



**Energy and Economic Growth**  
Applied Research Programme



**Oxford** Policy Management

# **Ghana Energy Summit Briefing Note**

Energy for Economic Growth

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## Acknowledgements

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This briefing note was authored by Mark Beare (OPM). Significant content was drawn from the forthcoming Thematic Note that was authored by David I. Stern (Crawford School of Public Policy, Australian National University), and edited by Rachita Daga (Oxford Policy Management).

## List of abbreviations

OPM	Oxford Policy Management
EEG	Applied Research Programme on Energy and Economic Growth
GDP	Gross Domestic Product
IEP	Integrated Energy Plan
PAYG	Pay As You Go
PV	Photovoltaic
SSA	Sub-Saharan Africa

# 1 Energy for Economic Growth

Energy security is one of the defining policy issues that governments face in the twenty first century as they battle to improve access to reliable, affordable and sustainable energy services. The Government of Ghana is no exception. Over one-third the population lacks access to electricity in their homes, and 82% lacks access to clean and safe forms of cooking.

Greater access to modern energy services is closely linked with improvements in people's wellbeing and opportunities to live more meaningful lives. Basic energy access is associated with improvements in productivity (greater amounts of goods and services produced), health and safety, gender equality and education.

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...how to improve access to energy to promote job creation and increase income levels as essential components of poverty reduction strategies.

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Energy is also needed for economic growth. Economic production – be it agriculture, extractive industries, manufacturing or services – requires an affordable and reliable energy supply. The World Bank's Enterprise Survey found that inadequate access to electricity is the second most

important obstacle for firms in SSA and the most important obstacle in South Asia.



For these reasons, many governments are grappling with how to improve access to energy to promote job creation and increase income levels as essential components of poverty reduction strategies.

This policy brief – produced by the Applied Research Programme

*Figure 1: Woman gaining access to the grid for the first time.*

on Energy and Economic Growth focuses on two issues at the centre of energy policy debates in Sub-Saharan Africa:

1. Integrated energy planning
2. Power sector reform

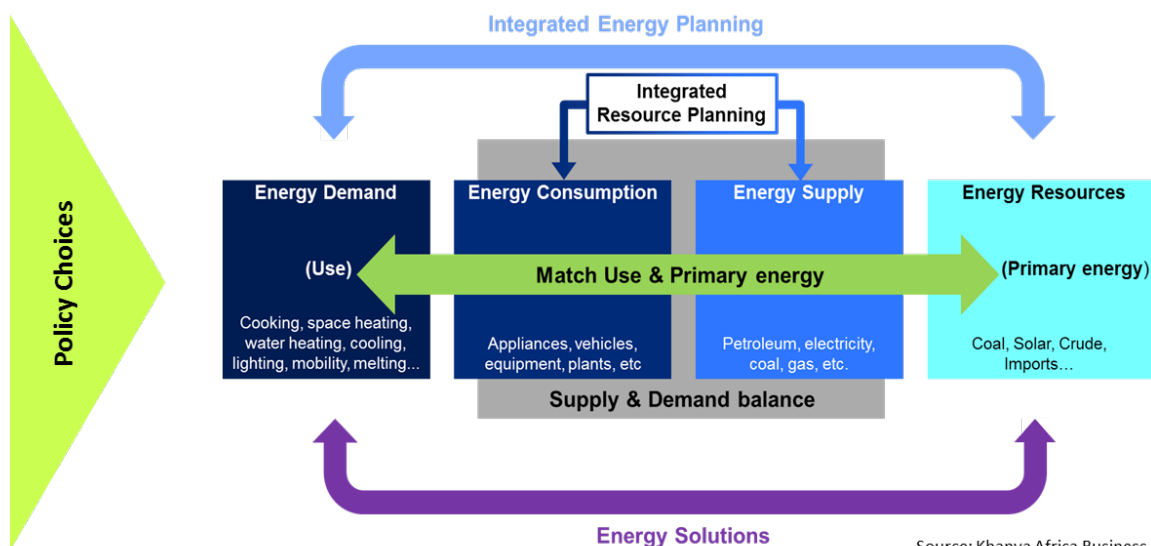
It concludes with a series of questions aimed at guiding discussions at the Ghana Energy Summit.

