Energising Development

Private Sector Participation in Micro-Hydro Power for Rural Development (PSP Hydro)

Benjamin Attigah
Project Manager
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Background

- PSP Hydro project is part of the global Dutch–German Energy Partnership ‘Energising Development’ (EnDev) which is implemented by GIZ
- PSP Hydro project is the first attempt in Rwanda to attract private commercial participation in micro-hydro power
- Duration: 2006-2012
- Status: 6 hydro sites currently supported
- Objective:
  To develop private entrepreneurship for building and operating micro-hydro power plants and provide support in the creation of a conducive regulatory framework for the MHP sector
Project activities

Support to SMEs

- Business Plan Development
- Technical Engineering Assistance
- Financial support: co-funding of maximum 50% of total investment costs

Sector Development / Institutional Support

- Political support and institutional guidance
- Assistance and tutorage for sector consolidation
- Improve cooperation between stakeholders in the sector
Project activities II

Privatisation of MHP plants

- MININFRA is interested in privatisation of all publicly funded MHP plants below 2.500kW
  - Community managed plants not working efficiently
  - EWSA not interested in management of smaller plants
- PSP hydro study: ‘Privatisation of the Management of Existing Micro Hydro Power Plants: Feasibility analysis and strategy’
- Audits of first pilot sites conducted by PSP Hydro:

<table>
<thead>
<tr>
<th>Name</th>
<th>Sponsor</th>
<th>Connection</th>
<th>Capacity (kW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agatobwe</td>
<td>GoR, UNIDO</td>
<td>Off-grid</td>
<td>200</td>
</tr>
<tr>
<td>Mutobo</td>
<td>GoR, UNIDO</td>
<td>Off-grid</td>
<td>200</td>
</tr>
<tr>
<td>Nyamotsi I</td>
<td>GoR, UNIDO</td>
<td>Off-grid</td>
<td>100</td>
</tr>
<tr>
<td>Nyamotsi II</td>
<td>GoR, UNIDO</td>
<td>Off-grid</td>
<td>100</td>
</tr>
<tr>
<td>Rugezi</td>
<td>GoR</td>
<td>On-grid</td>
<td>2.200</td>
</tr>
</tbody>
</table>
Project Cycle: Financing Mechanism

- EnDev grant: 50%
- Equity: 15%
- Loan: 35%
Project Cycle: Tendering

- **Stage 1**: Submission of expression of interest by the developers including
  - Detailed description of the site to be developed
  - Preliminary MoU with district authorities
  - Estimation of customer potential
  - References of project developers
  - Proof of equity

Evaluation of proposals by PSP Hydro and award of grant of €5000 for complete business plan development

- **Stage 2**: Submission of complete business plan and obtaining of financial closure
**Project Cycle: Tendering II**

- Call for proposals from private sector in 2005, 2007 and 2009

<table>
<thead>
<tr>
<th>Year</th>
<th>Submitted</th>
<th>Improved</th>
<th>Selected</th>
<th>Contracted</th>
<th>Ongoing</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005: Call 1</td>
<td>&gt; 20</td>
<td>15</td>
<td>6</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>2007: Call 2</td>
<td>5</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2009: Call 3</td>
<td>10</td>
<td>8 (+ 2)*</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>

* Old sites from Call 1
## Current Status of PSP Hydro Projects

<table>
<thead>
<tr>
<th>Company</th>
<th>Direct PSP support</th>
<th>Indirect support / spin-offs</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Site</td>
<td>Site</td>
<td>kW</td>
</tr>
<tr>
<td><strong>ENNY</strong></td>
<td>Mazimeru (500)</td>
<td>Maruruma, Rukarara 2 (150)</td>
<td>2635</td>
</tr>
<tr>
<td><strong>CALIMAX</strong></td>
<td>Gasumo (80)</td>
<td>Rubagabaga, Yungwe (314)</td>
<td>494</td>
</tr>
<tr>
<td><strong>SOGEMR</strong></td>
<td>Musarara (438)</td>
<td>Mukungwa 3, Giciye 2, + 5 others (2000)</td>
<td>7938</td>
</tr>
<tr>
<td><strong>REGREPOWER</strong></td>
<td>Kavumu (285)</td>
<td>Mukungwa 4, Mugambazi, Nshili 2, Umunywanzuki (916.4, 439.5, 480.7, 556)</td>
<td>2677.6</td>
</tr>
<tr>
<td><strong>RED</strong></td>
<td>Mashyiga (140)</td>
<td></td>
<td>140</td>
</tr>
<tr>
<td><strong>REPRO</strong></td>
<td>Murunda (96)</td>
<td>n.a (1000)</td>
<td>1096</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>1,539</td>
<td>13,441</td>
<td>14,980</td>
</tr>
</tbody>
</table>
Achievements

- Completion of the first privately owned and operated micro hydro power plant in Rwanda
- First wheeling arrangement (MHP, tea factory) in Rwanda completed soon
- 2 additional MHPPs expected to be completed by early 2012
- Guidance and support in the establishment of a regulatory framework has led to:
  - Process for license from regulator established
  - Establishment of standardized PPAs
  - Existence of environmental regulations
  - Establishment of a set feed-in price
- Rwandan banks have given first commercial loans to MHP projects
- Privatization of publicly owned MHPPs has been initiated
Challenges

- No defined political and legal framework at the beginning
  - General feed-in and wheeling tariffs still not officially declared
- Lack of own funds and collateral
- Low capacities (managerial capacities as well as technical and financial knowledge) of the local developers leading to delays and increases in costs
- Limited local expertise for analysis, design and construction of such projects
- Very high cost per kW installed
- Grid extension plans are not coordinated with private developers
- Too demanding conditions of local banks for loans
Outlook

Pending Challenges will have to be addressed by:

- Trying to work with regional experts
- Consolidating existing companies within the MHP sector
- Setting of appropriate incentives for private participation
  - Official declaration of feed-in tariff and wheeling tariffs
  - Definition of national guidelines for the support to MHP