

USES CONFERENCE

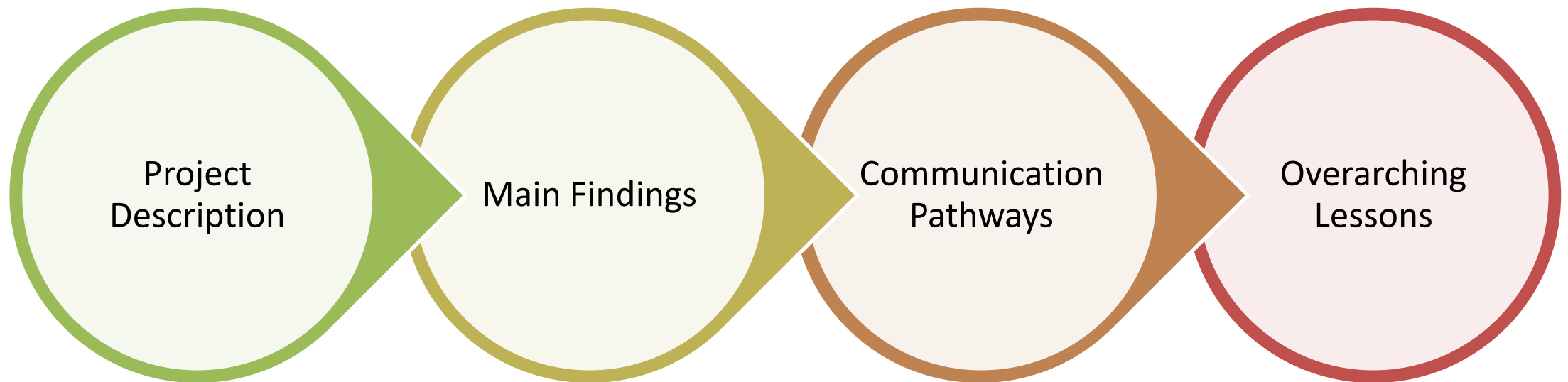
Theme 3 – Low Carbon Transitions

Experience on Green Growth Diagnostic for Africa

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OUTLINE



PROJECT DESCRIPTION

EPSRC

Engineering and Physical Sciences
Research Council



THE UNIVERSITY OF
NEWCASTLE
AUSTRALIA



Durham
University

GREEN GROWTH DIAGNOSTIC FOR AFRICA

AIM : Analyse the obstacles/constraints to investment in renewable energy technologies in Kenya. Specifically, the project focused on.

Research Questions:

1. What is the binding constraint(s) holding back investment in economically feasible renewable energy technologies?
2. Of the set of possible policies, which could most effectively target different binding constraints?
3. Who obstructs/drives the adoption of specific sustainable energy policies in Kenya?
4. What would be the macroeconomic impacts of an increase in renewable energy investment/capacity, and the reforms needed to bring this increase about?
5. Under what circumstances will increased renewable energy capacity translate into increased access to and increased reliability of electricity supply in Kenya and Ghana?

MAIN FINDINGS

- Africa faces **electricity shortages** with low **electricity access**, about 55 percent of the population lacks electricity access.
- The sector is characterized by **low electricity generation** capacity especially from renewable energy, power outages and higher prices.

Constraints that obstructs renewable penetration in the region.

- **Economic** – access to finance, low returns and high risks (unreliable off-taker, poor regulation, macro-economic imbalances, etc)
- **Technical** – high systems costs (poor/lack of networking infrastructure and inflexible generation mix)
- **Political constraints** – political interference and social acceptance.



MAIN FINDINGS

Overcoming technical barriers necessitates:

- Grid extension/enhancement and off-grid solutions, taking the perspective of a traditional power system planner (Rawn and Louie, 2017).
- It also entails address the challenges of the variable renewable energy (Rawn and Louie, 2017).

Economic obstacles:

- Using CGE analysis- an increase in RE investment have positive macro-economic benefits to both Ghana and Kenya that results from low electricity prices (Willenbockel *et al.* 2017).
- Lucas et al. (2017) show that renewable energy auctions have both economic and technical gains than feed-in-tariffs.

Political Challenges

- RE Auctions was a success for SA, however ESKOM is unwilling to lose its monopoly gains (Baker, 2017). This indicates that apart from economic motives, political forces have a role to play.
- Kenya is leading on the off-grid electricity market options, but rural poverty and high cost of reaching the remote, poor population is a key issue (Osiolo et al. 2017)
- Such off-grid solution enhance welfare, but productive activities for income generation cannot be sustained.
- For Ghana natural gas-based generation among is dominant among the political class and lack of an civil society that demand RE maker it hard to implement RE policies.

COMMUNICATION PATHWAYS

Green Power for Africa: Overcoming the Main Constraints

IDS Bulletin 48.5-6 (2017)

Inadequate power supply in sub-Saharan Africa (SSA) means that only 37 per cent of sub-Saharan Africans have access to electricity. Those with access are prone to experience problems with regular power outages. In many sub- SSA countries, electricity access rates are decreasing because electrification efforts are slower than population growth. [More details](http://www.ids.ac.uk/publication/green-power-for-africa-overcoming-the-main-constraints)



<http://www.ids.ac.uk/publication/green-power-for-africa-overcoming-the-main-constraints>

Research Outputs:

1. Green Investment Diagnostic for Africa: What are the Binding Constraints to Investment in Renewables in Kenya and Ghana?
2. The Value of Grid-Scale Variable Renewable Energy Generation in Sub-Saharan Africa
3. Macro-Economic Effects of a Low-Carbon Electricity Transition in Kenya and Ghana: An Exploratory Dynamic General Equilibrium Analysis
4. Political Economy Analysis of the Binding Constraints to Renewable Energy Investment in Ghana
5. From Growth to Green Investment Diagnostics
6. Cost and returns of Renewable Energy in Sub-Sharan Africa: A Comparison of Kenya and Ghana
7. Green Growth Diagnostics for Africa: Literature review and Scoping Study
8. The Political Economy of Low Carbon Energy in Kenya

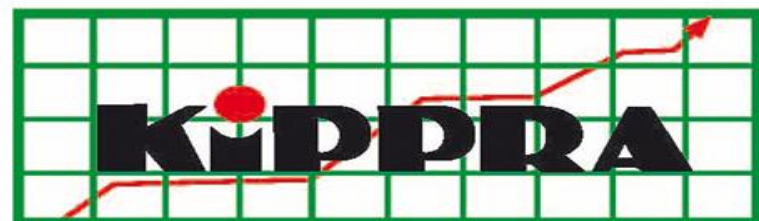
OVERARCHING LESSONS

To increase RE deployment:

- Donor support to boost affordability of rural electrification, and to increase the ability of the importance of the population to pay through the promotion of productive uses.
- Pre-selecting and de-risking sites to reduce investment uncertainty.
- Enhancing all stakeholders participation.
- Provision of government guarantees and political will.
- Addressing grid-challenges– introduce geographical incentives to IPPs or the pre-selection of sites with sufficient grid availability.



Thank You for Your Attention!



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