BUKU-KAPATI HYDROPOWER PROJECT - 5 MW

PHYSICAL PROGRESS REPORT

2081 Magh

JAN-2025

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1. PROJECT OVERVIEW

The **Buku Kapati Hydropower Project (5MW)** is a run-of-river initiative situated in Goli-03, spanning the Okhaldhunga and Solukhumbu districts. The project site lies about 200 kilometers north of Kathmandu and 38 kilometers south of Jiri. Key components of the project include a diversion weir with an undersluice, an intake and gravel trap, an approach canal, spillway arrangements, settling basin, headrace alignment, surge shaft, penstock alignment, powerhouse, tailrace canal, and switchyards. The electricity generated will be transmitted to the 33/11kV Bamti Sub-station.

Main Components of the Project:

- **Weir**
- **Settling Basin**
- **Headrace Alignment**
- **Penstock Alignment**
- **Powerhouse**
- **Tailrace**
- **Switchyard**

2. SCOPE OF STUDY

The main objectives of the site visit and subsequent analysis were:

To evaluate the physical progress of construction works, including the client's progress report:

1. **Review the Report**:

Verify details on completed work, cumulative progress, and scheduled vs. actual achievements.

2. **Conduct a Site Inspection**:

Document findings with photographs and notes.

3. **Analyze Resource Utilization**:

Assess manpower, machinery, and materials against planned deployment.

4. **Ensure Quality and Compliance**:

Confirm adherence to design specifications, safety standards, and quality protocols.

5. **Prepare an Assessment Report**:

Summarize findings, highlight discrepancies, and recommend corrective actions.

3. FIELD PROGRESS

4. PROJECT DESCRIPTION

The Buku Kapate Hydropower Project is located in Okhaldhunga District, Koshi Province, Nepal, approximately 200 kilometers north of Kathmandu. Headworks site and Powerhouse site is located at Bhusinga VDC. Geographically, the project lies between latitudes 27° 30’ 00” N to 27° 31’ 20” N and longitudes 86° 22’ 34” E to 86° 24’ 10” E.

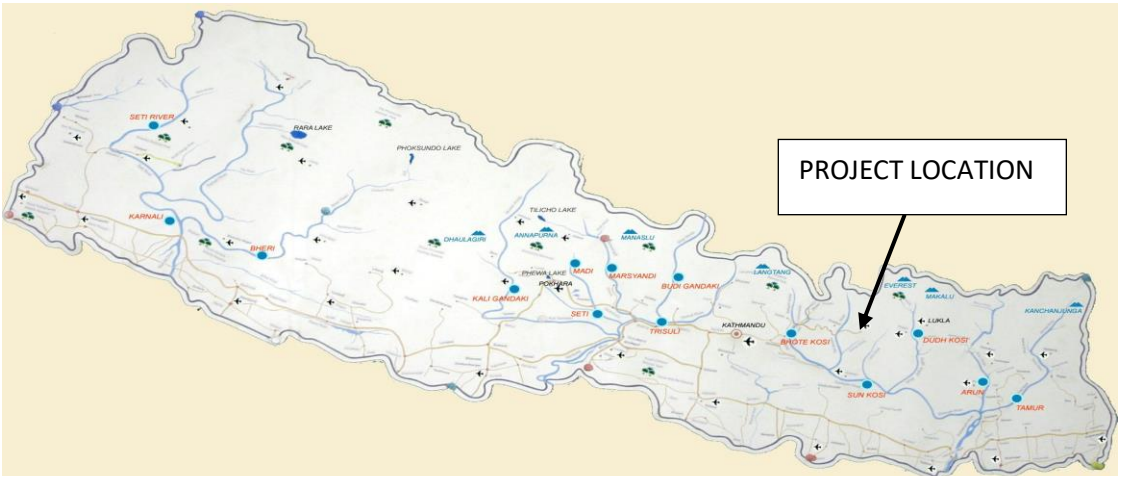

Figure 4-1: Project Location Map.

5. ACCESSIBILITY TO BUKU KAPATI HYDROPOWER PROJECT

S.N.	Distance	Distance (Km)	Remarks
1.	Kathmandu to Jiri Bazaar	179	Blacktopped road
2.	Jiri to Shivalaya	35	Gravel/Earthen
3.	Shivalaya to Headworks	58	Gravel/Earthen
	Total Distance from Kathmandu	**272 km**	

6. HEADWORKS AREA

Status: 95% Completed.

Location: Near Khijdemba Bhusinga Village.

Description: The headworks include diversion weir, under sluice, intake & gravel trap, approach canal and settling basin.

Remaining Work: Installation of hydro-mechanical gates and additional protection

Figure 6-1: Figure 6 1: Head Works Structure

Figure 6-2 : Figure 6 2: Intake.

structures.

Figure 6-3 : Settling Basin.

7. HEADRACE AND PIPE ALIGNMENT

Status: 97% of the work is completed. Out of the total 1,925 meters of headrace pipe, only 6 meters remain to be installed.

