# Know-How Transfer and Innovation in Renewables in Africa

## Insights and Experiences from European International Cooperation

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euei pdf
energy for development

# Introduction: EU Energy Initiative – Partnership Dialogue Facility (EUEI I PDF)

- An instrument of the EU Energy Initiative, founded in 2005 by EU Member States and the European Commission
- Main functions: policy & strategy advisory, dialogue, support to energy market development in developing countries
- More than 80 activities supported in over 20 countries and regions, incl. advisory projects, thematic studies, events, etc.
- Multi-donor: AUT, EC, FIN, FR, GER, NL, SWE; hosted by GIZ

# Introduction

- Nexus of objectives in international energy cooperation
  - Close energy access gap
  - Stable and secure, affordable, socially appropriate, and environmentally sustainable energy supply
  - Climate Change (mostly mitigation, also adaptation)
  - Shifting paradigms, wider global context: development cooperation + future growth markets → „win-win“
- This presentation …
  - … focuses on the developing countries‘ perspective, in particular Sub-Sahara Africa
  - … reflects experiences of EUEI PDF, as well as input from partners, stakeholders and beneficiaries

# Guiding Questions

- Renewable energy markets in the development context: What kind of Know-How?
- How to do Know-How-Transfer?
- Which markets, which innovative business models?
- How to stimulate markets and know-how transfer?

# What kind of Know-How?

- Common mistake: know-how = technology
- Underlying question: how to translate opportunity (potential + demand) into a successful venture
- Success = project development and operation; the key barriers are in the project development phase, in particular early stage project development
- Aspects of know-how: policies and regulations, management, technology, market information, project development, financing

# How to do Know-How Transfer

- Traditional approach: trainings, often focusing on technology → useful if real demand & potential application
- Ideal scenario: know-how transfer by „doing-business“
  - Real partnerships, i.e. joint business and project development, not just procurement of equipment and services
  - Direction: „North-South“ or „South-South“, perhaps also „South-North“ (e.g. mobile billing and payments)?
  - Needs opportunities for doing business and growth, i.e. accelerated market development
- ‚Chicken-and-egg‘ situation: know-how transfer through doing-business, but doing-business already needs know-how

# Energy Market Segments in Developing Countries

- Focus on electricity (not thermal energy and mobility)
- There is no one renewable energy (RE) market; but different energy market segments (by regulations, business models, actors, etc.) where RE technologies can be deployed

| | On-Grid | | | Rural Electrification | | |
|---|---|---|---|---|---|---|
| **Market Segments** | Utility-Scale | **Meso-Scale (FiT)** | **Small-Scale** | Grid Extension | **Mini-Grids** | **Standalone Systems** |
| **Level of Innovation** | Low | **Medium** | **High** | Low | **High** | **High** |
| **Potential for Win-Win** | Medium / high | **High** | **High** | Low | **High** | **High** |

# Innovation 1: Meso-Scale Renewables (on-grid)

- Business Models:
  - Independent Power Producers (IPP)
  - Captive Power + IPP
- Key Regulation: Feed-in Tarriffs / Tenders; PPA‘s
- Investment volume: x-xx Million EUR
- RE Technologies: Solar PV, Biogas (agro-industrial), Small / Mini-Hydro, Wind
- Market readiness: medium / low (depends on country)

# Innovation 2: Small Renewables (on-grid)

- Business Models:
  - Captive Power / Energy Service Companies (ESCO)
  - Net-Metering
- Key Regulation: Net-Metering
- Investment volume: 0.x-x Million EUR
- RE Technologies: Solar PV, Biogas (agro-industrial), Small / Mini-Hydro
- Market readiness: low (with regulation) / high (without regulation)

