

Small Hydro Business



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Introduction

- Definition of SHP.
- Our approach to SHP
 - To concentrate on projects below 1000 KW (between 100 KW to 1000 KW installed capacity) for the following reasons:
 - Large power potential available.
 - Short gestation period.
 - Can be easily replicated.
 - Easy to construct & commission.
 - Allows community participation, use of local skills and construction materials.
 - Rigorous surveys, investigation and designs as required in large projects not necessary.
 - Does not disturb the landscape or dislocate people. Land or water rights of the people are not taken away.
 - Lends good opportunity for standardization of plant and machinery and designs, thereby reducing capital costs.

Current National Power Scenario

- ❑ 50% of households have access to electricity
- ❑ Quality of power poor. Available for 40 % of time.
- ❑ Grid supply power unreliable and costly.
- ❑ Peak shortages 17 %
- ❑ Energy shortages 9.5 %
- ❑ Current generation capacity in India :
1,40,000 MW
- ❑ Projected generation capacity (in 2017) :
4,20,000 MW
- ❑ Must add Gen. Capacity: 20,000 MW to 30, 000
MW each year
- ❑ Present rate of addition : 4000 MW per year

Volume of energy business in India is very

Small Hydro Potential

- Identified Potential in India: 15,000 MW
- Developed so far: 2000 MW (13.33 %)
- Target (2007-2012) GOI 1400 MW

We have studied SHP in two parts.

(vi) Of the Himalayan states.

(vii) Of other states (would follow)

□ In The Himalayan States:

- SHP potential 9,500 MW
- Developed so far: 650 MW (7 %)
- Present power consumption: 2000 MW
- Market size: 8,850 MW

Thus the entire power demand of the Himalayan states can be fully met from SHP source alone. It is a paradox that we are not looking at this solution.

Technology / Product

□ SHP Components.

■ *Civil works*

- Diversion weir
- Desilting arrangement
- Water conductor system

■ *Electro- mechanical works:*

- Turbine
- Generator
- Switchgear and protection
- Control equipment

■ *Switchyard & Interconnection bay.*

□ Technology Status

- Proven Technology: Plants established more than half a century ago are still working...!
- Turbines designed & developed by SBA for Indian conditions. New technology developed for Civil Works & control equipment.

Time-line & Milestones

- Total period from concept to commissioning : 12-18 months
- Pre-construction period : 6 months.
 - Surveys & Investigations
 - Feasibility studies
 - Detailed Project Report
 - Clearances
 - Detailed designs and drawings
 - Financial closure
 - Finalization of contracts
- Construction period (incl. commissioning) : 6 months

Financials of a Typical SHP in the Himalayan states

- Capital cost per KW installed capacity:
Rs 60,000 to Rs 100,000/-
(USD 1400 to USD 2300)
- Cost of generation per KWhr: Rs 2.00 to Rs 2.50
(4 to 6 cents)
- IRR. 20 % (approx)
- Payback period: 5 to 7 yrs.
- Operating and Maintenance Expenses:
1.5 to 2.5 % of capital cost,
with an increase of 5 to 10 % pa.
- No fuel expenses.
- Post construction phase: Inflation free.

Economic, Social & Environmental Impact

□ **Economic Benefits:**

- Low cost energy solution. Generates power at affordable prices. When it comes to producing electricity, nothing does the job better than hydro power.
- Ensures high quality power.
- Copious Revenue generation through sale of excess energy during the day to the grid.
- Ignites entire economic activity.
- Ensures energy security on sustainable basis.

Economic, Social & Environmental Impact

□ **Social Benefits**

- A business with strong social commitment.
- Benefits the local communities at large through participation.
- Develops a large cadre of barefoot entrepreneurs and technicians in small hydro sector.
- Reduction in migration of rural population.
- