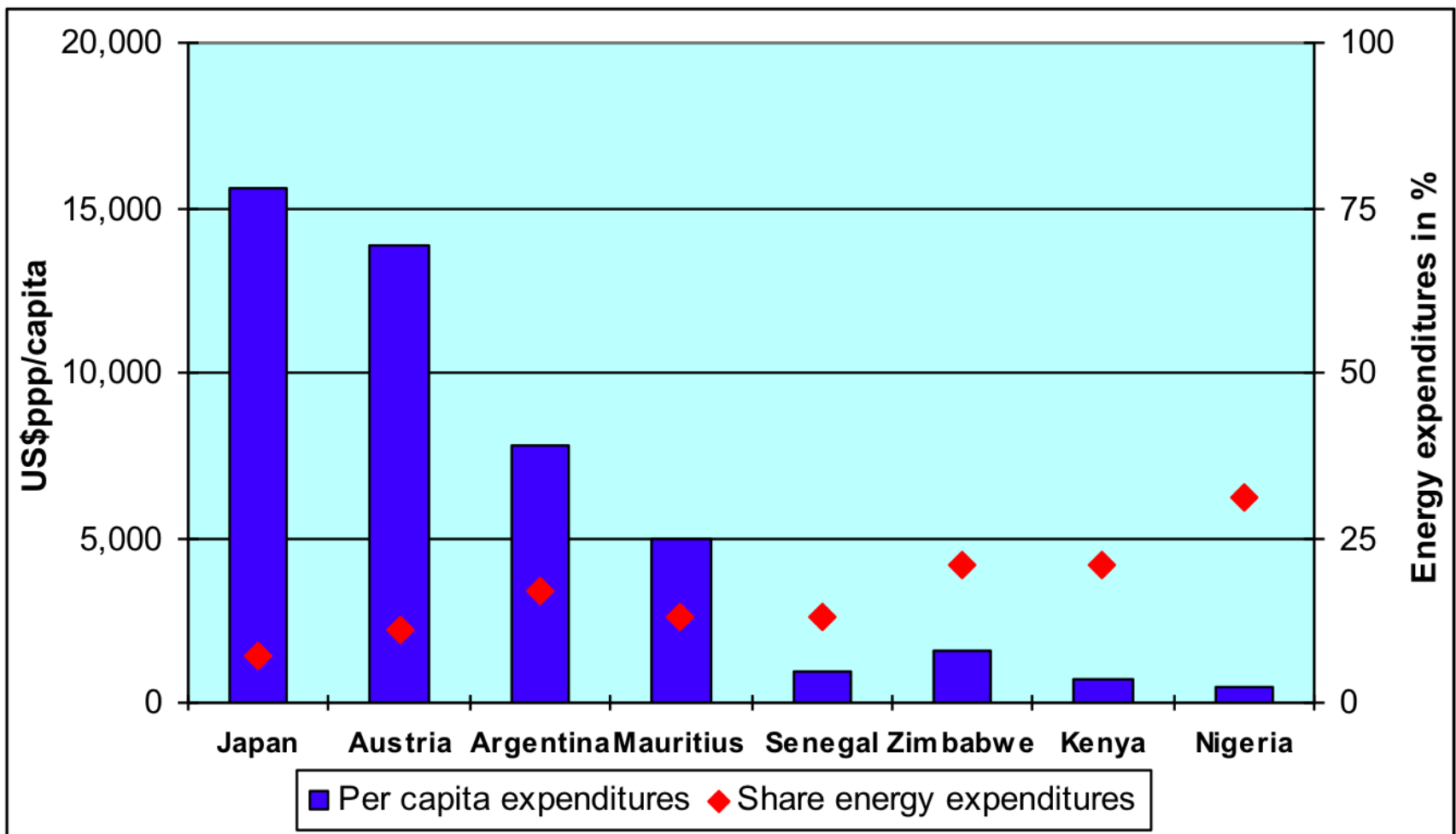
- SOC3 – Disparities – Household energy use for each income group and corresponding fuel mix
- Data needed
 - Energy use per household for each income group (quintiles)
 - Household income for each income group (quintiles)
 - Corresponding fuel mix for each income group (quintiles)

Monthly Household Energy Expenditures by Income levels, Brazil



■ energy expenditure per month (US\$ PPP-2000) ◆ energy expenditure per average income (%)

