

Seminar on

Mainstreaming Energy Sustainable Development Goals (SDGs), Target and Indicators into Statistical Programmes of Select African Countries

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Energy Indicators for Sustainable Development: Social Dimensions

Ralph D. Wahnschafft, Ph. D.

**Senior Advisor on Sustainable Development
Policies**

Berlin, Germany

United Nations Global Development Agenda to 2030:



Sustainable Development Goals (SDGs)

SDG 7: “Ensure access to affordable, reliable, sustainable and modern energy for all”

Target 7.1: “By 2030, ensure universal access to affordable, reliable, sustainable and modern energy services”

Target 7.2: “By 2030, increase substantially the share of renewable energy in the global energy mix”

Target 7.3: “By 2030, double the rate of improvement in energy efficiency”

Why is the social dimension important ?



- Energy in **poverty reduction** (income generation activities; electric power, transport, telecommunication services)
- Energy and **health nexus** (health care systems, ... also indoor and outdoor air pollution issues)
- Energy and **water nexus** (clean water, sanitation, etc)
- Energy and **food nexus** (irrigation, agricultural productivity, food storage and transportation)
- Energy and **education nexus** (reliable and efficient lighting in schools)

Lack of access to modern energy services



- **1.16 billion people lack access to electricity**
 - = 18% of the world's population –
 - = 22% of developing countries' population
- **2.8 billion people use wood or coal and lack access to modern energy services for cooking**
 - = 37.5% of the world's population
 - inadequate cooking stoves cause indoor air pollution
- **Mostly in sub-Saharan Africa and South Asia**
- **Mostly in rural areas**



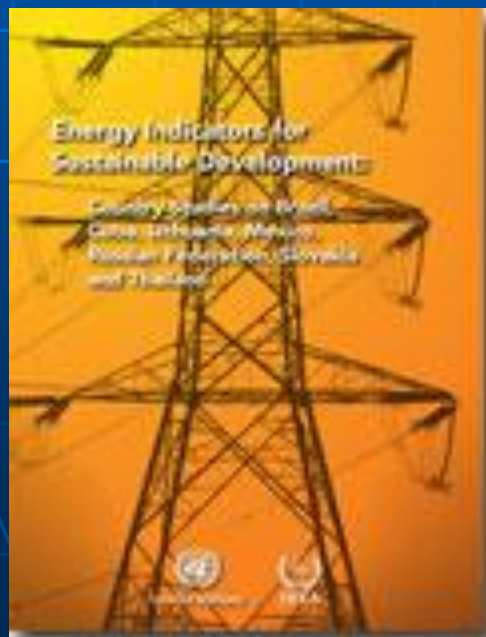
“ The test of our progress is not whether we add more to the abundance of those who have much, it is whether we provide enough for those who have too little ”

Franklin Roosevelt

Energy Indicators for Sustainable Development



Common methodology:
4 social indicators ←
16 economic indicators
10 environmental indicators



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

Role and meaning of indicators ?

