



# PV Off-Grid Market Trends and Business Opportunities in Sub-Saharan Africa

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[www.renewables-made-in-germany.com](http://www.renewables-made-in-germany.com)

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# Brief Introduction

## to the Project Development Programme (PDP)

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## PDP: Targets and Approach



**Target** Support of business partnerships between German and local companies and the development of lighthouse projects in developing and emerging countries

**Approach** Strategic market development: regional, long-term and holistic linkage of all instruments of the ‘renewables – Made in Germany’ initiative, focused on local industry dynamics

**Target Groups** Project developers, manufacturers, distributors, operators – in Germany and abroad

**Technologies** All renewable energy technologies, particularly photovoltaic, biomass and biogas

**Added Value** GIZ professional expertise and networks with policy-makers, private sector and associations

## PDP: Targets and Approach

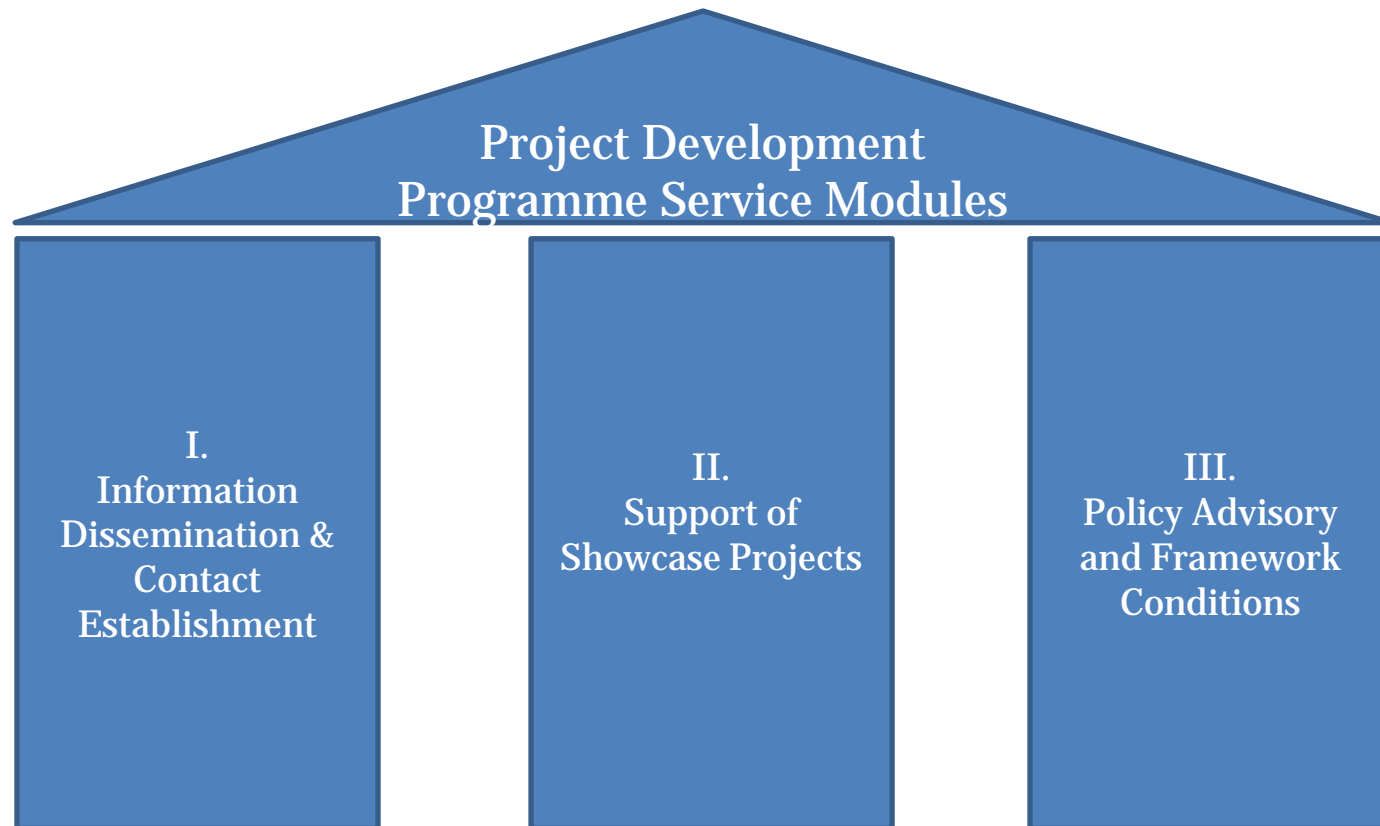
**Sponsor** Federal Ministry for Economic Affairs and Energy within the 'renewables – Made in Germany' initiative

