

# Mini-grids: A public-private balancing act

Political, economic and organisational lessons from  
Namibia, Senegal and Rwanda

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- In the past 5 years, mini-grids have been actively promoted in Africa by the governments of:

- Senegal
- Rwanda
- Namibia
- Madagascar
  - Mali
- and more...



- ALL of these countries have pursued some kind of public-private cooperation strategy

**Senegal**

Electricity concession areas

Retail price regulation

Partial investment subsidies  
Private sector micro-utilities

Private sector plant  
construction

BOT

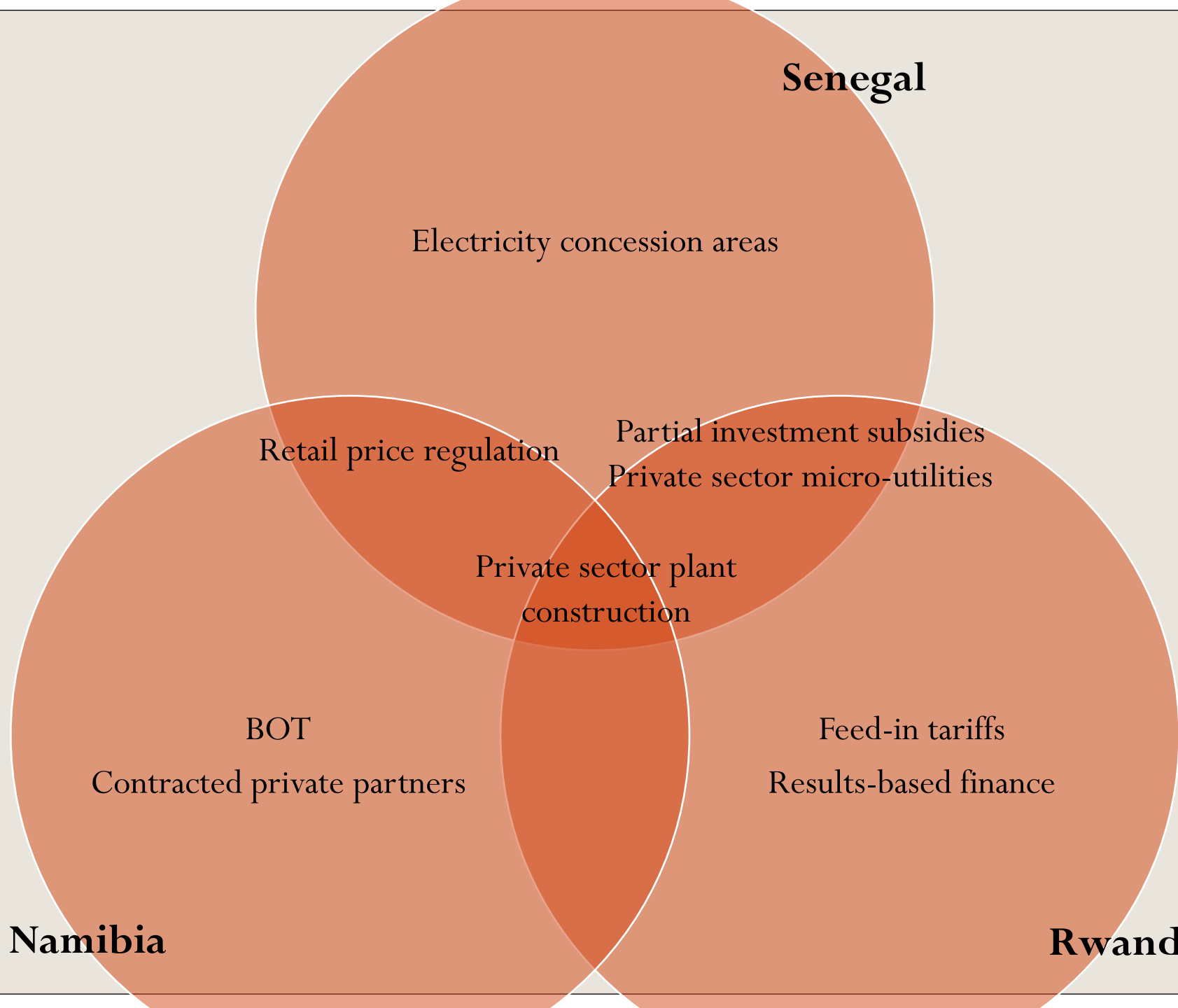
Contracted private partners

Feed-in tariffs

Results-based finance

**Namibia**

**Rwanda**



# Overview: Senegal

- 18 minigrids completed under Phase 1 of GIZ/ASER program
  - 5kWp PV + 10kVA diesel backup
- Further mini-grids underway: ~75 by ASER with GIZ, EU and World Bank support
- Hardware is procured centrally by government/donor. Private sector partner installs, commissions and operates plant for 15 years.
- Price, O&M cash reserves and service conditions fixed in PPP agreements
  
- Strengths: Technologically sound solutions with clear O&M scheme for 15 years
- Weaknesses: Expansion to new clients and new villages dependent on government planning and therefore extremely slow.