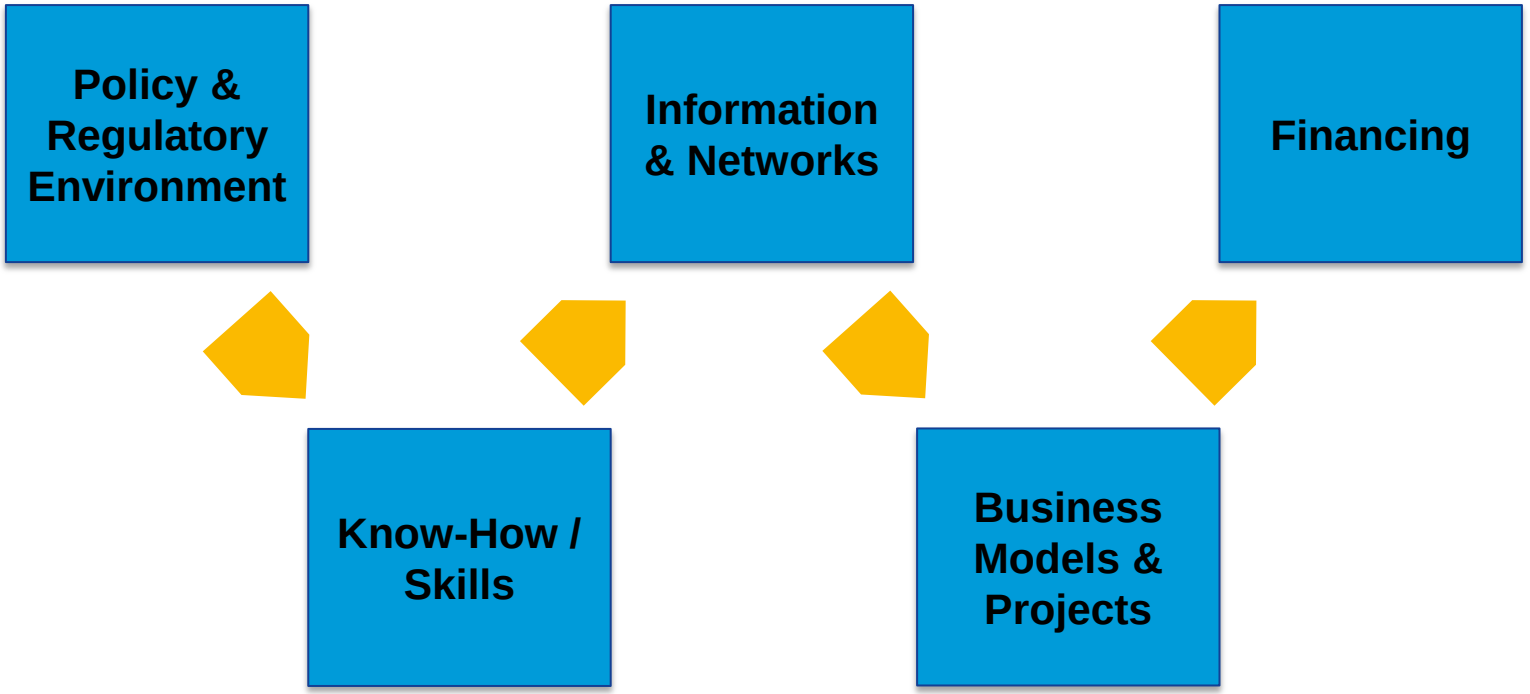
# Innovation 3: Mini-Grids (off-grid)

- Business Models
  - Private Mini-Utilities
  - Public / Utility-operated
  - Public-Private hybrids (generation or distribution)
- Key Regulation: permits/licenses, grid connection, tarrifs
- Investment volume: 0.x-x Million EUR
- RE Technologies: Solar PV, small wind, hydro, in combination with diesel and / or battery
- Market readiness: medium / low (depends on country)

# Innovation 4: Stand-Alone Systems(off-grid)

- Business Models:
  - Retail
  - Pay-as-you-go (combination with mobile payments!)
- Key regulation: equipment standards
- Investment volume
  - Individual systems: 20-300 EUR
  - Retailers / installers: x-xx Million EUR
- RE Technologies: Solar Home Systems, solar lanterns
- Market readiness: high