**Partners** Ministries, rural electrification agencies, regulatory bodies, renewable energy associations

**Target Countries** Ghana, Kenya, Mozambique, Tanzania



## PDP: Services



# Off-Grid Trends and Business Opportunities in Sub-Saharan Africa

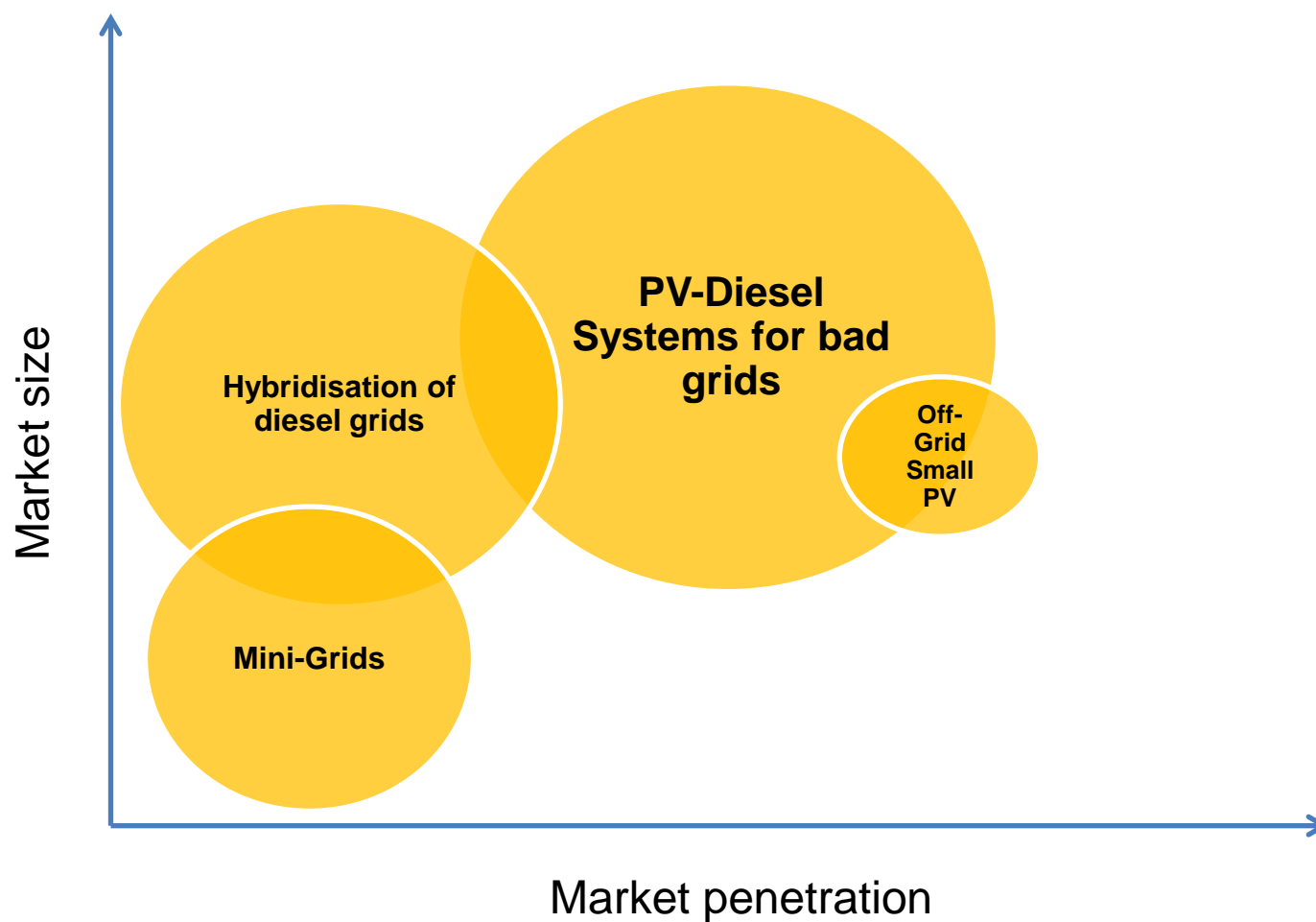
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## Sub-Saharan Africa: Off-Grid Market Segments



