IREK

Innovation and Renewable Electrification in Kenya

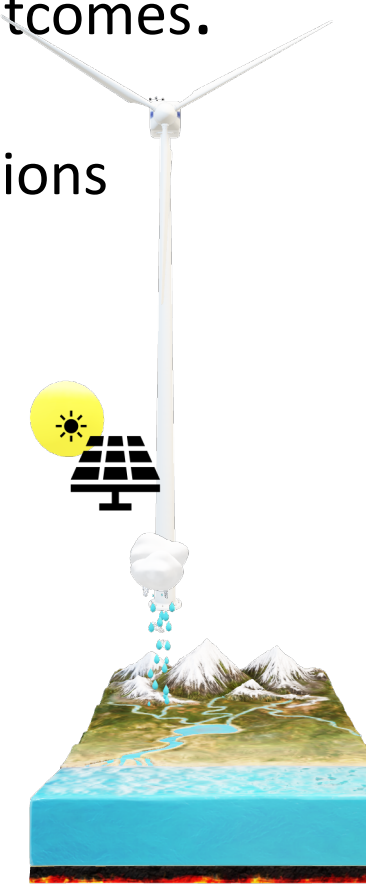
Are capabilities for renewable electrification in place? A Kenyan firm level survey.

Dr. Charles Nzila

Introduction

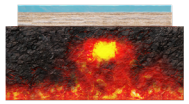
- **What:** Capability pathways, shortfalls, interactions & outcomes.

- **Why:** Linking findings to capability formation & implications on the Kenyan energy sector.



- **Which capabilities are in place & where are the shortfalls?**
- **To what extend do RE technologies influence the development & deployment of capabilities?**
- **Which developments should be pursued?**

- **Theoretical framing**:
  - *Multifaceted interventions: Zhang et al 2016; Fatema et al 2019*
  - *Multi-sectoral analysis: Lindbom 2015;* Flüeler 2012
  - *Enabling environment & Models: Byrne 2012; Cole 2018, Kirchherr & Urban, 2018*
  - *Capability accumulation & RBV vs TBV*