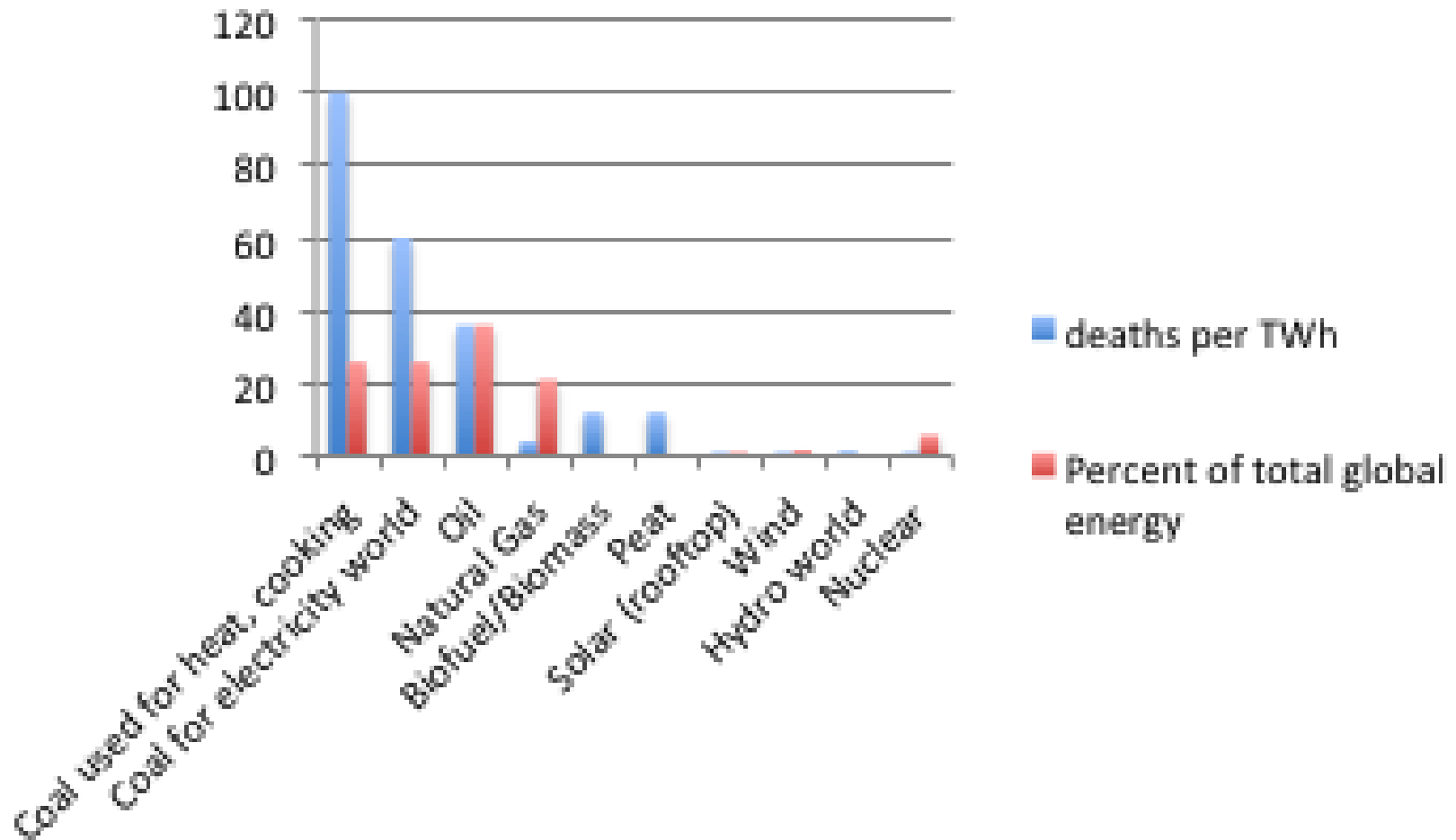
Per capita expenditures and share in energy expenditures, selected countries, 2000



