Meeting Africa's Power Challenges

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Leading change in emerging markets

Outline

1. Africa's power challenges
2. The response: power sector reform
3. Reviewing regulatory performance
4. Improving state-owned utility performance
5. Accelerating investment

SIZE OF THE AFRICAN CONTINENT COMPARED TO OTHER LAND MASSES

But GDP of Sub- Saharan Africa equivalent to just one small OECD country – the Netherlands

1. Africa’s power challenges

- Power infrastructure is underdeveloped
- Electricity supply is often unreliable
- Power costs are high
- Access to electricity is low and unequal

Power infrastructure is underdeveloped

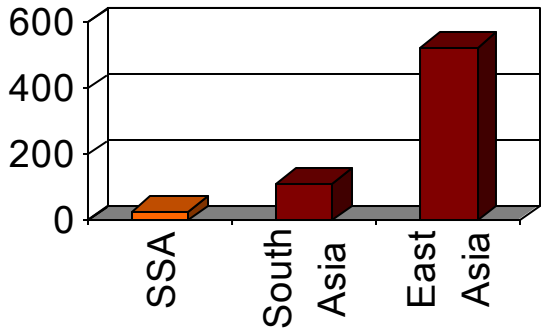
- Installed capacity in SSA is around 80 GW
  - Spain has more
  - South Africa accounts for more than half
- Installed capacity per capita 10% of Latin America
- Up to a quarter of capacity unavailable
- Growth in capacity stagnant

Power infrastructure is underdeveloped

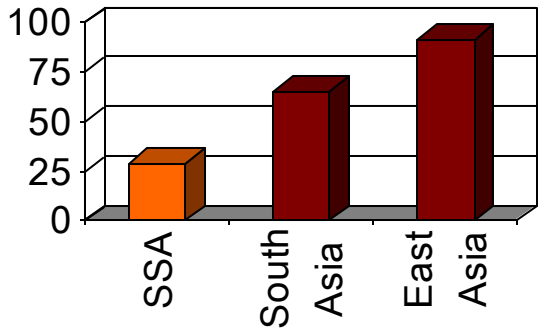
- Consumption per capita barely 1% of high-income countries and declining
- Large energy resources unexploited, distant from main centers of demand
  - eg. hydro in DRC & Ethiopia
- Few economies of scale
  - 33 out of 48 countries have <500MW
  - 11 countries <100MW

A global outlier

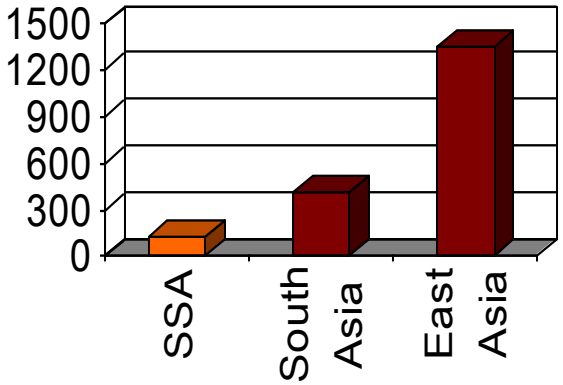
Generation capacity
(MW per million population)



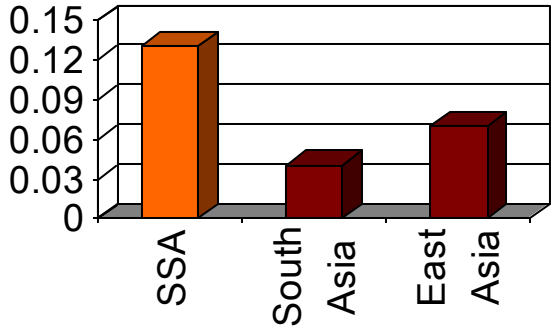
Electrification rate
(Percentage of households)



Electricity consumption
(kWh per capita per year)



Power prices
(US$ per kilowatt-hour)