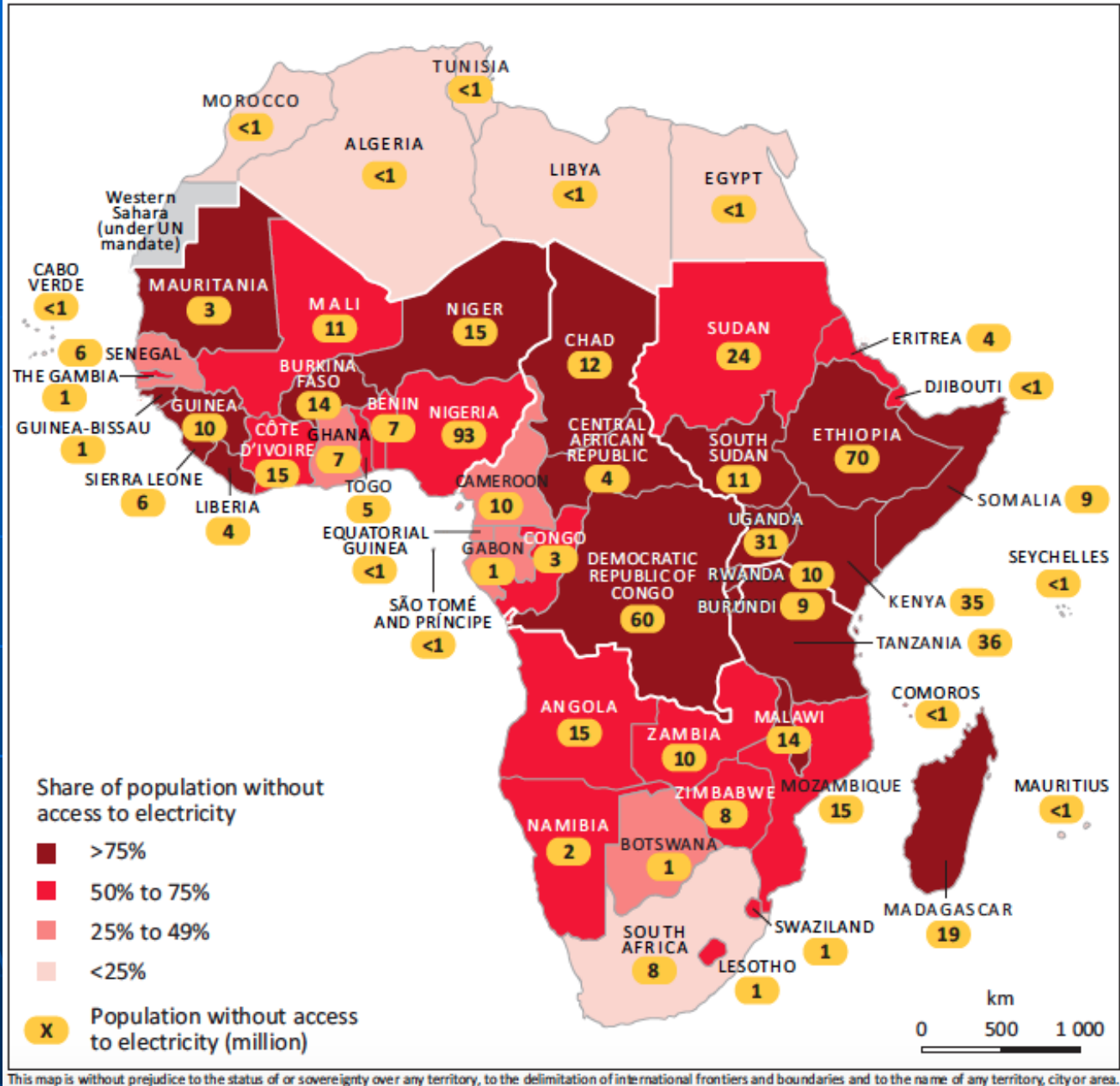
Essential basis for policy dialogue and policy making:

- Basis for public awareness creation;
- Basis for political debate and decision making at national, provincial and local levels;
- Basis for feasibility analysis and investment decisions in businesses and in public (energy) infrastructure;
- Basis for public private partnerships;

Indicators and measurements can have political significance and may be subject to interpretation / manipulation: Transparency remains essential

Access to electricity (in % of population)

	2012					
	1990	2000	2010	2012	rural	urban
Cameroon	29 %	46 %	49 %	54 %	19 %	88 %
Ethiopia	10 %	13 %	23 %	27 %	8 %	100 %
Ghana	31 %	45 %	61 %	64 %	41 %	85 %
Kenya	11 %	15 %	23%	23 %	7 %	58 %
Rwanda	2 %	6 %	11 %	18 %	8 %	62 %
Senegal	26 %	37 %	57 %	57 %	27 %	88 %
Sierra Leone	6 %	9 %	12 %	14 %	1 %	47 %
Togo	10 %	17 %	28 %	31 %	9 %	68 %
Uganda	7 %	9 %	15 %	18 %	8 %	77 %
Zambia	13 %	17 %	19 %	22 %	6 %	47 %
South Africa	65 %	66 %	83 %	85 %	67 %	97 %



This map is without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.