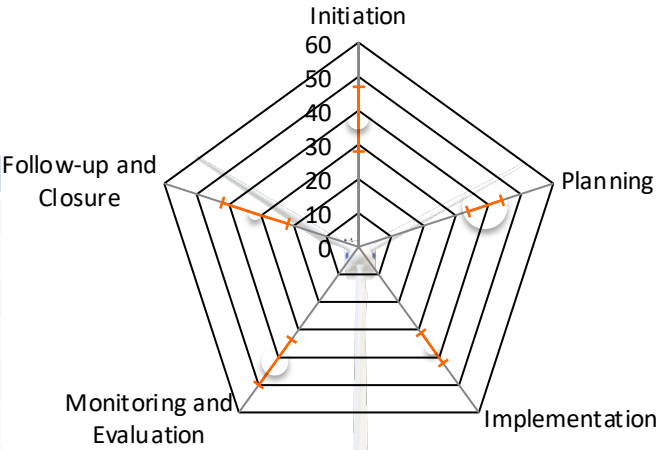
Approach: Capability framework

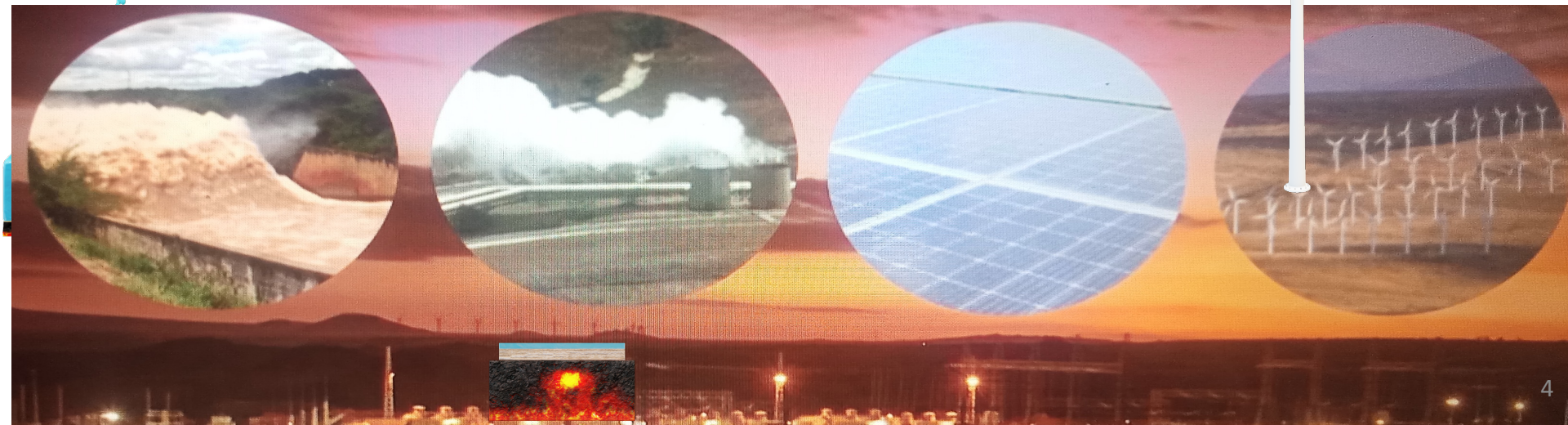
Capability Dimension	Key indicators	Metrics
Financial & management	• Financial acquisition & management (*Strategic management & steering*)	• Identification, assessment, negotiation, and finalisation of terms • Development & implementation of strategic plans, organisational structures, M&E
Operational (Tech/D&E)	• Design & Engineering (*Planning & execution activities*)	• Project evaluation, procurement, support, process improvements, planning, and control
Implementation capability	• Planning & Implementation (*planning, monitoring & controlling processes, Quality assurance, inspection, & inventory control*)	• Planning, monitoring, & coordination of project implementation activities
Servicing & maintenance	• Servicing, and maintenance (*Project sustenance activities*)	• Carrying out maintenance, planning, monitoring, & coordinating service activities
Personnel & supplementary	• Supplementary (*General acquisition - procurement, consumables &human resource*)	• Planning, monitoring, & coordination of acquisition processes (consumables, human resources, etc)

Approach: Survey

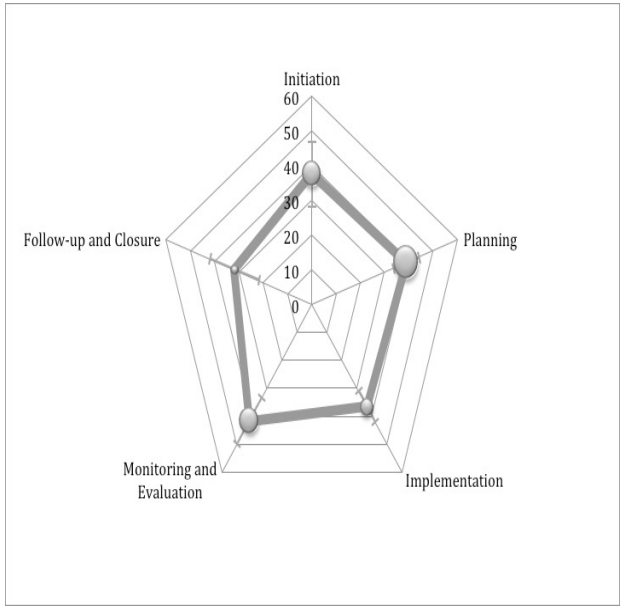
- **Survey on deployment of capabilities in 5 RE technologies & 5 steps in the value chain**