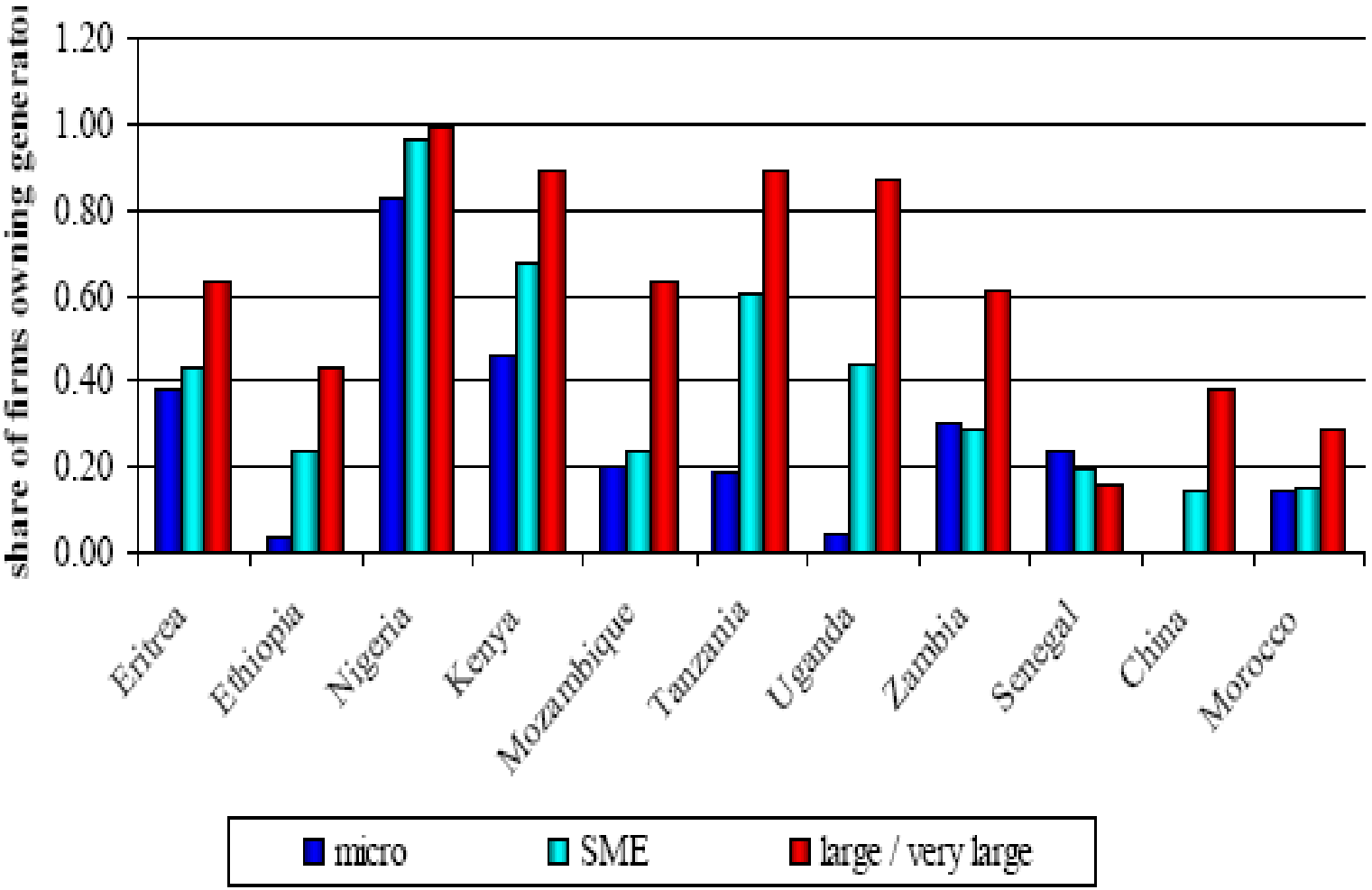


Source: Africa Infrastructure Country Diagnostic

Supply is often unreliable

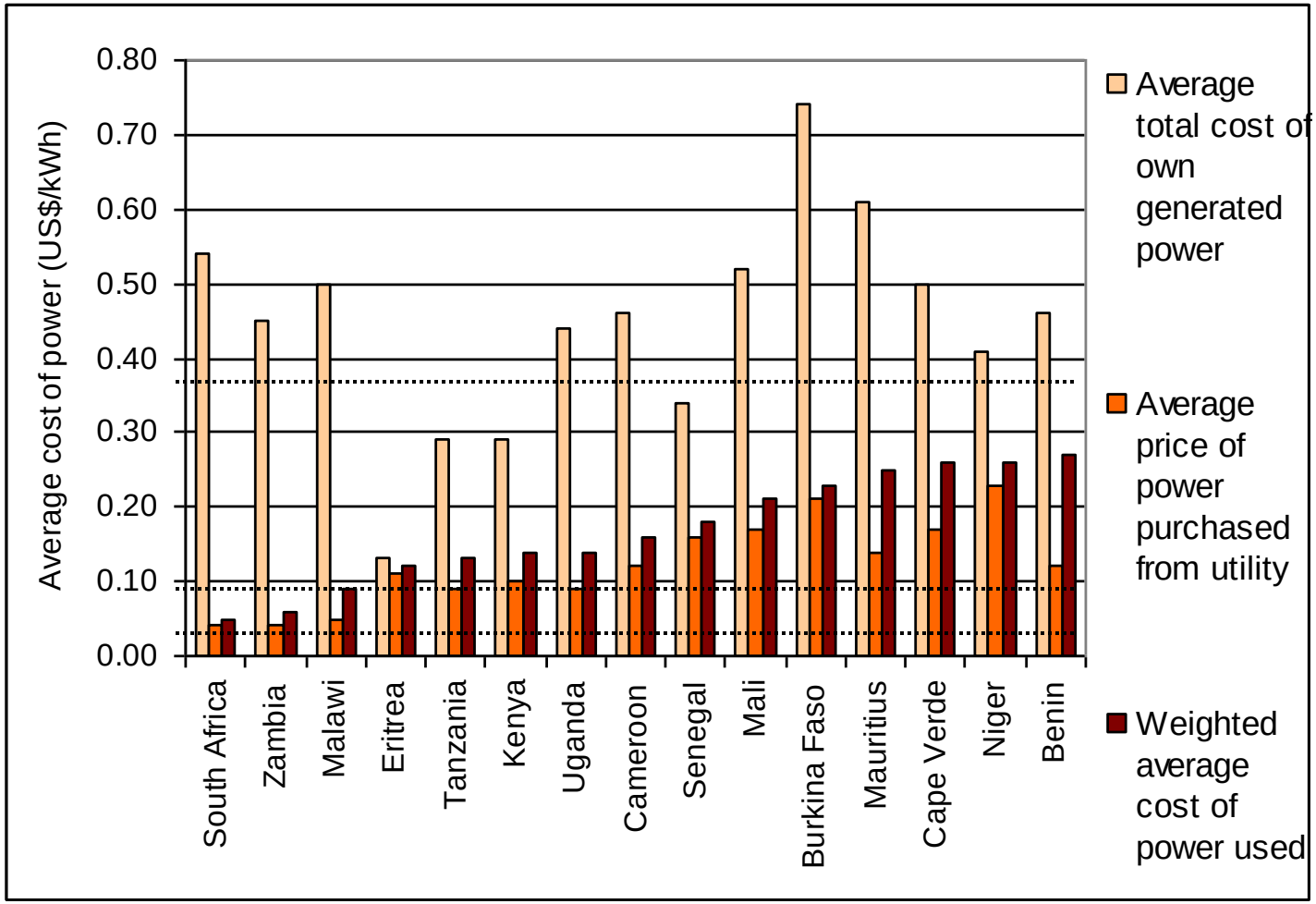
- Insufficient investment in maintenance and refurbishment
- WB Enterprise surveys reveal average of 56 days per annum with power interruptions
  - losses in forgone sales and damaged equipment
- More than half of large firms have back-up generators
- Own-generation now a significant proportion of installed capacity

