Overview of BPC, its hydropower projects and Opportunities for further Development

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Content

Overview of BPC

Generation Business

Group Business

Current Projects
Overview

Hydropower Player
Established presence in Power Sector in Nepal since 1966

Vertically Integrated Portfolio
• Generation & Distribution
• Manufacturing of H/M & E/M & its repair
• Engineering & Consulting services
• Hydraulic Model Testing

Operational Track Record
• Power Plant Operation & Electricity Distribution,
• Development of hydro projects,
• Manufacturing of H/M & Repair of E&M equipment
• Engineering & Consulting,
History

Ownership and Management

- 1966: BPC established
- 1993: Ownership transfer to GoN
- 2003: Privatized

Government Management
- 10 yrs

UMN Management
- 13 yrs

Present Management
- 13 yrs

Generation Capacity Addition

- 1978: 1 MW (Tinau)
- 1981: Andhikhola 5.1 MW
- 1991: Khimti (17%) 5.1 MW
- 1994: Jhimruk 12.3 MW
- 1997: Khimti (60%) 4 MW
- 2000: Khimti (60 MW) 60 MW
- 2007: Khimti (17%) 4 MW
- 2015: AKHPU 4.3 MW
Capacity Building
Generation Business Overview

<table>
<thead>
<tr>
<th>Generation Capacity</th>
<th>Equity Megawatts-34 MW Wholly Owned &amp; Operated- 17.4 MW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jhimruk Plant</td>
<td>• Capacity- 12.3 MW</td>
</tr>
<tr>
<td></td>
<td>• Annual Generation- 72 MU</td>
</tr>
<tr>
<td></td>
<td>• 100% Ownership</td>
</tr>
<tr>
<td>Andhikhola Plant</td>
<td>• Capacity- 9.4 MW</td>
</tr>
<tr>
<td></td>
<td>• Annual Generation- 70 MU</td>
</tr>
<tr>
<td></td>
<td>• 100% Ownership</td>
</tr>
<tr>
<td>Khudi Plant</td>
<td>• Capacity- 4 MW</td>
</tr>
<tr>
<td></td>
<td>• Annual Generation- 24 MU</td>
</tr>
<tr>
<td></td>
<td>• BPC holds 60% ownership</td>
</tr>
<tr>
<td>Khimti Plant</td>
<td>• Capacity- 60 MW</td>
</tr>
<tr>
<td></td>
<td>• Annual Generation- 350 MU</td>
</tr>
<tr>
<td></td>
<td>• BPC holds 17% ownership</td>
</tr>
</tbody>
</table>
Group Business Structure

**Generation**
- Andhikhola Hydroelectric Plant: 9.4 MW - wholly owned
- Jhimruk Hydroelectric Plant: 12.3 MW - wholly owned
- Khudi Hydropower Plant: 4 MW - 60% ownership
- Khimti Hydropower Plant: 60 MW - 17% ownership

**Distribution**
- EDC Galyang: 33,000 consumers
- EDC Darimchour: 14,000 consumers

**Projects**
- Kabeli-A: 37.6 MW (Kabeli Energy Ltd - 54% ownership) - Starting construction
- Nyadi: 30 MW (Nyadi Hydropower Ltd - 97.3% ownership) - Starting construction
- Lower Manang Marsyangdi: 100 MW - Under PPA Process
- Chino Khola: 8.5 MW

**Engineering Consulting**
- Hydroconsult Engineering Ltd: 45 Engineers, 5 Environmentalist - 80% ownership

**Manufacturing & Repairs**
- Nepal Hydro & Electric: Installation, Manufacturing & Repairs of EM & HM equipment - 51% ownership

**O&M Services**
- BPC Services: O&M Service Provider - 100% ownership
Subsidiary & Associate Companies

- **Hydro Consult Engineering Ltd.**
  - Project Planning and Conceptual Design
  - Engineering Design and Tender Documentation
  - Project Management and Construction Supervision
  - Monitoring and Mitigation Projects

- **Nepal Hydro & Electric Ltd.**
  - The competence of NHE includes many combinations of mechanical and electrical, design and manufacture, management and implementation

- **BPC Services Ltd.**
  - Its core business is to provide Operation and Maintenance services to power plants.
Subsidiary & Associate Companies

- **Conduct research and consulting services on following areas of activities:**
  - Physical Hydraulic Model studies
  - Sediment studies
  - Hydro turbine efficiency measurement
  - Settling basin performance test
  - Hydrometry

- **Hydro Lab Pvt. Ltd.**

- **Himal Power Limited**

- **Khudi Hydropower Limited**

- Owns and operates the 60-MW Khimti Hydropower Project, which began commercial operation on July 5, 2000.