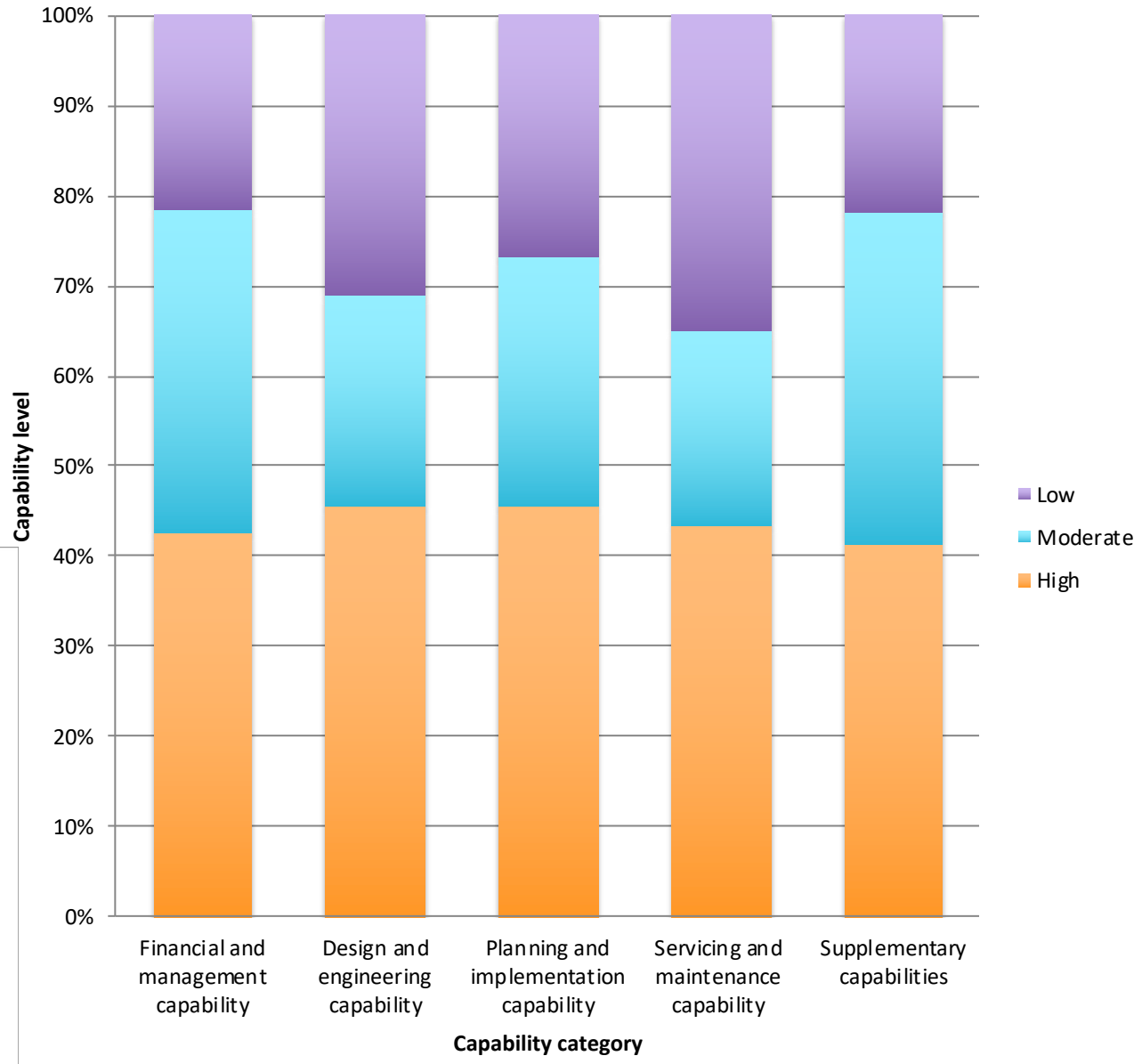
Technology	Sample frame	Sample size	Response	% Response
Small hydro	15	14	10	71%
Wind	11	11	7	64%
Solar	57	50	41	82%
Geothermal	4	4	2	50%
Biogas	6	6	3	50%
Hybrid	9	9	8	89%
Total	102	94	71	76%





Key findings: Aggregate Analysis of Capabilities





Key findings: Summarised

Details	Results
Firm/Project activities	• Active involvement in most of project life cycle (dependence on external agencies during project execution) • Local sourcing of business development services (outsourcing of project finance and technology)
Learning & development of capabilities	• Major accomplishments spearheaded endogenously (minimal cooperation across project / obscure repository).
Benefits & outcomes	• Outstanding benefits : Job creation, demand and use of capabilities in new projects. • Minimal constraints experienced during project execution: Least constraints- use of capabilities in new projects
Influencing factors	• High influencing factors: project planning & design, team performance, financing, employee capabilities & relationship with stakeholders • least influencing factors: local manufacturing/service provision and partner's capabilities

Key Take Away

- Kenya's RE landscape predominated by high deployment related capabilities but with noticeable bottlenecks & weak diffusion.

- Some learning opportunities have been harnessed to drive & grow the capabilities, but the national guiding policies remain largely passive.

- Minimal diffusion of expertise (learning) and development of capabilities in most small scale RE projects hence continued dependence on external actors.

Paradigm shift–

- More local active involvement in entire RE project life cycle
- Reduced dependence on external actors on RE value chain
- Targeted development of local capabilities.

PATHWAYS TO SUSTAINABILITY

BUILDING INNOVATION CAPABILITIES FOR SUSTAINABLE INDUSTRIALISATION

Renewable Electrification in Developing Economies

Edited by Rasmus Lema, Margrethe Andersen, Rebecca Hanlin and Charles Nzila

earthscan from Routledge

Thanks!

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"..the owners of incumbent "legacy" technologies have placed any number of ingenious obstacles to the adoption and spread of potentially disruptive competitors by fair means or foul, and often have done their best to block them entirely."

Calestous Juma, Innovation and Its Enemies: Why People Resist New Technologies.

Any questions?

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