Source: International Energy Agency "Africa Energy Outlook" 2014

Potential challenges with Energy Access Indicators: Lack of data, varying methods, varying definitions

Access to electricity – data collection and analysis

- Comprehensive, comparable, systematic data collection method (typically household surveys),
- Reliability of energy supply ? (e.g electricity rationing, black-out periods, ...)
- Recording of decentralized power generation (from diesel generators, or from renewable sources of energy)

Proposed “Energy Access” Redefined: “adequate quantity, available when needed, good quality, reliable, convenient, affordable, legal, healthy and safe” (World Bank Group)

Recording the contribution of decentralized power generation to Energy Access Data

- Estimated 400 GW capacity of decentralized diesel generator operating for rural industries, mines, and communities (world wide), [... often not included in energy statistics];
- IRENA estimates some 20 million households (or 100 million people) are serviced by decentralized off-grid renewable energy systems (world wide);
 - including solar home systems (SHS); renewable-based mini grids; and small wind turbines
- According to some estimates, African developing countries are installing some 70-100 MW (off-grid) renewables / year

Access to non-solid commercial fuels for cooking and heating

- **Solid fuels**

(e.g. wood, charcoal, agricultural residues, briquettes)



Use of solid fuels in inefficient or without cook stoves causes indoor air pollution (by particulates, black carbon, carbon monoxide) and respiratory diseases

- **Non-solid fuels**

Liquid fuels (e.g. kerosene, ethanol, biofuels), **or**

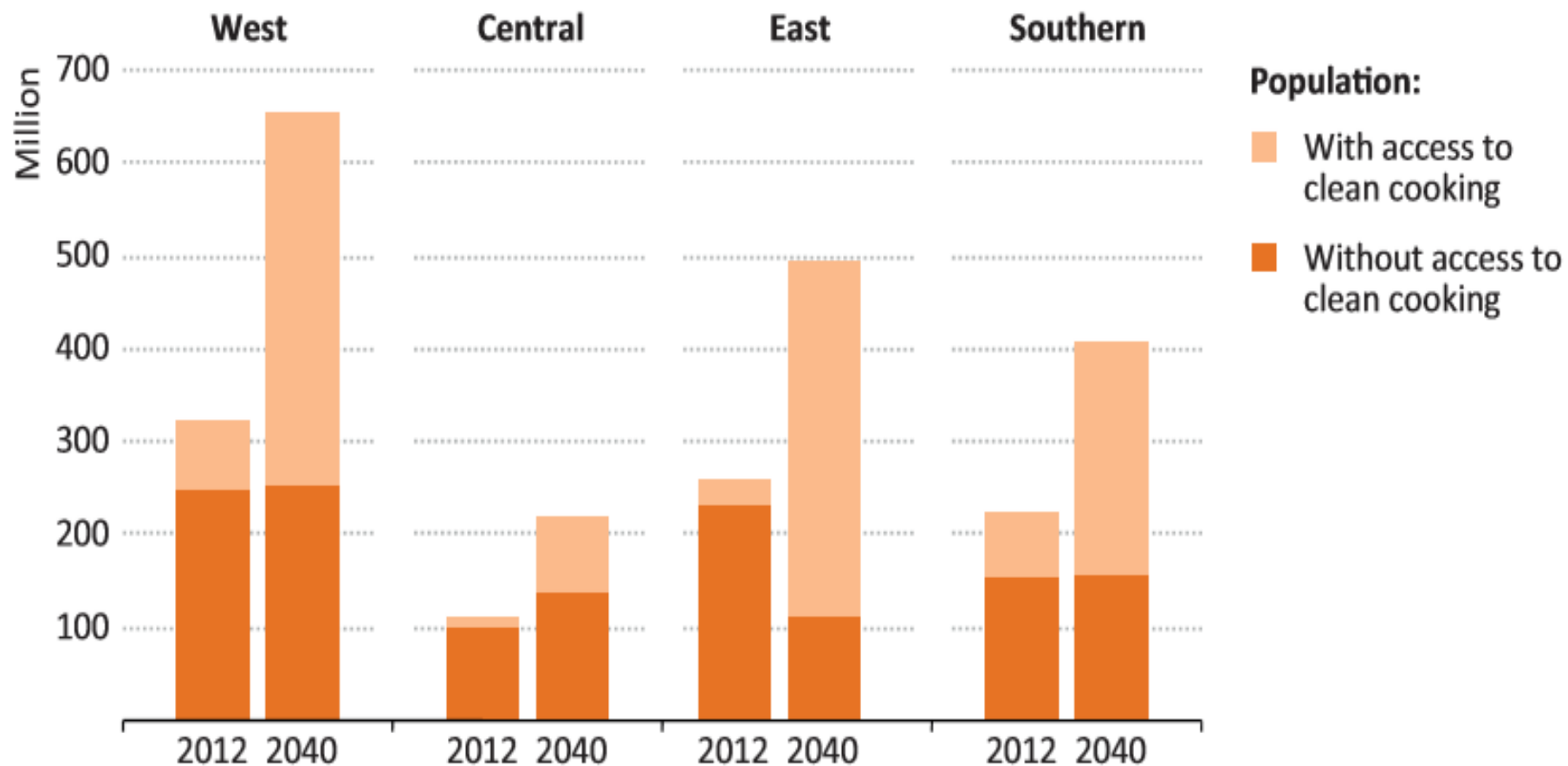
Gaseous fuels (natural gas)