## 2 Energy Planning for Economic Growth

When exploring options to improve families' and enterprises' access to energy, governments tend to focus on supply side solutions – i.e. they focus on energy supply and distribution. From a policy perspective, the supply side is easier to engage with, as it has fewer stakeholders.

But the demand-side of the equation is equally important. First, the development benefits of energy are determined largely by how that energy is used. For example, electricity used for lighting in the home will have different economic impacts than electricity used for irrigation, aluminium smelting or the telecoms sector. Government interventions to influence the drivers of demand in the residential, services, agriculture and industrial sectors are important for achieving sustainable economic growth.

Engaging with the demand side actors is far more complex than engaging with the supply side and requires extensive data surveys to determine what is driving demand and what can be done to influence it in such a way as to modulate both the intensity of energy use and the extent of energy access and understand the holistic nature of the energy series. This balance of supply and demand is outlined in the diagram below.



Source: Khanya Africa Business Solutions 2012

Figure 1: Indicative Integrated Energy Planning System

Moreover, any government intervention in demand sectors, such as industrial policy or transport policy, will influence the overall demand for energy in the economy. These policies are therefore important in defining the demand profile that feeds into supply-side planning. Achieving the right balance between energy demand and supply is crucial to reducing constraints on economic

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growth. Integrated energy planning has long been recognised as a useful approach to developing a demand profile for an economy and subsequently modelling a supply mix of energy services that best matches the demand sectors. The output of the integrated energy planning

process, namely the Integrated Energy Plan (IEP) is a powerful policy instrument for signalling to both consumers and producers as to what the policy direction will be. The IEP is also as a critical input into the resource plans that are used to plan infrastructure investments, including when and

where to build generation sites, oil refineries and to inform the roll out of household level programmes such as solar home systems (electrical and water heating), etc.

An IEP requires comprehensive demand side data in order to accurately assess the use of energy services and develop the demand profile and forecast energy demand over time. Access to good quality demand data has been cited by a number of researchers and energy planners as a constraint for effective modelling of energy demand forecasts. Generally, large demand side surveys are conducted to collect data. These can be hampered by weak regulatory support for the IEP process, so data provision

regulations are necessary to compel energy users to supply information in the format required to feed into the IEP modelling. As with any modelling process, there are usually significant assumptions applied. It is here where policy makers have the most influence in ensuring that the assumptions are reasonable and reflect broader policy stances such as the imperatives of industrial, climate change, transport policy, etc.

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### **The South African Integrated Energy Plan**

In order to publish an IEP, the South African government initiated the process through the primary policy document and subsequently enacting legislation and related regulations within a robust governance framework to empower the ministry to develop it as a powerful policy instrument as outlined below:

- National energy policy: The development of a National Integrated Energy Plan (IEP) was envisaged in the White Paper on the Energy Policy of the Republic of South Africa of 1998.
- National policy strategy: The purpose of the IEP is to provide a roadmap of the future energy landscape for South Africa to guide future energy infrastructure investments and policy development.
- National energy legislation: The National Energy Act, 2008 (Act No. 34 of 2008) requires the Minister of Energy is mandated to develop and publish the IEP in the Government Gazette.
- Evidence based: The IEP analyses current energy consumption trends within different sectors of the economy (i.e. agriculture, commerce, industry, residential and transport) to project future energy requirements, based on different scenarios.
- Transparency and Accountability: The South African IEP process includes extensive public consultation to ensure transparency and to inform and seek input from stakeholders as the IEP is developed, enabling inputs to be considered such as climate change and environmental impacts. Civil society has an opportunity to make itself heard during the consultations across the country.