# “Success Factors” for Energy Market Development

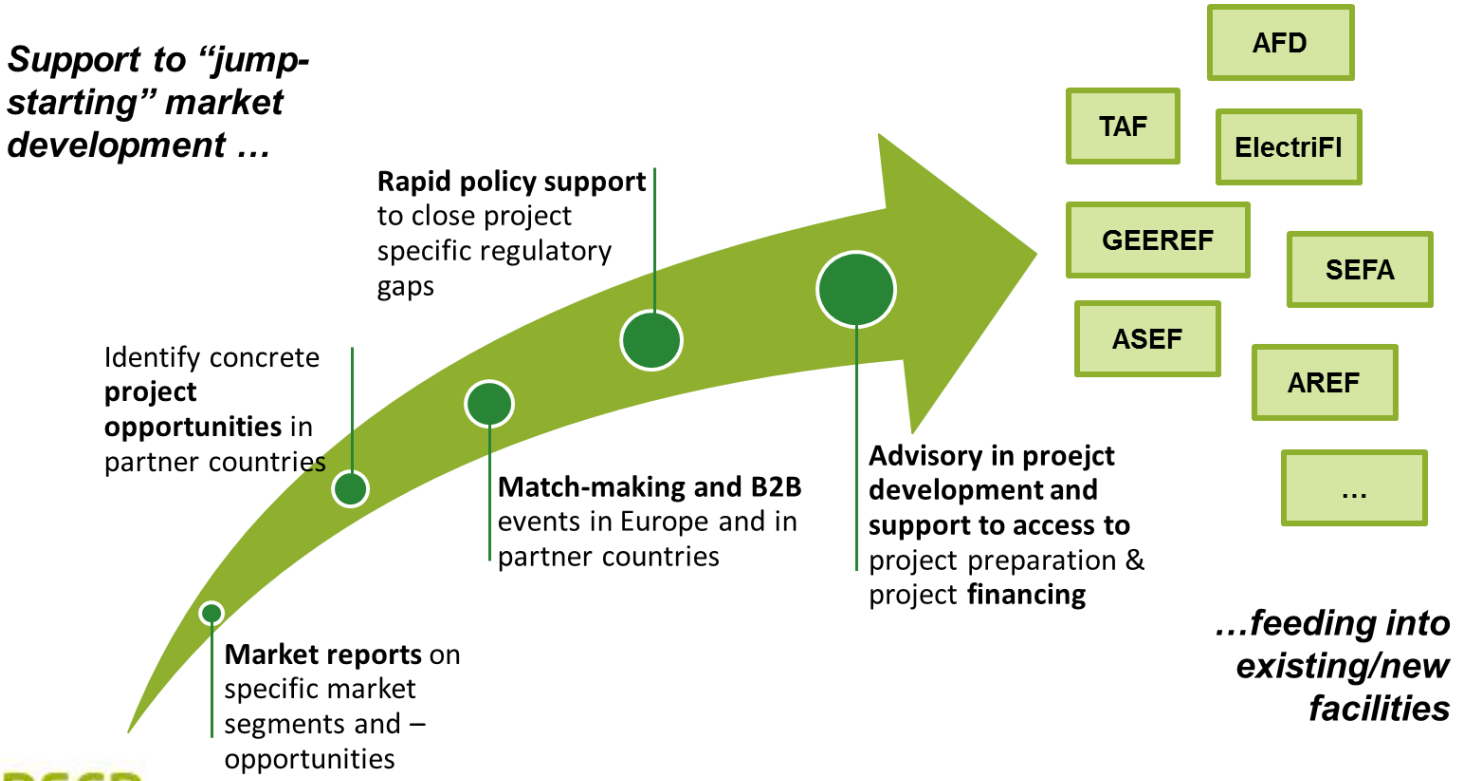



- Financing needs other success factors to be in place, otherwise projects are not “bankable” = no project, no know-how transfer, no investment, no energy

# How to support energy market development?

| Success Factor | How to support |
|---|---|
| Policy & Regulatory Environment | - Advisory on policies and regulations<br>- Regional exchange and learning |
| Know-How & Skills | - TVET & education<br>- Twinning; Match-Making and B2B |
| Information & Networks | - Market Information<br>- Match-Making and B2B |
| Business Models & Projects | - Project Development Advisory<br>- Grant support for project devt. |
| Financing & Risk Mitigation | - Grants<br>- Equity & Loans<br>- Risk Mitigation |

# Our Approach to make Know-How-transfer happen




RECP
Africa-EU Renewable Energy Cooperation Programme

http://www.africa-eu-renewables.org/

# Conclusion & Key Messages

- Focus support efforts on innovative market segments and business models, for widely spread benefits
- Know-how comprises many different aspects
- Know-how-transfer best done by „doing business“
- Different innovative business models in different energy market segments, with high potential for know-how transfer
- Uptake and thus know-how-transfer requires multiple success factors to be in place at the same time
- Market development needs to be stimulated actively, with a mixed set of support interventions – work in progress!

# Thank you for your attention!

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