- KHL has successfully commissioned 4 MW Khudi Hydropower Project located in Lamjung District in Nepal. The project started its commercial operation from December 30, 2006.
Current Projects

• Kabeli A HEP (37.6 MW) - starting construction – Q3 2016

• Nyadi HEP (30 MW) – starting construction – Q3 2016

• Lower Manang Marsyangdi HEP (100 MW)

• Chino Khola HEP
# Status of Projects Under Development

<table>
<thead>
<tr>
<th>Particulars</th>
<th>Andhikhola Upgrading</th>
<th>Kabeli-A</th>
<th>Nyadi</th>
<th>Lower Manang</th>
<th>Chino</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>Syangja District Mid-West Nepal</td>
<td>Panchthar District Eastern Nepal</td>
<td>Lamjung District Mid-West Nepal</td>
<td>Manang District Mid-West Nepal</td>
<td>Manang District Mid-West Nepal</td>
</tr>
<tr>
<td>Capacity</td>
<td>9.4 MW</td>
<td>37.6 MW</td>
<td>30 MW</td>
<td>100 MW</td>
<td>8.5 MW</td>
</tr>
<tr>
<td>Feasibility Study</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>On Going</td>
</tr>
<tr>
<td>ESIA</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>On Going</td>
</tr>
<tr>
<td>PPA</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>In process</td>
<td>Yet to start</td>
</tr>
<tr>
<td>Land Acquisition</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>Yet to start</td>
<td>Yet to start</td>
</tr>
<tr>
<td>Financial Closure</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>In process</td>
<td>Yet to start</td>
</tr>
<tr>
<td>Construction Schedule</td>
<td>Completed</td>
<td>Q3 2016</td>
<td>Q3 2016</td>
<td>2017-18</td>
<td>2017</td>
</tr>
<tr>
<td>Commercial Operation</td>
<td>April 2015</td>
<td>Q4 2019</td>
<td>Q4 2019</td>
<td>2021</td>
<td>2019</td>
</tr>
</tbody>
</table>
# Kabeli-A Hydroelectric Project Factsheet

<table>
<thead>
<tr>
<th>Category</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Capacity</strong></td>
<td>37.6 MW</td>
</tr>
<tr>
<td><strong>Location</strong></td>
<td>Panchthar District, Eastern Nepal</td>
</tr>
<tr>
<td><strong>Salient Features</strong></td>
<td>- Head: 118 m&lt;br&gt;- Discharge: 38 m³/sec&lt;br&gt;- Annual Energy: 205 GWh</td>
</tr>
<tr>
<td><strong>DPR</strong></td>
<td>- Completed&lt;br&gt;- Consultants: Hydro-Consult</td>
</tr>
<tr>
<td><strong>Detail Design &amp; Tender Doc</strong></td>
<td>- Tender Doc: finalized&lt;br&gt;- Detail Design: Completed&lt;br&gt;- Consultant: Mott-Hydroconsult</td>
</tr>
<tr>
<td><strong>ESIA</strong></td>
<td>- Approved from GoN and WB&lt;br&gt;- Consultants: NESS-HydroConsult</td>
</tr>
<tr>
<td><strong>Access</strong></td>
<td>- Road: 800 km from KTM&lt;br&gt;- Air: Bhadrapur and Taplejung</td>
</tr>
<tr>
<td><strong>PPA and Generation License</strong></td>
<td>- PPA completed&lt;br&gt;- Generation License received</td>
</tr>
<tr>
<td><strong>Financial Closure</strong></td>
<td>- Completed</td>
</tr>
<tr>
<td><strong>Expected CoD</strong></td>
<td>2019</td>
</tr>
</tbody>
</table>

**Highlights**
- First project awarded under ICB
- WB Funding
- Daily Peaking Plant
- No resettlement
Kabeli A HEP- Snapshots

