

Chhimbu Hydroelectricity

HCDO Project Committee Serial Number 003

Kathmandu 20. November 2004

Project Site: Chhimbu, Bakanje VDC, Ward 8, Solu-Khumbu



Report

The Report came in existence after a meeting in Chhimbu Hydroelectricity Committee on 5. November 2004 with Thoege Berg Nielsen and Kurt Lomborg from Himalayan Project / Skivehus Rotary Club, Denmark.

Chhimbu Hydroelectricity was established in January 1999 by village itself.

The village received from VDC 100.000 NRS and collected among themselves 30.000 NRS.

Furthermore they donated labor at the value of 15.000 NRS.

In total construction expenses of 145.000 NRS.

The Generator is 1 KW supplied from: Kathmandu Metal Industries P/Ltd, Taiti between Chhetrapati and Nabhal, Tel 259069 / 9851033418

Since the beginning the payment from the users have been 25 NRS per month per unit (25 W) which have lead to a total income of 26.970 NRS after 5 1/2 years of running.

Since the beginning the expenses have been in total 23.995 NRS. The operator Sona Jetha Thami has received 400 NRS per month for switching on and of – in total 19.200 NRS.

Mechanical expenses have been in total 4.795 NRS for calling Matter Rana Manggar, Bhandar four times. Installment 700 NRS, repairing wheel 3.000, check-up 650 NRS and finally 600 NRS to declare not repairable on the spot.

The Balance of the Chhimbu Hydroelectricity Committee is per 5. November 2004 of 3.020 NRS.

The Operator Sona Jetha Thami is switching on the generator every evening at 5 PM and switching off again at 7 AM. Besides of this he is not doing any other work.

On the 5. October 2004 the generator suddenly stopped producing electrical power. This happened after a period where water from a leak in the nozzle had sprinkled on the generator and other equipment. There had been a leak for a long period, but the more powerful sprinkling was of more recent date. Three years before a fuse box had burned. This was repaired by connecting the wires without fuse box.

On 5. November 2004 the Committee applied Himalayan Project for help to build a new 2 KW installation by the members:

Chairman Pemba Gyalzen Sherpa

Treasurer Kusang Sherpa

Members Soman Thami
Ang Gelbu Sherpa
Jangbu Sherpa
Danu Sherpa, Dachhu

After discussion Himalayan Project/Skivehus Rotary Club recommended not to build 2 KW but rather building a 5 KW for which support up to 75% is provided from ISAP. But for the moment the two organizations were not willing to go into this project, as it seemed that the village hadn't done anything to prepare this situation, as will be discussed below.

Instead it was decided to bring the generator and other equipment for Kathmandu Metal Industry to see if repair was possible, and here to decide who should pay for the repair.

On the 7-8. November 2004 generator, two control boxes, nozzle and the burned fuse box were carried for Jiri by Sona Jetha Thami and Lhakpa Sherpa and by bus for Kathmandu just before Tihar and 6 days of holiday. The factory checked the machines and promised to repair for 9.500 NRS. Himalayan Project decided to pay this amount as a donation for Chhumbu. Out of this amount 7.200 Rs were a donation from **dentist Benny Frømann Nielsen, Skive**.

On 17. November 2004 the repair had finished and payment was done. Beside the payment an extra rubber ring for nozzle and cables for earthen on the generator were delivered. In total the payment were **10.525 NRS**.

The equipment is supposed to be brought back on 30. November 2004 by Lhakpa Sherpa.

Discussion

The total income for 5 ½ years of use have been 26.970 NRS. In average 5.000 NRS per year – or 400 NRS per month – equivalent to 16 units in average. As 25-30 units have been connected, and even up to 35-40 units can be connected, this indicates that some villagers are connected without giving payment.

A total Balance after 5 ½ year of use on 3.020 NRS show that the village never thought about future. Depending on the generator lasting forever or depending on a future donor. This is not a good way of sustainability, as the generator has to be renewed or repaired sooner or later.

It seems like the Committee and the Operator have too less idea about running hydroelectricity. The maintenance has been poor and the leaking of water wasn't corrected in proper time. At least something could have been done to prevent water from splashing on the equipment. The Mechanical Advisor also seems to have given poor advises. There was no earthen on the generator. This could lead to danger for people touching the machine and also lead to shortcutting inside the generator. To shortcut the fusebox will make it sure that the machine will be ruined if something occur. If the fusebox had been effective, maybe the current situation wouldn't have occurred.