% of businesses that rely on back-up generation



Source: Estache, 2005, p.31. Evidence from the Investment Climate Assessments

High power costs

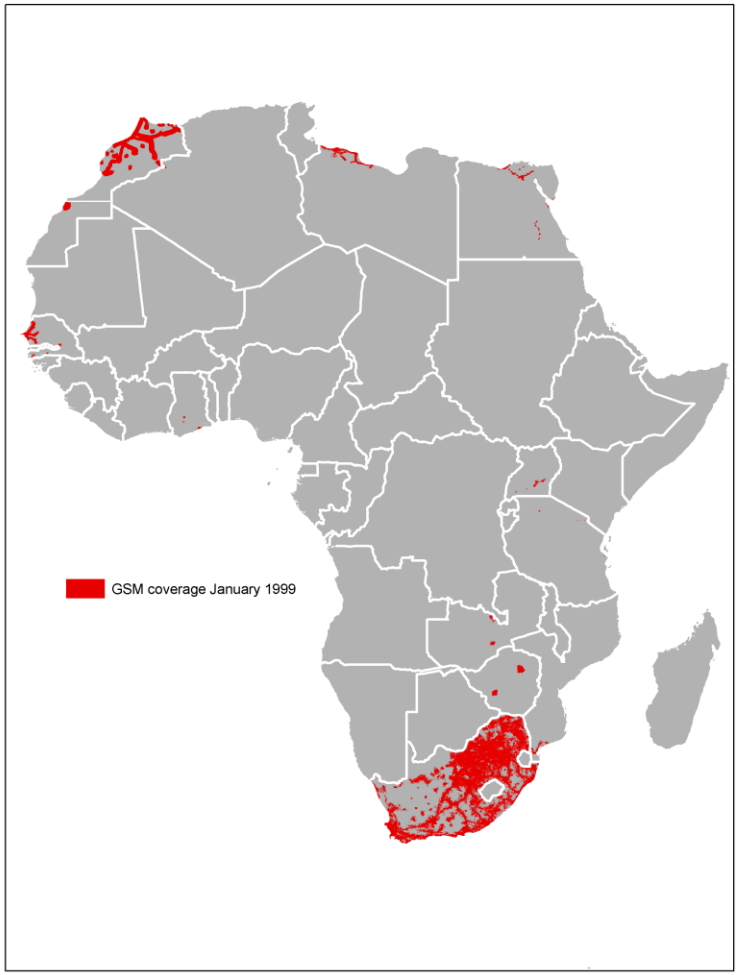


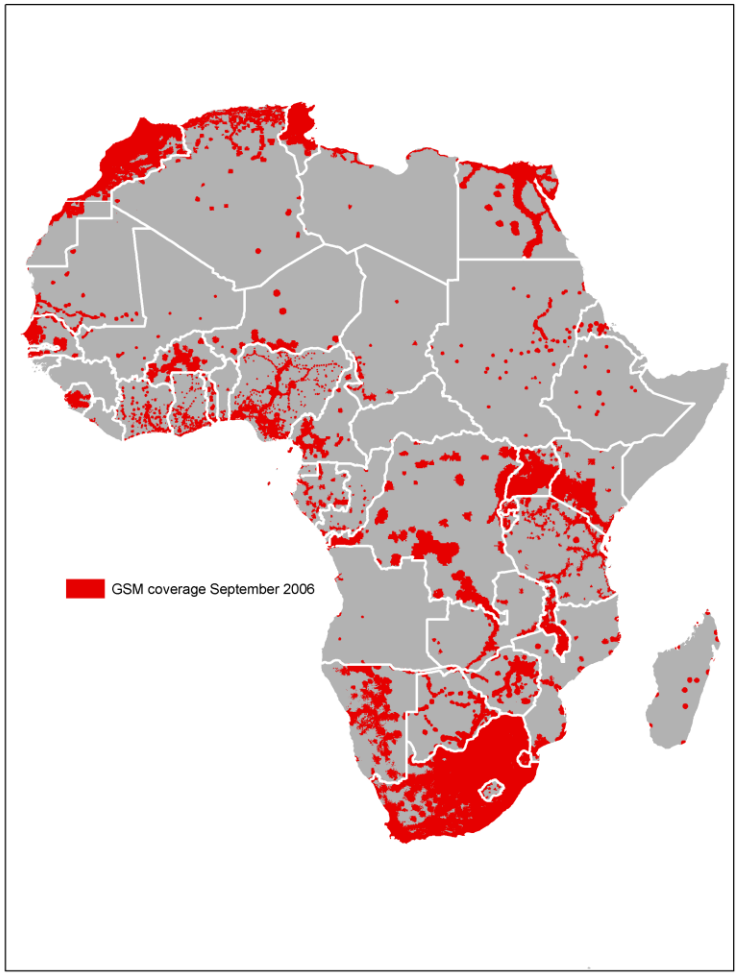
Source: Africa Infrastructure Country Diagnostic

