



# Policies for appropriate pathways in energy and sustainable industrialization

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Faith Wandera

Snr. Dep. Director, Renewable Energy

Ministry of Energy



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# Introduction

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- Sustainable Energy pathways (SDG 7) (Energy Access, Energy Efficiency & RE)
- Drivers for RE: Climate change mitigation, HAP and health, energy security, energy access, income generation, job creation
- Arguments for RE in off-grid areas (lack of infrastructure for conventional energy sources)
- IREK Project focus (**Solar & Wind**- learning, innovation and development of capabilities)



# State of learning, innovation & capability development

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- SSA- largely trades in unprocessed products attributed to low levels of technological learning, skill creation and innovation (Lall & Pietrobelli, 2005)
- Most R & D institutions engaged in Agriculture rather than Manufacturing
- Supply of modern skills is inadequate and the physical infrastructure is weak and often deteriorating
- East Africa: operational capabilities needed to compete internationally in simple technologies are still lacking
- Kenya: Mostly informal sector, small businesses, focus on introducing new products rather than processes, weak innovation culture (Mendi & Mudida, 2017)



# Gaps in policy for capability development (IREK WP5 Survey, 2016)

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- Building capacity in the wrong places
- Absence of programmes to test competency and stimulate demand after training
- Lack of political will to support training
- Limited technical capacity (operation & maintenance for wind projects)
- Outsourcing personnel for major contracts on almost everything particularly for wind
- Political interference in project implementation
- Inadequate IPRs at the local level to protect international patents



# Gaps in the Small Wind Innovation System

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- The technological innovation system is weak (all 7 functions rated <2, on a scale of 0-6 where 0=non existent, 6=very strong)
- Limited availability of data for developing small wind systems, lack of technical expertise to analyse the data
- Low incorporation of wind in the 26 mini grids and yet the potential for hybridization has been established from studies (Johannesen, 2019)
- Policy documents have targets set for large wind & other RE but not small wind
- No dedicated budget for small wind, other than the installation of data loggers
- Low levels of R & D (most small wind products in the market are imported)
- Capabilities in developing countries generally lower (**basic**) than for developed countries (**intermediate to pre-advanced**) both at firm and national levels



# Policy implications for small wind

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- Need for increased focus on capability development to enhance national capabilities to install, operate and maintain small wind. Projects implemented should enhance local capacity.
- Better use of international linkages is necessary, with respect to tapping into the flow of knowledge and skills resulting from partnership with developed countries
- Weaknesses in the innovation system for small wind need to be addressed to improve the fulfilment of the Technological Innovation System functions