### 3 Energy Sector Reform for Economic Growth

Many power sectors in SSA are vertically integrated with state power utilities being the dominant player across all elements of the value chain – generation, transmission and distribution. Powers sector reform should entail ring fencing the various divisions of the utility to enable a more competitive internal arrangement that limits cross subsidisation and ensure that each division - generation, market operator and distribution – operates on a cost reflective basis and meets their operational expenses in a manner that promotes sustainability and at least incorporates an element of marginal costing to address future investments.

...access to energy can be expected to promote economic growth, however whether that leads to positive poverty and development impacts is less clear.

Political influence in power sectors frequently leads to tariffs being set below cost recovery levels in efforts to secure political support. Utilities, as a result, run large deficits limiting their own creditworthiness and investment, and undermining their credibility as off-takers for independent power producers.

When the politics trumps the economics of the tariff setting, the result can be suboptimal (often sub-cost reflective) pricing structures that threaten the viability of the utilities and increase the risk of unreliable supply as investments do not keep up with demand and private sector players are shunned from the market.

South Africa offers an example of where this occurred: long run average cost tariff setting resulted in steadily decreasing investments in generation (amongst other market failures) that precipitated the 2008 supply crisis. Historically ‘unfunded’ investments necessitated sharp increases in tariffs that have decimated the industrial and manufacturing sectors that had been developed on low input electricity costs. It is this context that many governments and development agencies are focusing on market reforms to promote long term sustainability for the infrastructure investments they fund.

An independent regulator, removed from political influence, can encourage investment in the power sectors by providing transparent and predictable decisions around optimal tariff levels. The key question that begs an answer then is, what would the correct price be? Ardent market commentators would argue that the market should set the price as electricity is simply a commodity

like any other. Alternatively there is an argument for the role of the development state to modulate prices that are cost reflective, but not market-related, as a policy instrument to increase access and affordability and drive economic growth.

Whether it is the market or the state that determines prices, the power system must be sustainable. Therefore, tariffs must be, at the very least, cost reflective to ensure sustainable



Tariffs must be at the very least be cost reflective to ensure sustainable investments and long term reliability of supply

Figure 3: Technicians expanding the grid to new areas

investments and long term reliability of supply. As stated by Stern (forthcoming), “In Sub-Saharan Africa, only 2 out of 39 countries collected enough revenue to cover the total cost of providing electricity reducing sustainability and increasing the risk of poor reliability. Corruption, incorrect data on bills, etc. tend to reduce collections. A number of utilities in SSA are transitioning to pre-paid meters, which reduce electricity consumption but improve revenue collection.”

## 4 Questions for reflection during the summit

A cohesive strategy is required to manage energy effectively if economic growth and poverty reduction are to be realised. However, a number of questions need to be addressed as part of that strategy, namely:

**Is Ghana suitably capacitated to manage the energy sector?** This could include a baseline level of expertise to understand the outputs from various pieces of policy research and the development of an IEP. Energy ministries generally do not need the full gamut of skills, as the modelling is often outsourced, but strategic skills to challenge assumptions and understand the implications of the modelling outputs will be critical. Models don't make decisions, people (policy makers) do!

**Does Ghana need an integrated energy plan?** In the absence of an integrated approach to energy planning that responds to how demand sectors are being promoted and seeks to optimise the supply mix, there is a real possibility of supply side investments being 'stranded' despite domestically available energy supplies, such as natural gas.

**What are the challenges of integrating natural gas into the supply mix?**

**Is there a trade-off between promoting more access versus increasing productive consumption?** There are benefits to promoting energy use for industrialisation as well as electrification of schools, health clinics and households. Should any particular category of energy consumer be prioritised over another?

**Does Ghana's regulator have sufficient autonomy and power to discipline the market?** Energy regulation requires difficult choices. A weak or captured regulator can be worse than no regulator at all!

## Way Forward

It is hoped that with the background provided and the questions raised that the participants to the summit will engage in dialogue that starts to produce answers to these questions and concrete actions that can inform the policy environment and produce a positive energy security outcome.