Photo source: flickr

Access to non-solid commercial fuels (in % of population)

	1990	2000	2010	2012	2012	
					rural	urban
Cameroon	14 %	20 %	22 %	22 %	4 %	41 %
Ethiopia	4 %	6 %	3 %	2 %	2 %	18 %
Ghana	2 %	8 %	15 %	17 %	4 %	29 %
Kenya	19 %	20 %	17 %	16 %	3 %	49 %
Rwanda	2 %	2 %	2 %	2 %	2 %	2 %
Senegal	32 %	38 %	39 %	39 %	8 %	69 %
Sierra Leone	6 %	6 %	2 %	2 %	2 %	2 %
Togo	2 %	2 %	4 %	5 %	2 %	9 %
Uganda	2 %	3 %	3 %	3 %	2 %	10 %
Zambia	4 %	13 %	17 %	17 %	3 %	42 %
South Africa	60 %	75 %	85 %	87 %	67 %	96 %

Figure 3.8 ▷ Population with and without clean cooking access in sub-Saharan Africa in the New Policies Scenario



Potential challenges with Energy Access Indicators: Lack of Data

Access to non-solid commercial fuels (for cooking)

- **Definition: “Heavy” dependence on non-commercial energy = typically 75% dependence**
- **Challenge of data collection**

- **... importance of researchers and analysts to share / disclose information on methodologies and definitions used in data collection**

Social Indicator 2: 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)

“Energy Poverty”

- “Energy poverty” is an important social issue and concept, even if no agreed definition exists.
- Evidence from many countries indicate that *poor households typically spend a higher percentage of their disposable income on energy than wealthier ones.*
- When households are forced to spend as much as *10% to 20% of their cash income* on energy, they are being deprived of other basic goods and services necessary to sustain life.



Migrant Workers Cooking-India: Photo WB/Curt Carnemark

Social Indicator 3: 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)