Ongoing Work:

- Repair work of saddle support 2 (damaged by landslide) from AB-3.

Remaining Work:

- Protection works at AB-2.
- Backfilling between AB-5 and AB-6.
- Removing of exposed boulder between AB-22 and AB-23 (Landslide prone area).
- Protection works between AB-26 and AB-26A.
- Protection works between AB-27A and AB-28 (landslide prone area).

Figure 7-1: Head Race Pipe Erection.

Figure 7-2: Steel I-Section Saddle Support.

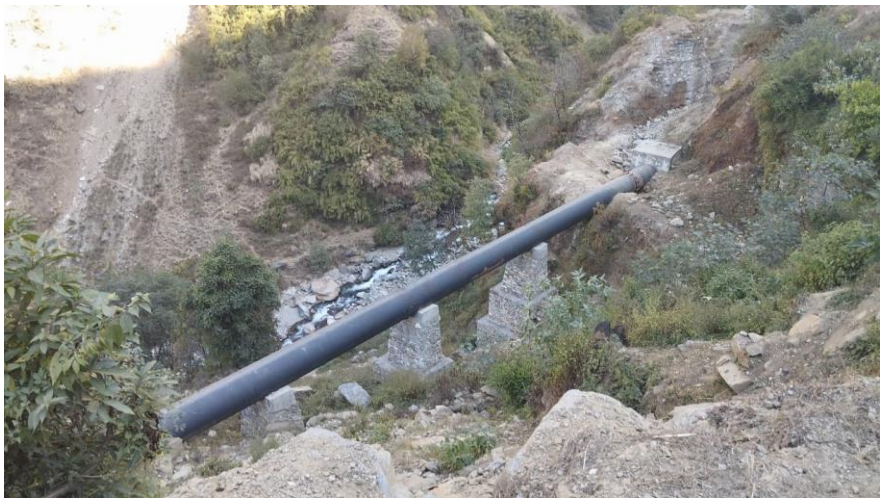

Figure 7-3: Stone Masonry Saddle Support.

Figure 7-4: Head Race Pipe.

Figure 7-5: Anchor Block.

8. SURGE SHAFT AND PENSTOCK PIPE

Status: 90% Completed.

Current Progress:

- Fabrication works completed
- Excavation work in progress.
- Rebar works of AB31 and AB31A is going on.

Remaining Work:

- Installation of surge shaft pipe works (Horizontal-36m, Inclined-30m) is remaining
- Installation of 72m penstock pipe is remaining.

Figure 8-1: Surge Shaft.

Figure 8-2: Anchor Block (AB-31).

Figure 8-3: Surge Shaft Ongoing works

Figure 8-4: Anchor Block (AB=31A)

Figure 8-5: Penstock Pipe

Figure 8-3: Bifurcation branch pipe

9. POWERHOUSE, TAILRACE AND PROTECTION

Powerhouse Status: 95% Completed.

Current Progress:

- Construction of the powerhouse superstructure and switchyard is completed.

Remaining works:

- Installation of **plane** sheet around the Crane Beam, shutter, chequered plates, staircase.
- Finishing work (paintings and fencing around Powerhouse).

Tailrace Status:

- 90 % of tailrace works Completed.
- 20m approx. tailrace pipe installation remaining.

Protection Works:

- Protection works of tailrace canal end is remaining.

Figure 9-3: Powerhouse Machine Foundation

Figure 9-2: Powerhouse Machine Installation

Figure 9-1: Switchyard

10. KEY OBSERVATIONS

Major Achievements:

- Completion of concrete works of weir, under sluice, boulder rip rap, intake & gravel trap, approach canal & spillway and settling basin.
- Completion of major works of headrace and penstock alignment with significant progress in the finishing of anchor blocks.
- Significant progress in the construction of Powerhouse along with switchyard and tailrace canal.

Areas Needing Attention:

- Surge tank and penstock construction require accelerated efforts.
- Protection works especially along landslide prone areas need to be seriously considered

- Workmanship and design consideration of repair works of saddle supports.
- Coordination among contractors and suppliers is critical to overcome delays.
- **Outlook:** The project is advancing steadily, with the overall weighted progress indicating significant milestones achieved. However, some delays in civil and HM works need to be addressed to meet project timelines.

11. SUMMARY OF SITE VISIT FINDINGS

During the visit, we reviewed the status of various components and noted the following progress:

SN	Component	Physical Progress
1.	Headworks	95%
2.	Head Race Pipe Alignment	97%
3.	Surge Shaft and Penstock Pipe	90%
4.	Powerhouse, Tailrace and Protection	95%
	Total Average weighted Site Progress	**94.25%**

The overall weighted progress of the project stands at **94.25%,** reflecting significant advancements in key areas such as Headworks, Head Race Pipe and Powerhouse. However, components such as Surge Tank, Penstock Pipe and protection works still has to be carried out timely.