# Overview: Namibia

- Initially a 100% PV project, changed to a mini-grid due to economic realities
  - 202kW PV array, 766kWh battery array, 2 new 150kVa generators
  - Financing: EU subsidy (75%) + Nampower (14%) local government (11%)
  - Construction phase managed by NGO and sub-contracted to private company
  - Ownership: 100% local government. Separate legal entity proposed but not established.
  - O&M: Ministry of Public Works
- Strengths: Allows government to achieve political goal of providing cheap electricity to an economically depressed area.
- Weaknesses: Implementation cycle >4 years, weak ownership structures, poor O&M, occasional fuel shortages

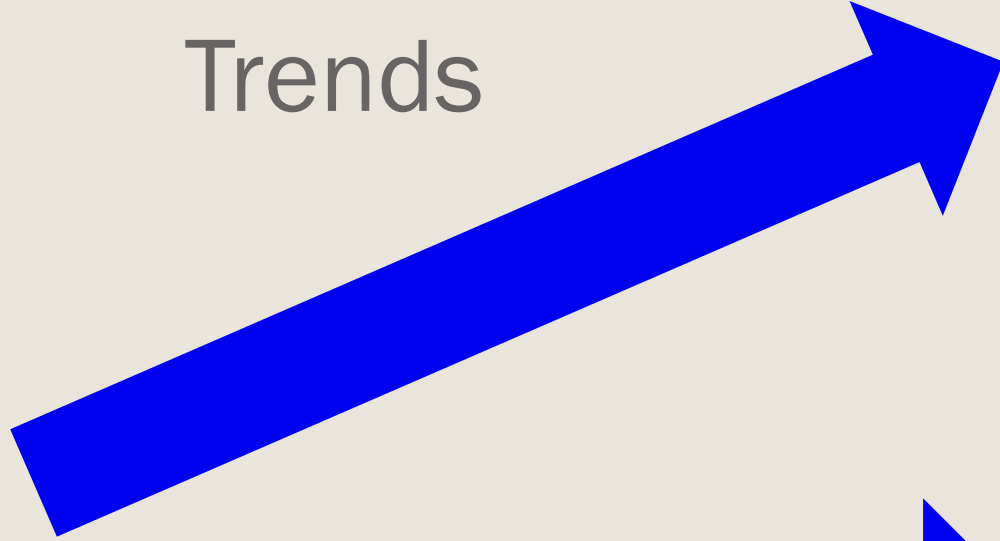
# Overview: Rwanda

- 3 private micro hydro plants operational (1 MW combined)
- 6 more under study (> 3 MW combined)
- Originally isolated mini-grid designed, but grid connect when completed
  - Create private micro utility
  - Develop business plan for investing in a micro hydro plant
  - Provide 15% equity for the investment
  - Obtain 35% commercial debt
  - Receive 50% subsidy
  - Feed-in tariff, partial regulatory framework and financial sector in place
- All 20+ public micro hydro plants will be privatized
- No more 100% public hydro plants

# Requirements for a healthy minigrids sector

- A coherent and favourable policy environment
  - Consistency over time
  - Private-sector friendly
  - Favourable tax regime
  - IPPs allowed and supported by policy
- Strong plant ownership arrangements
  - Clear responsibility for quality of service
  - Community ownership usually fails
  - Vocal customers AND strong regulation
- Robust plant and business design:
  - Realistic and viable business plan
  - High O&M and interest coverage rate
  - Hybrid diesel-PV/Wind rather than 100% RET
  - Grid-connect option supports economics and technical operation

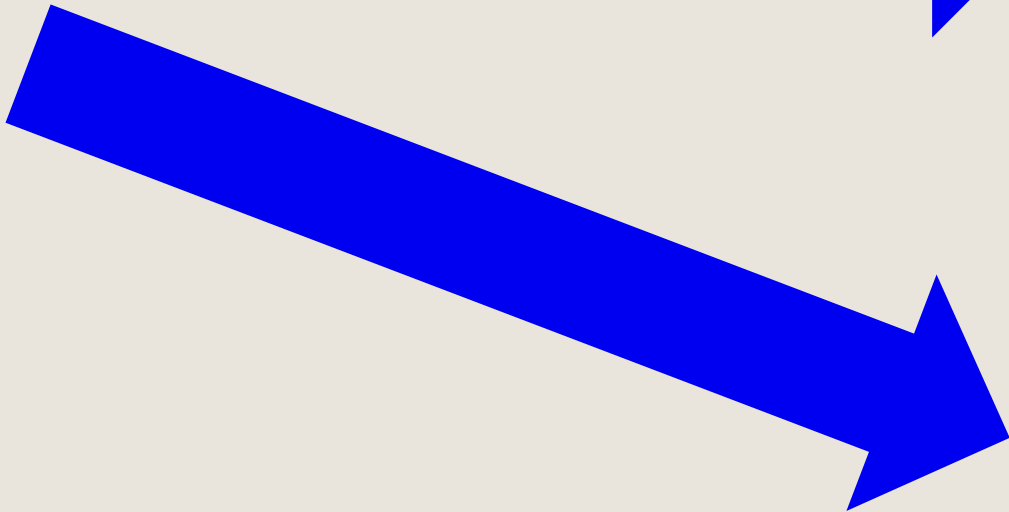
# Trends



- Results-based financing
- Partial subsidies
- Transparent and supportive regulatory frameworks
- Tax and duty exemptions



- Sub-contracted turnkey plants
- Subsidised rural tariffs
- Donor-driven projects



- Government-operated plants
- Public works companies
- 100% public project finance



# Advice to private companies

- Focus on countries with stable governments and a track-record of successful private, or public-private schemes
- Budget time and resources to finding reliable **local partners** and doing “test-runs” with them
- Use donors and philanthropic equity to reduce risk – not to control the project
- Follow policy initiatives to anticipate political trends:
  - EUEI-PDF Minigrids Policy Toolkit for Africa
  - Results-Based Finance initiative in Rwanda
- Look beyond the obvious countries to poor-but-stable emerging African countries: Rwanda, Mozambique, Burkina Faso, Tanzania, ...

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