Very low access to power

Source: Earthlights, 2000

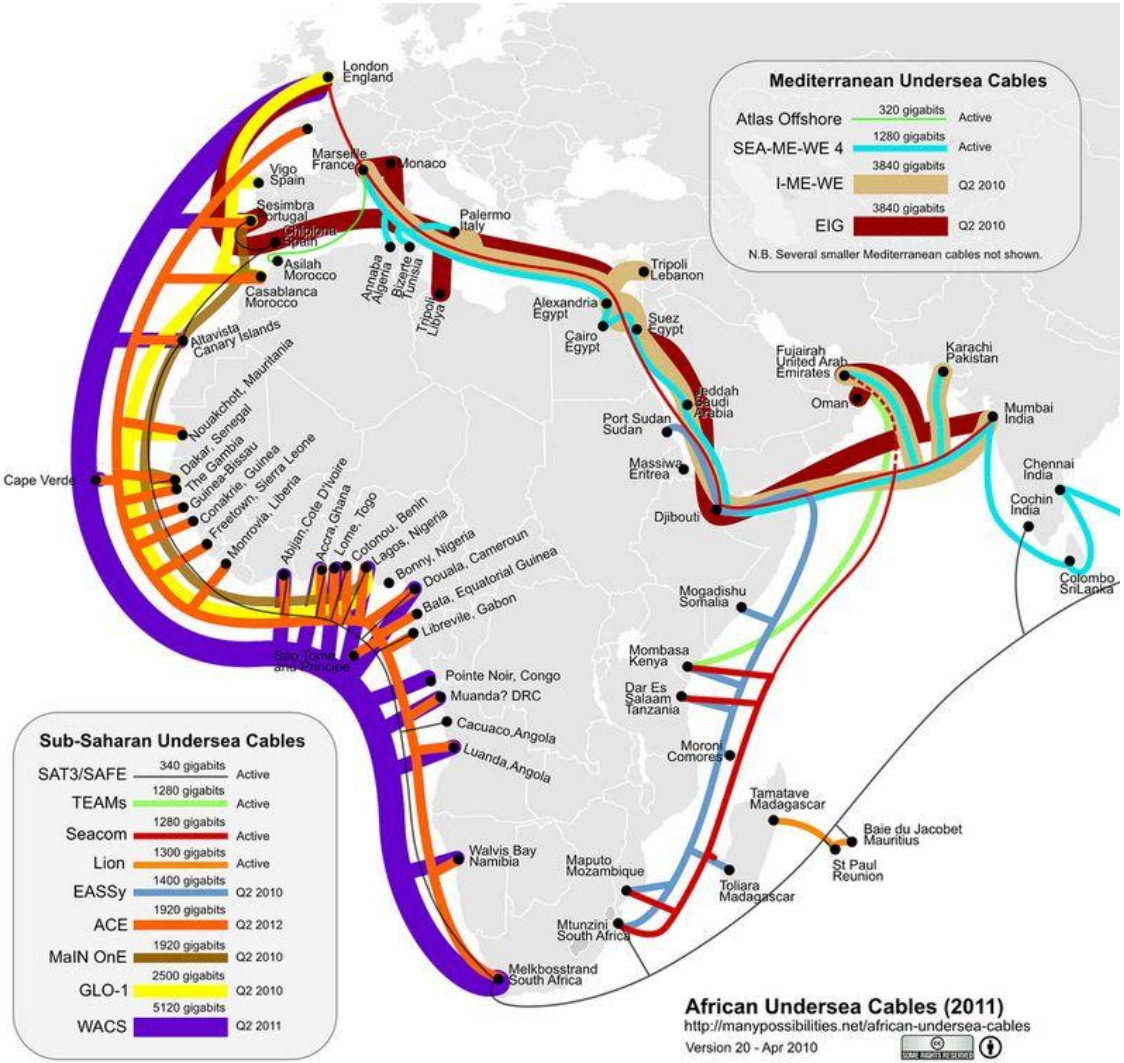
However, fast growing cell phone footprint





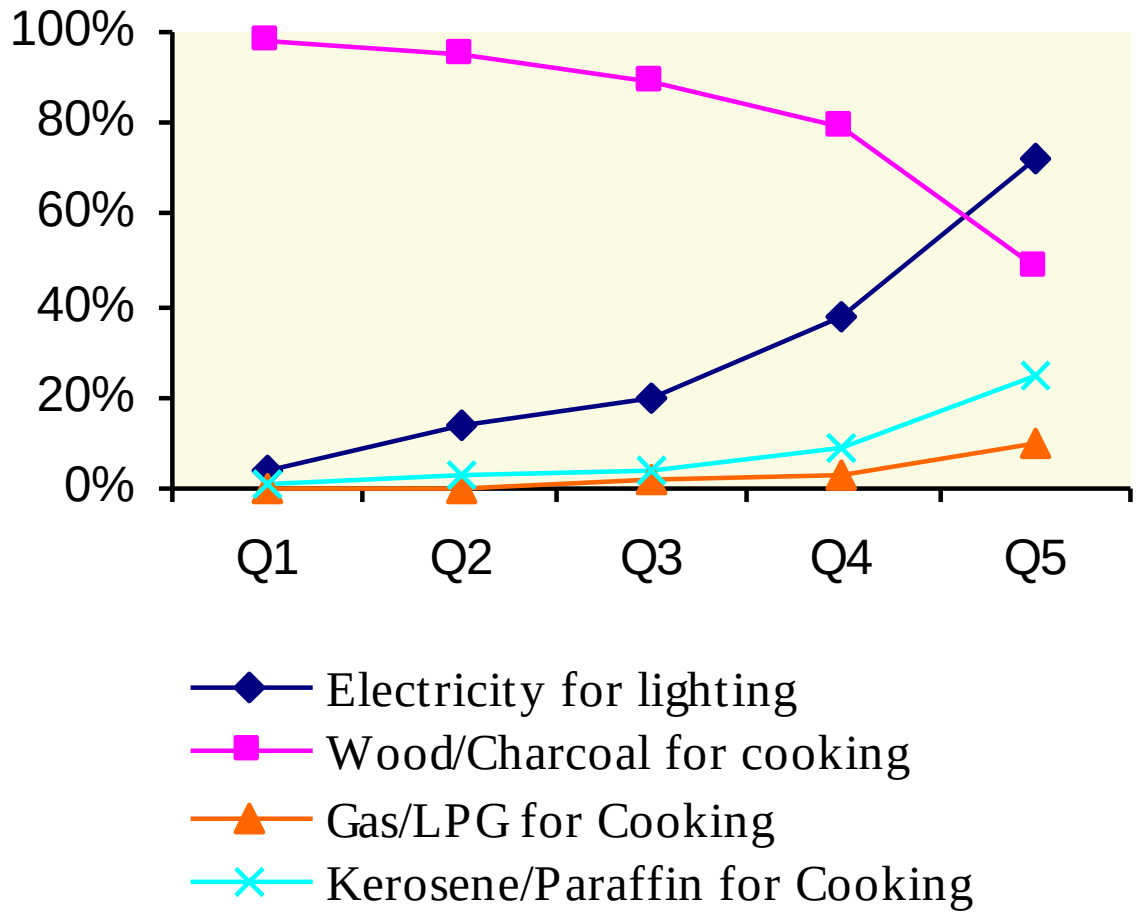
Source: Africa Infrastructure Country Diagnostic