Example: Household Energy Spending in the UK 2002-2012

Percentage of Household Disposable Income Spent on Energy: 2002 to 2012

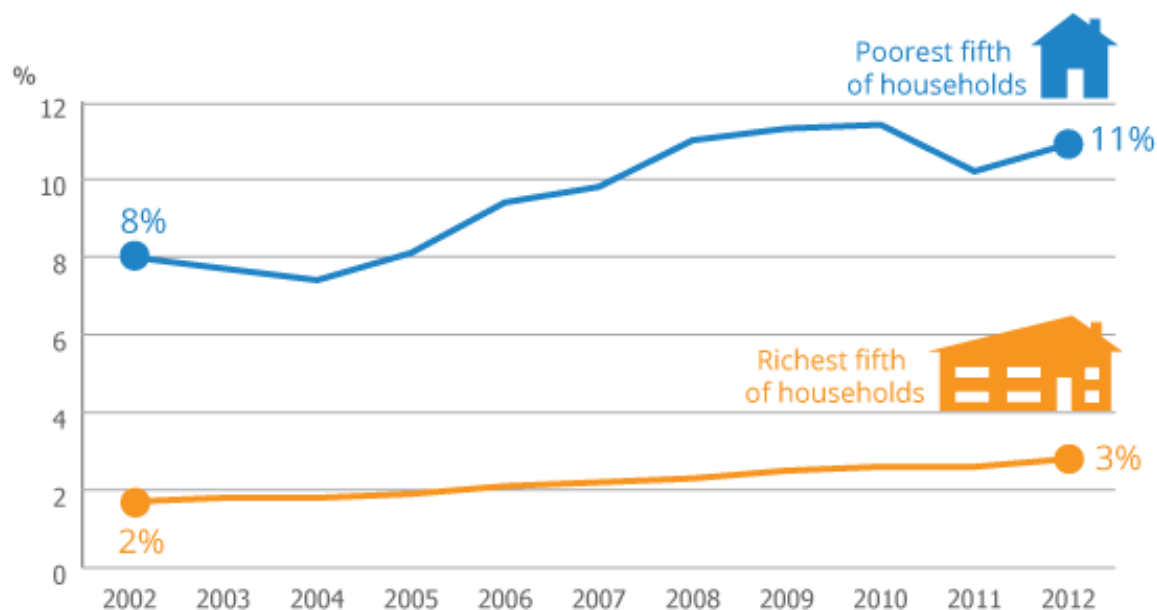
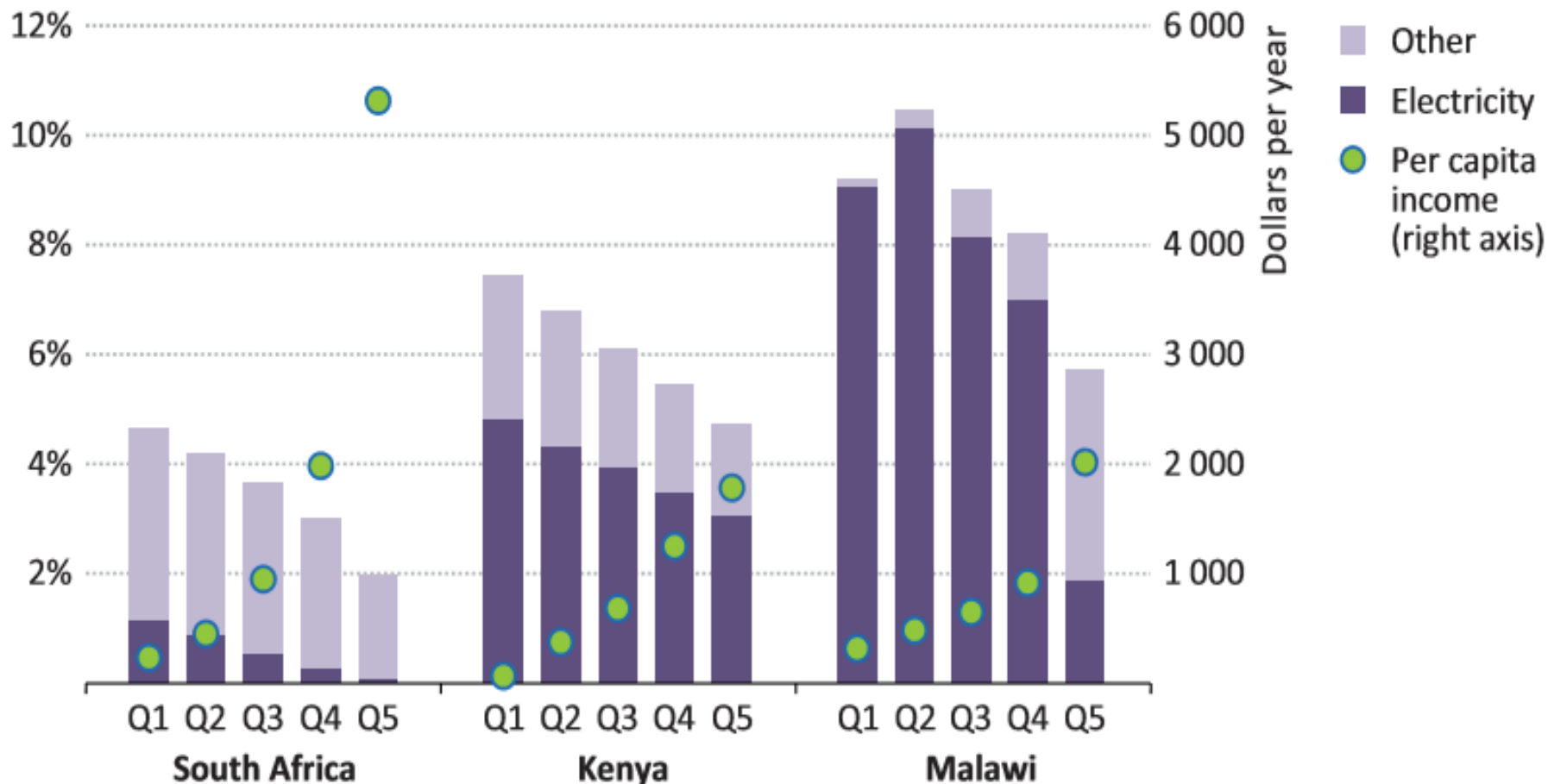
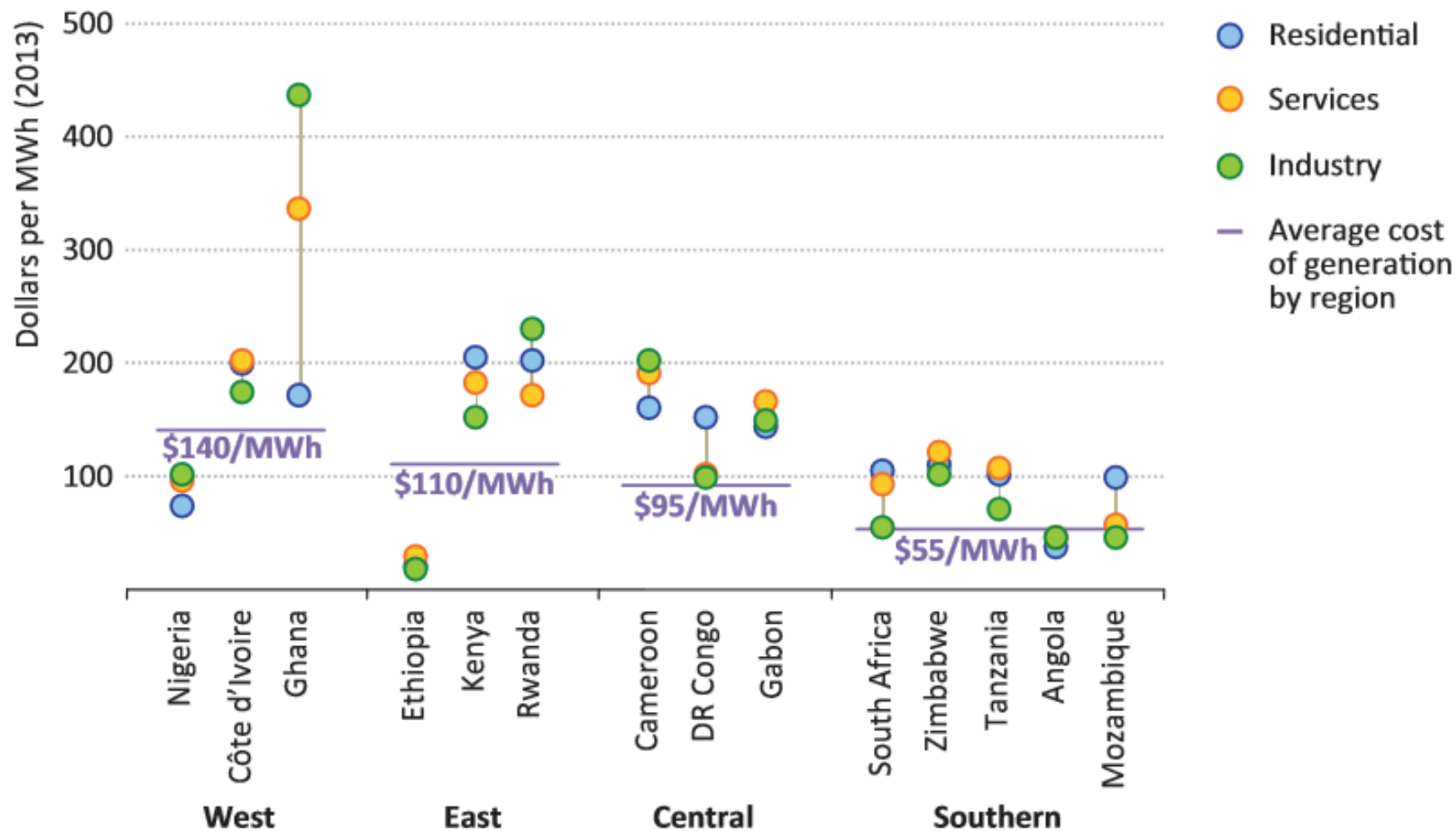


Figure 1.31 ▷ Household energy spending as share of income



Note: Q1 is the lowest income quintile (20%) in a country, while Q5 is the highest.

Figure 1.30 ▸ **Grid electricity prices by end-use sector in selected countries, 2013**



Social Indicator 4: Safety



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

Thank you

Further information:

Ralph D. Wahnschafft

D- 14163 Berlin, Germany, Tel: +49-(0)172-873 8606

Ralph_Wahnschafft@yahoo.com & ralph.wahnschafft@gfhsforum.org