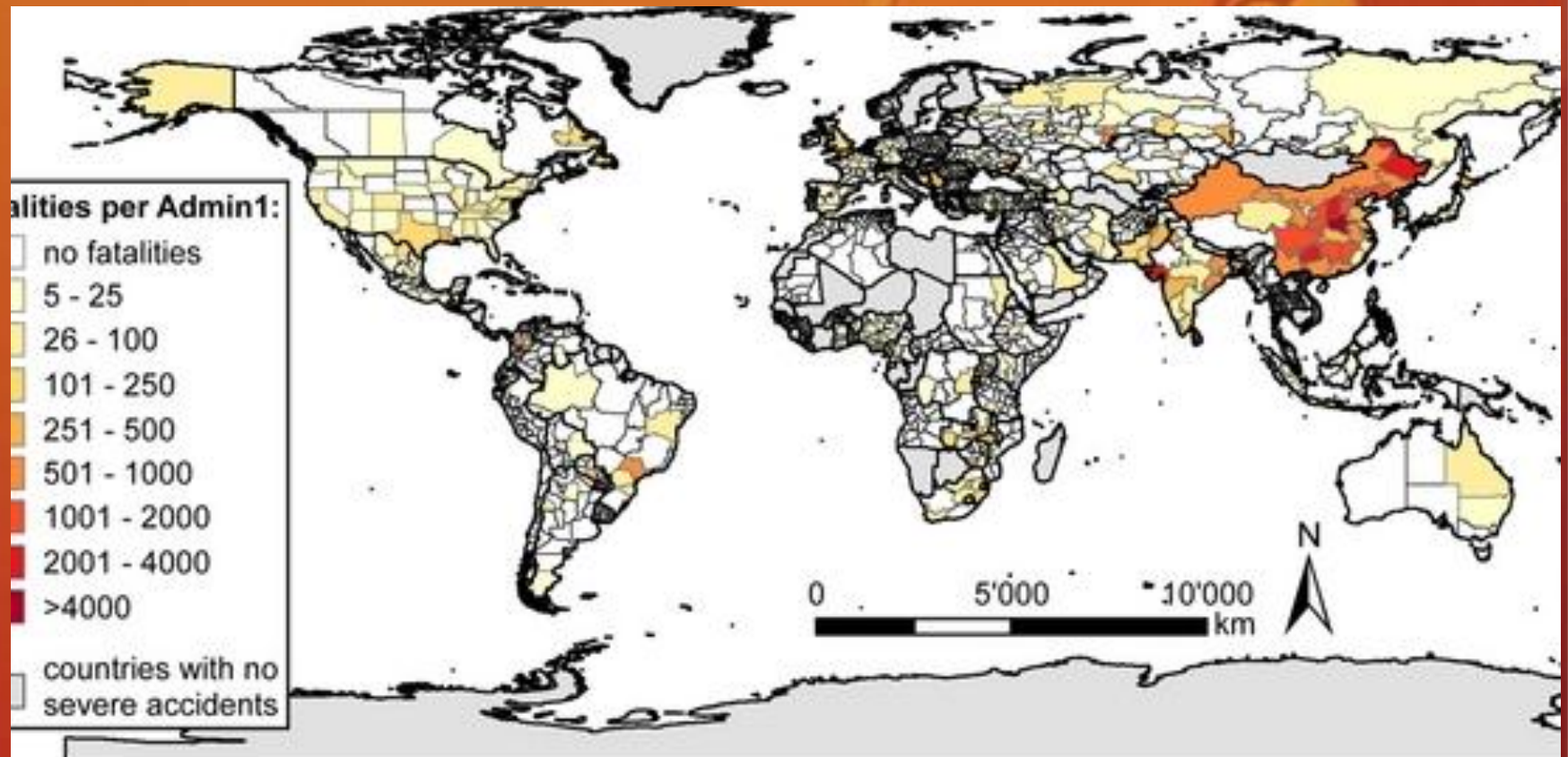
Social Dimension Indicators

- SOC4 – Safety – Accident fatalities per energy produced by fuel chain
- Data needed
 - Annual fatalities by fuel chain
 - Annual energy produced

Global deaths per TWh by energy source 2011



Geographic distribution of fatalities in fossil and hydro chains, 1970-2008.