And rapid growth in broadband



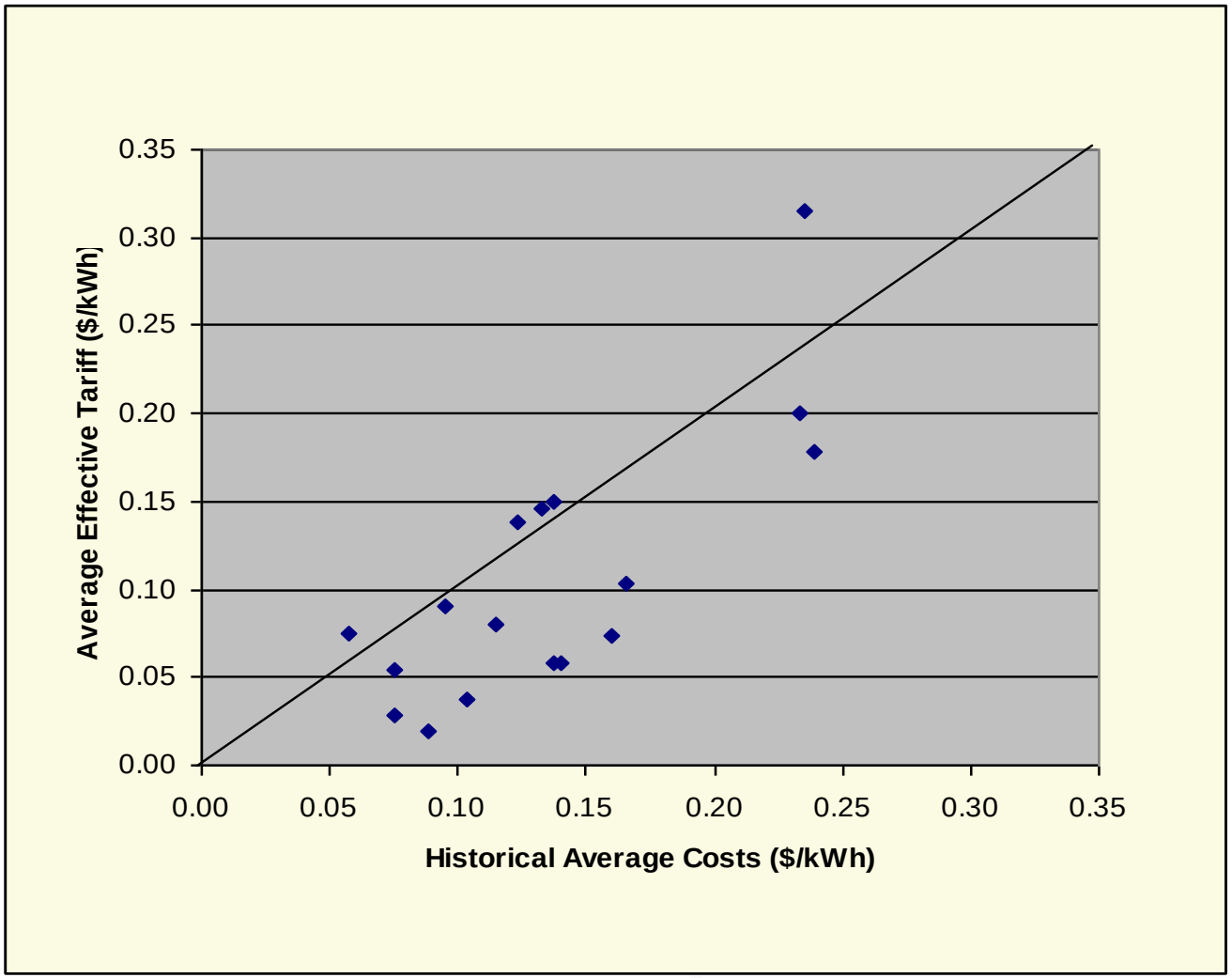
ICT different to power sector, but what can we learn in terms of competition and private sector participation?