## Sub-Saharan Africa: Current Situation

- **Strong & continuous economic growth**  
Ghana, Kenya, Mozambique and Tanzania experience growth rates of 5.7% on average
- **Structural supply problem & large off-grid population**  
all countries experience regular load-shedding and black-outs
- **Stronger focus on off-grid regulations**  
mini-grid and PV-diesel-system regulations gain in importance
- **Options to economize diesel**  
policy-makers and customers seek for options to reduce diesel costs , even though fossil fuels are subsidized
- **Lack of financing options**  
Financing through local banks in many areas not available, financing gap for mid-size applications



## Sub-Saharan Africa: Market Segments

# Solar Home Systems and Pico PV Applications

- **Rural homes have high expenses for energy**  
30% of household expenses go to energy (paraffin, diesel, wood fuel)  
high opportunity costs through time expense  
average home uses 1kWh / day
- **Growing awareness for technology**  
SHS become increasingly known amongst population, but campaigns still necessary
- **Applications**  
homes, health centers, schools, local government buildings
- **Public and NGO programmes**  
in general, rural electrification agencies support the dissemination of SHS with the help of international funds (e.g. World Bank)

## Sub-Saharan Africa: Growing Market Segments

### PV Retro-fitting of Diesel-Grids

- **Rural electricity supply**  
Apart from main cities, population lives off-grid in many countries, some of them are supplied by the state utilities with several MW of diesel mini-grids in place (e.g. Kenya: 16 MW, 15 grids)
- **High generation costs through diesel**  
due to high costs for diesel, generation costs challenge the operator

## Sub-Saharan Africa: Growing Market Segments

### PV Retro-fitting of Diesel-Grids

- **Government programmes / drivers for retro-fitting and new hybrid-systems**
  - Kenya: Kenya Power (15 diesel grids exist), budget of 43 mio USD grants/loans from development partners, FiT for PV in mini-grids (0.2 USD/kWh)
  - Tanzania: FiT for mini-grids (0.29 USD/kWh)

## Sub-Saharan Africa: Growing Market Segments

### Development of New Hybrid-Mini-Grids

- **Reach-out to more parts of the population** to meet the targets of their electrification plans, the governments reach out to additional parts of the population through the development of new hybrid-mini-grids
- **Government and donor programmes**
  - Ghana: tender for the planning, implementation and operation of a mini-grid supplying 10,000 islanders in the Volta river with electricity; GEDAP / World Bank
  - Kenya: several mini-grids planned, financed e.g. by KfW (3 large solar mini-grids ) or WB

## Sub-Saharan Africa: Growing Market Segments

### PV-Diesel Systems for Bad Grids

- **Potential customers in agricultural or food industries**  
demand in agricultural companies such as flower, vegetable or teas farms, cooling houses, etc. is growing
- **Tourism as growth factor for PV and solar thermal applications**  
the sector increasingly uses RE applications to enjoy reliable energy supply and off-set diesel costs
- **Economic feasibility**  
first commercially financed systems have been implemented, electricity tariffs sharply rise in a number of African countries such as Ghana and Tanzania

## Sub-Saharan Africa: Growing Market Segments

### PV-Diesel Systems for Bad Grids

- **Investment security**  
due to high costs, no fast expansion of diesel grids from the national operators expected
- **Administrative effort lower**  
since PV-diesel systems for self-consumption do not feed in, administrative efforts are lower



## Sub-Saharan Africa: RE Frameworks

### Challenges and PDP's response

- Know-how for setting-up tenders not given everywhere → **trainings with rural electrification agencies**
- Lack of awareness → **information workshops for potential clients and involved policy-makers**
- Lack of operation skills and maintenance → **trainings and workshops for PV installers, system integrators and project developers as potential partners for German companies**

## PDP: Activities in 2014

# Join our upcoming PV Activities!

- 25 June (Berlin): PDP-Information Workshop „Off-Grid-PV and PV-Diesel-Hybridization Solutions in Mozambique“
- 17 - 21 October (Mozambique): AHK- Business Trip „Off-Grid-PV and PV-Diesel-Hybridization Solutions in Mozambique“
- October 2014 (Kenya): “German Solar Training Week”
- 3 – 7 November (Ghana): German Solar Training Week / WACEE
- 20 - 21 November (Mozambique): German Solar Training Days





# Thank you for your attention!

**Regine Dietz, Team Leader**

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