What was done now

The generator was repaired according to below mentioned:

1.	1 KW Motor Coil	1 set	2.800,-
2.	Ball Bearing	2 pcs	900,-

3.	Brange Runner	1 set	3.500,-
4.	TPMCB (tripole)	1 pcs	750,-
5.	Capacitor Connector	1 pcs	125,-
6.	Join Copling	1 pcs	225,-
7.	Nozzle Handle	1 pcs	100,-
8.	Nozzle Rod	1 pcs	240,-
9.	Nozzle Not	1 pcs	100,-
10.	Track of Controller	1 pcs	200,-
11.	Connector of Controller	2 pcs	225,-
12.	Voltmeter	1 pcs	500,-
13.	Transformer of Controller	1 pcs	400,-
14.	Earthen Set	1 set	1.000,-
	TOTAL		11.075,-
	Discount		550,-
	Bill		10.525,-

The manufacturer made a test showing that the generator after repair can charge 1,2 KW, but probably only in the beginning. He recommend that the maximum load on the net should be 0,9 KW to prevent overload. He would estimate that the generator should have a lifespan of at least 4-5 years if it is taken proper care of. And maybe even longer if necessary precautions are taken. He said that the lifespan of a generator is measured in years more than in hours of running.

What should be done when Generator return back

All kind of Overload and Shortcutting should be prevented.

1. Measure that no more than 0,9 KW of units are connected - to prevent overload.
2. Install Earthen at the generator according to the training program provided by the manufacturer – to prevent shortcut inside generator and electric chock for the persons handling the generator.
3. Don't ever make other shortcutting possible at the generator.
4. Make sure that water will never touch any equipment.
5. When Nozzle is dismantled make sure it is 100% clean for sand and others before assembling – and if rubber ring is destroyed – change it.
6. There should be Earthen for every 400 m of wire, even it is PVC insulated – to prevent damage from lightening.

What should be done in future

Caretaker shall do more than just opening and shutting. He shall keep everything clean from water source and down to water outlet. Every time nozzle is dismantled it shall be 100% clean for sand in every corner. Also generator and control boxes shall be without dust.

Ask the Mechanical Supporter to come every now and then, for instance every half year to check up that everything is working well and prevent damages before they happen and give advise for the committee and the operator. And in future he shall never do any illegal work. Repair has to be in full before generator is started again. Even if someone has to go for Kathmandu to buy spare parts.

The Committee shall see to that there will be accumulated enough balance to be able to renew the generator after 4-5 years. And even better to be able to upgrade the generator for 2 KW by their own means. The village can't depend on others to run their electricity. The Committee has to decide how to make income from electricity. All users have to pay for the units they are using. If they can't pay why should they have. But an option could be, that those who can afford, and who need very much, should pay more. Others should pay medium, and those who can't afford should at least pay smaller amount. The Committee should at least accumulate 10.000 NRS per year for renewal. This accumulated balance should be kept in Bank Account for safety reasons.

Recommendations for the future

The organization ISAP should be consulted to investigate about future possibilities. They can measure the water sources and give recommendations about for instance a 5 KW generator, which can receive support up to 75%. They can also give advise about how to run the Committee and how to accumulate money. And survey how the need of electricity could develop in the area.

The water resources of Chhimbu are not in high level. The streams in the vicinity are as follows:

Sagar-Bakanje side	equivalent to 15 mm tube	distance 0,8 km
Chhimbu	equivalent to 70 mm tube	distance 0,1 km
Bahalitaka	equivalent to 32 mm tube	distance 0,5 km
Temjing	equivalent to 50 mm tube	distance 2,3 km
Pike Khola	big stream	distance 8 km

The size of the streams are estimated in winter season when the flow is low

A Budget on power consumption is as follows:

16 members of Chhimbu	could consume 1,4 KW
16 new members of Chhimbu	could consume 0,8 KW
Chhimbu School	could consume 0,4 KW
New members on Sete side	could consume 0,8 KW
New members on Kenja side	could consume 0,8 KW
Loss on longer wire	could consume 0,8 KW
In total	5,0 KW

With this electricity the villagers of Chhimbu would have the opportunity to make income generating. Cottage industry or cooperative manufactories. Chhimbu School could open for adult education to support these initiatives. And the school could at evening time give room for arrangements and entertainment, like cinema.

Himalayan Community Development Organization shall be contacted by the Chhimbu Hydroelectricity Committee to go into this investigation. So please, don't delay until it is too late once again.



Kathmandu on 20. November 2004
 Kurt Lomborg
 Chairman of Himalayan Project