Access to energy by income quintile unequal



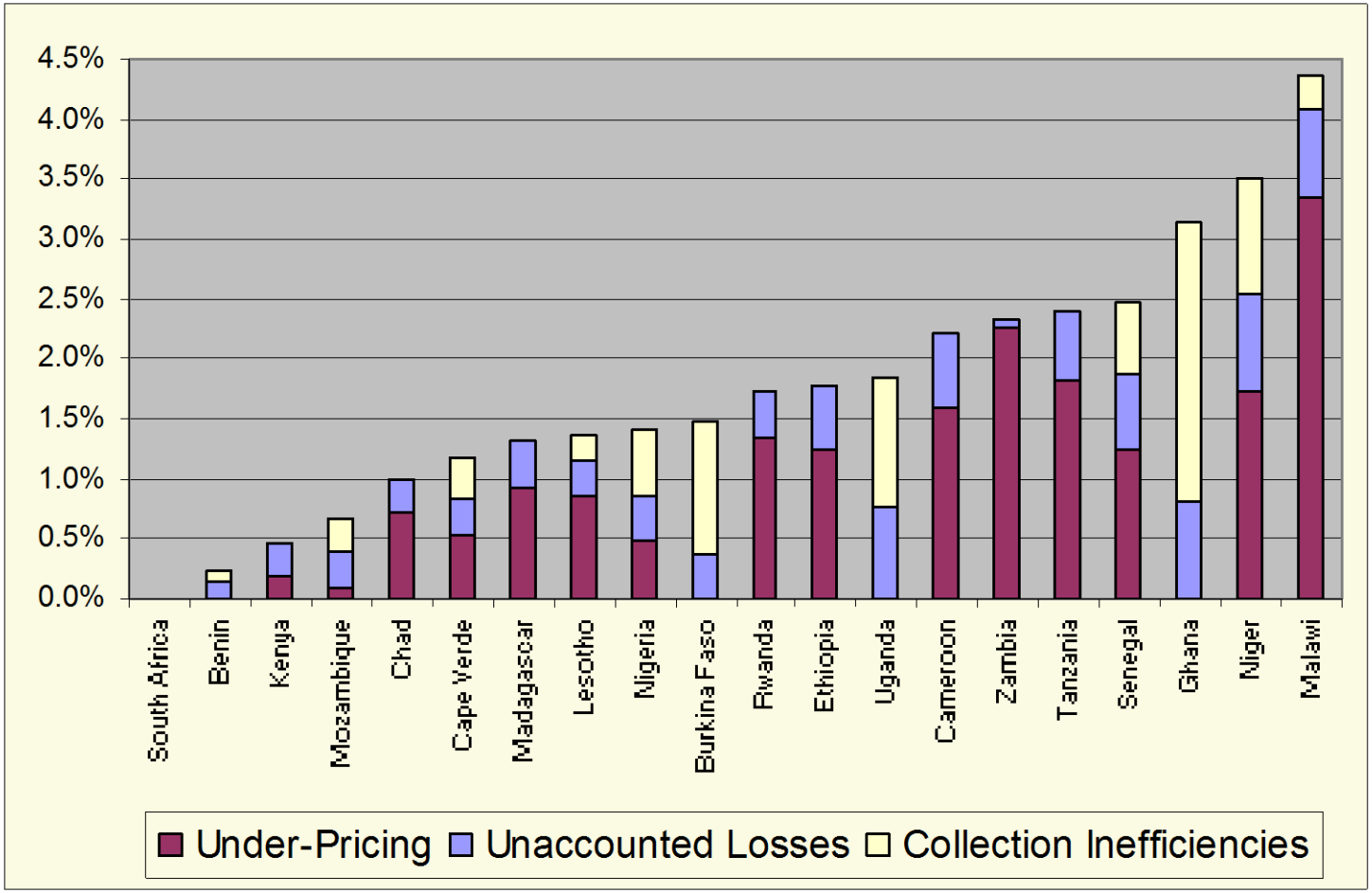
Source: Africa Infrastructure Country Diagnostic

Most tariffs do not recover costs



Source: Africa Infrastructure Country Diagnostic

Hidden or quasi-fiscal costs

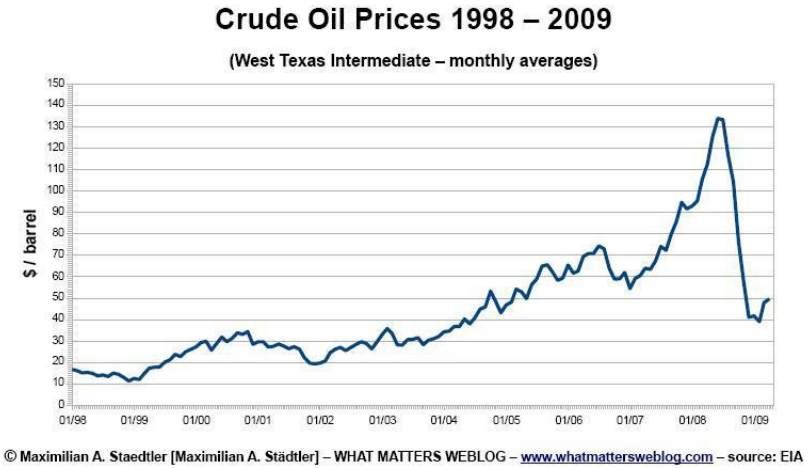


Source: Africa Infrastructure Country Diagnostic

Extent of crisis revealed in prevalence of emergency short-term power leases

Power crisis exacerbated by

- drought
- high petroleum prices
- damage to infrastructure through wars
- rapid demand growth



2. The response: power sector reform

- Standard reform model advocated since early 1990s
- Progress in reform, but nowhere in Africa has the standard reform model been fully implemented
- Instead we have hybrid power markets which present new challenges

