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A Case Study of the 60kW Yandohun Micro Hydro Power Project in Lofa County, Liberia

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### History, Demography & Geography Stats
- **Country:** Republic of Liberia
- **Capital:** Monrovia
- **Established:** 1822
- **Independence:** July 26, 1847
- **Location:** West Africa
- **Geographic Cord.:** 6° 30' N, 9° 30' W
- **Area:** 111,369 sq. Km (43,000 sq. mi)
- **Population:** July 2011 est. 3,786,764 2008 Census – 3,476,608
- **Population Growth Rate:** 2.663%
- **Official Language:** English, 20 Ethnic
- **Currency:** LRD (USD in common use)
- **Religion:** Ch. – 85.6%, Ms. – 12.2%
- **Climate:** Tropical; hot, humid; dry winters with hot days and cool nights.
- **Coastline:** 579 km

### Socio-Economic Statistics
- **Unemployment Rate:** 85% (2003 est.)
- **Inflation Rate (Consumer Prices):** 7.5%
- **Urbanization:** 48%; Rate 3.4%/annual
- **GDP:** 2010: $1.691 billion; Growth: 5.1%
- **GDP Per Capital (PPP):** $ 500
- **Agri. Products:** rubber, coffee, cocoa, rice, cassava, palm oil, cattle, etc.
- **Industries:** iron ore mining, timber, rubber processing, diamond/gold mining, palm oil
- **Natural Resources:** Iron ore, timber, gold, diamond, hydropower, solar power, wind
- **Renewable Water Resources:** 232 cu Km
- **Solar Radiation:** 3.84 – 6.13 kWh/m^2/d
- **Wind Speed:** 1.4 – 4.0 m/s (gentle breeze)
- **Oil Import:** 4,263 bbl/day
- **Oil Consumption:** 4,000 bbl/day
Project Location
Initially 30kW isolated grid constructed in the 1980s;

Operated and managed successfully by the Yandohun community until it was destroyed during the 14-year Liberian civil war;

Re-designed for 60kW in 2009 with funding from the World Bank’s Africa Renewable Energy Access (AFREA) Program;

Rehabilitation work commenced in June 2011 with AFREA funding;
### Project Information

<table>
<thead>
<tr>
<th><strong>Project Name</strong></th>
<th>Yandohun Micro Hydro</th>
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<tbody>
<tr>
<td><strong>Location</strong></td>
<td>Yandohun Town, Kolahun District, Lofa County</td>
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<tr>
<td><strong>Site description</strong></td>
<td>Located about 53km south west of Voinjama City, Lofa County</td>
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<td><strong>Project type</strong></td>
<td>Run-of the river</td>
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<tr>
<td><strong>Source</strong></td>
<td>Yando Creek</td>
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<td><strong>Gross head</strong></td>
<td>59 m</td>
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<tr>
<td><strong>Design Flow</strong></td>
<td>0.1m³/sec</td>
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<tr>
<td><strong>Power output</strong></td>
<td>60 kW (six rainy months), 5-30 kW (six months of dry season)</td>
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<td><strong>Distance to load Ctr.</strong></td>
<td>Yandohun (1.6 km)</td>
</tr>
<tr>
<td><strong>Main load centres</strong></td>
<td>About 220 households, one elementary school, one rice mill and few small businesses</td>
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<td><strong>Project Status</strong></td>
<td>Civil works about 60% completed; except for the turbine and generator, all other system components (penstocks, transmission &amp; distribution lines, transformers, connectors, poles, etc.) have been procured and transported to the site.</td>
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<td><strong>Ownership</strong></td>
<td>Yandohun Community</td>
</tr>
<tr>
<td><strong>Environmental &amp; Social Impact</strong></td>
<td>Environmental and social impact assessment conducted with no major impact on the community.</td>
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Challenges

- Remote project location;
- Very bad road conditions, especially during the rainy season;
- Difficulties in transporting construction materials and equipment;
- Very limited communication link between project site and RREA central office.
Success Factor

- Very organized and mobilized community;
- Excellent community contribution (in-kind);
- Contractor based/settled in community until project completion;
- Very good support from both Government and World Bank;
THANK YOU