1. Local Interaction
2. Physical Hydraulic Modeling
3. P/H site and Tamor River
### Nyadi Hydroelectric Project Factsheet

| **Capacity** | 30 MW |
| **Location** | Lamjung District, Western Nepal |
| **Salient Features** | Head - 334 m  
Discharge - 11 m³/se  
Annual saleable energy - 168.5 GWh |
| **DPR** | Completed  
Consultants - Hydro Consult |
| **Detail Design & Tender Doc** | Tender Doc - ready  
Detail Design - complete |
| **EIA** | Approved by GoN  
Consultants: Hydroconsult |
| **Connectivity** | Road: 207 km from KTM  
Air: Pokhara |
| **PPA and Generation License** | PPA and FC Completed  
Generation License received |
| **Expected CoD** | 2019 |

### Highlights
- No resettlement
- No Forest Area
- Local support
1. Automatic Gauge Reader Arm
2. Bridge along access road installed over Marsyangdi River
3. Nursery development for plantation
## Lower Manang Marsyangdi Project Factsheet

<table>
<thead>
<tr>
<th>Category</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Capacity</strong></td>
<td>100 MW (@Q40)</td>
</tr>
<tr>
<td><strong>Location</strong></td>
<td>Manang District, Western Nepal</td>
</tr>
</tbody>
</table>
| **Salient Features**      | - Head: 320 m  
  - Discharge: 38 m³/s                                                  |
| **DPR**                   | - Completed  
  - Consultants: Bernard-HydroConsult                                      |
| **Detail Design & Tender Doc** | - Tender Doc: ready  
  - Detail Design: ongoing                                      |
| **EIA**                   | - Approved by GoN  
  - Consultants: SWECO-Hydroconsult                                        |
| **Access**                | - Road: 230 km from KTM  
  - Air: Pokhara and Manang airports                                     |
| **PPA & Generation License** | - Application for PPA  
  - Application for GL                                                   |
| **Expected CoD**          | 2021                                                                     |

### Highlights
- Weir type dam
- Surface settling Basin
- Surface power house
- No re-settlement
Lower Manang Marshyangdi HEP
Snapshots

1. Marsyangdi river and H/W Site
2. Physical Hydraulic Modeling
3. Public Hearing for EIA
4. Access Road
# Chino Khola Small Hydropower Project Factsheet

<table>
<thead>
<tr>
<th>Category</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Capacity</strong></td>
<td>8.5 MW</td>
</tr>
<tr>
<td><strong>Location</strong></td>
<td>Manang District, Western Nepal</td>
</tr>
<tr>
<td><strong>Salient Features</strong></td>
<td>- Net Head- 905 m &lt;br&gt; - Discharge- 1.07 m³/se</td>
</tr>
<tr>
<td><strong>DPR</strong></td>
<td>Completed &lt;br&gt; Consultants- Hydro Consult E. Ltd</td>
</tr>
<tr>
<td><strong>Detail Design &amp; Tender Doc</strong></td>
<td>Not yet started</td>
</tr>
<tr>
<td><strong>EIA</strong></td>
<td>To be started &lt;br&gt; Consultants: HCEL</td>
</tr>
<tr>
<td><strong>Access</strong></td>
<td>Road: 230 km from KTM &lt;br&gt; Air: Pokhara and Manang airports</td>
</tr>
<tr>
<td><strong>PPA &amp; Generation License</strong></td>
<td>Not started</td>
</tr>
<tr>
<td><strong>Expected CoD</strong></td>
<td>2019</td>
</tr>
</tbody>
</table>

## Highlights
- Construction power for LMMHEP
- Short tunnel and penstock waterway
- Surface settling Basin
- Surface power house
- No re-settlement
Chino Khola SHP
Snapshots

1. Headworks Site.
2. Geological Condition at Left Bank of H/W Site.
3. Access Road and Powerhouse Site
Growth Trajectory

- **2011**: Start Construction of Andhikhola Project
- **2012**: CoD Andhikhola Project
- **2013**: Kabeli Project construction start
- **2014**: Start Nyadi Project Construction
- **2015**: CoD of Kabeli HEP & Nyadi HEP
- **2016**: CoD Chino
- **2017**: Start LMMHEP Construction
- **2018**: Start Nyadi HEP
- **2019**: CoD Lower Manang HEP
- **2020**: CoD Manang HEP
- **2021**: 100 MW (113 MW)
  - 37.6 MW (93 MW)
  - 30 MW 72.8 MW
  - 8.5 MW* 42.8 MW
  - 4.3 MW* (34.3 MW)
  - 30 MW*

*Includes- 9.4 MW Andhikhola + 12 MW Jhimruk + 60% of 4 MW Khudi + 16.88% of 60 MW Khimti
Thank You!