Since early 1990s “standard reform model” advocated

Vertically-integrated, publicly-owned monopoly

▼

Commercialisation and corporatisation

▼

Independent regulation

▼

Unbundling to separate potentially competitive elements from non-competitive elements

▼

Private sector participation

▼

Introduction of competition

IPPs for the market

or wholesale competition in the market

eventually customer choice and retail competition

Progress in reform

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- About 30 African counties have established independent electricity regulators
- Some countries have unbundled their state-owned utilities
  - e.g. Kenya (KenGEn & KPLC)
  - e.g. Ghana (VRA, GRIDco, ECG)
  - e.g. Uganda (UEGCL, UETCL, UEDCL)

  e.g. Nigeria (Gencos, TCN, Discos)
- Most countries have enacted laws permitting private sector participation, but progress is mixed
  - Private concessions and management contracts
    - e.g. Uganda, Cameroon, Cote d'Ivoire, Mali, Gabon concessions
    - E.g. Namibia, Lesotho, Rwanda, Tanzania, Kenya, Nigeria management contracts
  - Frameworks for small RE IPPs
    - e.g. Tanzania, REFITs, etc
  - About 50 IPPs across Africa
    - e.g. Kenya (5 + 3 more), Uganda (first large IPP hydro + a number of smaller IPPs), Tanzania, Ghana, Cote d'Ivoire, Senegal, Nigeria, Togo, South Africa (renewables), etc

Progress in Africa's two largest economies

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- **South Africa**
  - After slow start, a successful renewable energy IPP programme
  - Rounds 1 & 2 = 47 projects totaling 2450 MW
  - Wind prices drop 20% and solar PV 40%
  - Round 3 in progress plus more
  - Procurement of gas, coal & hydro IPPs planned
- **Nigeria**
  - Sale of 5 out of 6 Gencos; sale of NIPPs planned
  - Concessioning of 10 out of 11 Discos
  - 25 % payment made; 75% expected by September 2013
  - TCN management contract
  - Bulk trader
  - Transitional electricity market being designed

But nowhere is “standard reform model” implemented in full

- Initial power sector reform plans often stalled or reversed
  - Nowhere do we have full wholesale or retail electricity competition
  - Many countries have not unbundled
    - e.g. Tanzania, South Africa
  - Private sector participation is still often constrained

- Instead, **hybrid power markets** have developed
  - Incumbent state-owned utilities have retained dominant market positions
  - Independent Power Producers (IPPs) are being introduced on the margin
  - i.e. both State Owned Enterprise (SOEs) and IPPs are involved in new generation investments

[Exceptions are private concessions in countries such as Uganda, West Africa and privatisation in Nigeria]

Hybrid power markets are challenging

Performance of state-owned utilities

- Still responsible for electricity provision
- Often unable to finance new investment
- And poor financial and technical efficiencies

New investment

Responsibilities for planning, procurement and contracting “fall between the cracks” – unclear, neglected, sub-optimal => inadequate investment

3. Re-assessing regulatory performance

- Independent regulator model
- Regulatory risk
- Evaluating regulatory systems
- African electricity regulator peer review and learning network

Widespread model: “independent” regulator

e.g.

“AFUR recommends that the following key principles form part of an initial framework for utility regulation in Africa:

- Minimum regulation necessary to achieve policy and sector objectives;
- Adherence to transparent decision-making and due process requirements;
- **Independent or autonomous regulation where possible**;
- Accountability towards government, investors and end-users
- Non-discrimination when not in conflict with policy prerogatives of government;
- Protection of investors against physical and regulatory expropriation; and
- Promotion of competition by limiting anti-competitive behaviour.”

Regulatory risk?

- Effective regulation was seen as key to infrastructure reform and attracting private investment
- It was hoped that regulation would insulate tariff-setting from opportunistic political interventions – thus enabling cost-recovery and more predictable revenue streams

Some now argue that regulators are actually exacerbating the problems they were meant to solve

They argue that regulators lack true independence, are unaccountable and make non-credible, inconsistent decisions

Time to re-assess

- We now have up to 15 years of experience with infrastructure regulatory agencies in developing countries
- Have these regulators
  - protected consumers and facilitated affordable and quality infrastructure services through improved efficiencies, reduced costs and effective standards?
  - promoted financial viability of utilities and provided incentives for new investment?
- To what extent has regulatory independence helped achieve the above objectives?
- Do we need to consider new regulatory models which respond to developing country challenges and are more effective in meeting the above objectives?

Regulation should at least make a difference in…..

- Main areas which concern electricity consumers:
  - **access to the grid**
  - **reliable, quality supply & service**
  - **competitively priced “affordable” electricity**

- Enabling utilities to provide the above through being
  - **efficient**
  - **financially viable**
  - **adequate and timely investments**

4. Improving performance of state-owned utilities

- State-owned utilities still dominant
- But very difficult for regulators to institute incentives for improved performance
- Rate of return regulation sometimes supplemented with efficiency incentives for O&M cost reductions
- Regulation can be supplemented with utility KPIs (cf Zambia)
- Ultimately regulation needs to be supported by SOE governance reforms

Integrated reform of SOEs

1. Clarification of roles and responsibilities

- Public entity management legislation
- Corporatisation
- Codes of corporate governance
- Performance contracts
- Effective supervisory / monitoring agencies
- Transparent transfers for social programmes

2. Changing the political-economy of the uitlity

(cf Gomez-Ibanez)

- Improved transparency and information
- Structural reform and direct competition
- Mixed-capital enterprises

State-owned utility governance reform

- Two-thirds of utilities have undergone some form of governance reform
  - Corporatisation
  - International accounting standards
  - Performance contracts and monitoring
  - Exposure to private capital markets