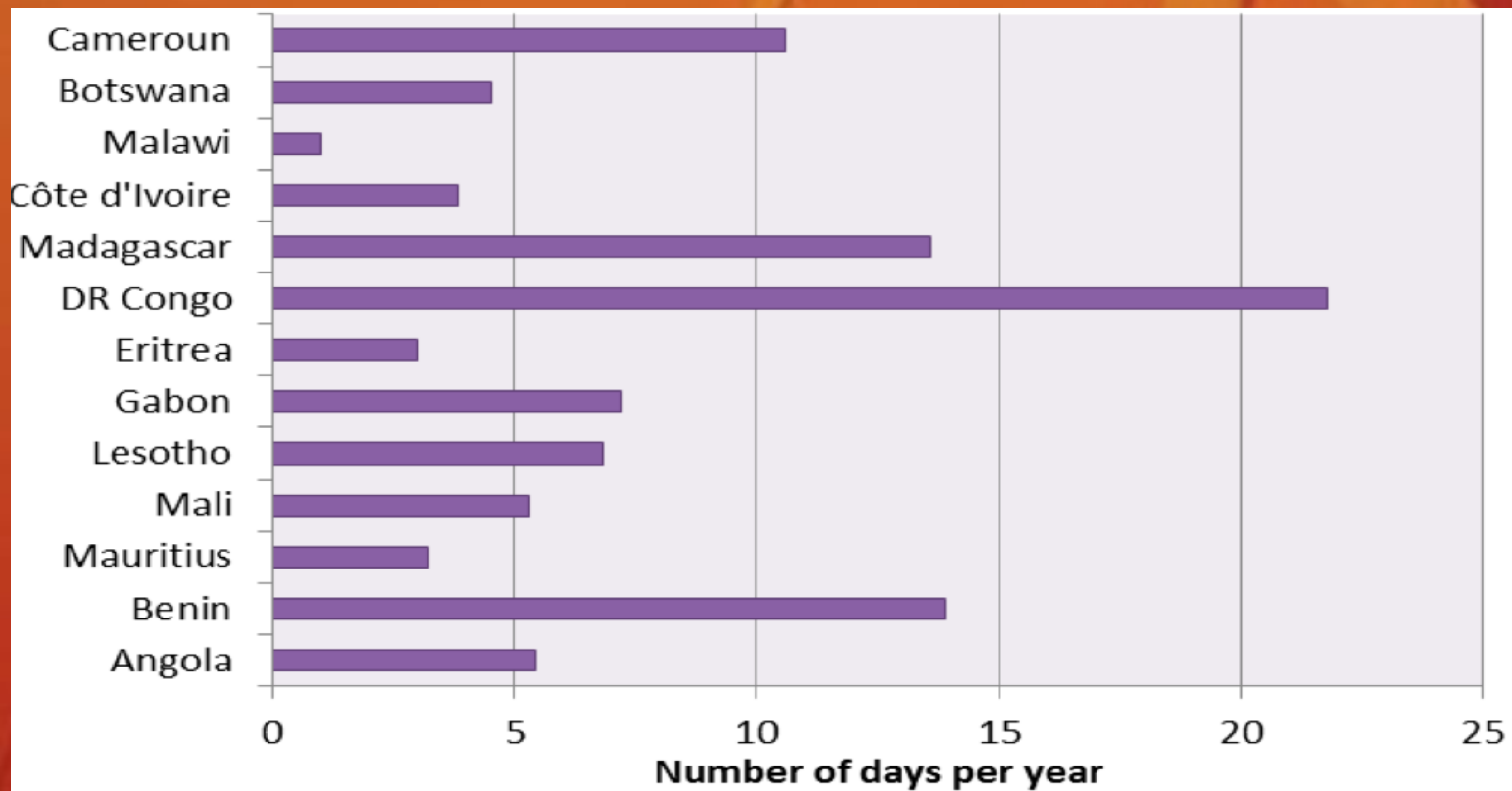
Burgherr, P., Eckle, P., Hirschberg, S. (2010) Severe accidents in the context of energy security and critical infrastructure protection. Proceedings of the European Safety and Reliability Conference, ESREL 2010.

Reliability Indicator – Electricity

- Weather related damage
- Equipment failure
- Conflict
- Lack of Investment in New Capacity
- Poor Maintenance

Reliability Indicator

Electric outages experienced by firms – Average number of days per year



Reliability Indicator

Percentage of surveyed firms that own/share electricity generator, 2013