✓ KenGen & KPLC partially listed on Nairobi Stock Exchange
✓ Succesfull bond issues by Eskom, KenGen, Nampower, etc

- Empirical evidence from AICD study is that utilities that are subject to more reform measures perform better

5. Accelerating private investment in power

- Progressively more IPPs
- Learning the lessons of private sector performance
- New investment challenges
- Non-OECD investment is unlocking projects

Independent Power Projects (IPPs) in Africa

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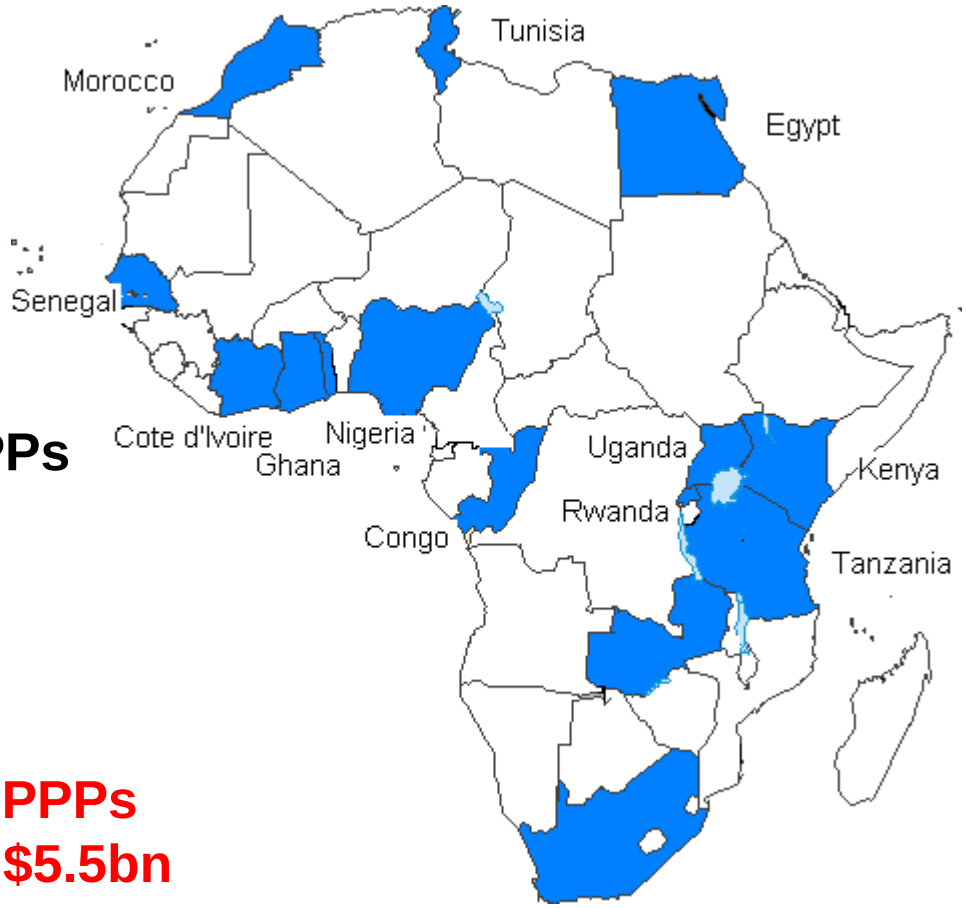

+/- 50 largish IPPs
17 Countries
12,000MW
US$10 billion

South Africa REIPPPs will add another $5.5bn

Contributing elements to IPP success

Country level

- Favourable investment climate
- Clear policy and legal framework
- Coherent power sector planning
- Transparent and credible regulatory oversight
- Competitive bidding practices

Contributing elements to success

Project level

- Committed equity partners
- Favourable debt arrangements
- Secure and adequate revenue stream
  - Credit worthiness of off-taker
  - PPA
  - Appropriate security & credit enhancement measures
- Secure, competitive fuel contracts
- Positive technical performance
- Ongoing strategic and risk management

New investment challenges arising from hybrid markets

- Who should be responsible for generation expansion planning & security of supply?
- How are new build opportunities allocated between the incumbent SOE and IPPs?
- Who should initiate bids for IPPs?
- How should we deal with unsolicited bids?
- Who should be responsible for contract negotiations with new IPPs?
- How do we avoid potential conflicts of interest when SOEs are the Single-Buyer?
- Who should approve long term PPAs?
- How do we ensure fair dispatch between SOE generators and IPPs?

Non-OECD investment is unlocking projects

- Some Chinese examples
  - Zambia: Kariba North Bank Hydro
  - Zambia: Kafue Gorge Lower Hydro
  - Ghana: Bui Hydro
  - Ghana: Sun Asogli gas-fired power plant
  - Ethiopia: Genale Dawa & other hydro
  - etc
- Need for a better understanding of how these deals are structured, risk assessed, procurement undertaken and finance arranged – and how they might be replicated?

Annual investment needs and financing flows for power sector in SSA

Spending needs

	$ billions	% GDP
Capex	**26**	4.2
Opex	**14**	2.2
Total	**40.6**	6.4

Existing financing flows

Opex	Capex					
Public sector	Public sector	ODA	Non OECD	PPI	Total Capex	Total Spending
7	**2.4**	**0.7**	**1.1**	**0.5**	**4.6**	**11.6**

Improving operational efficiencies: **- $3.3 bn;** cost recovery **- $2.2 bn**

Financing gap $23 billion

In summary

- The scale of the challenge implies that ideological debates around public versus private investment are irrelevant / meaningless
- All sources of finance have to be mobilised
- Which means an integrated approach of
  - fixing public utilities
  - improving regulation
  - accelerating private sector participation
  - welcoming non-OECD sources of finance and projects

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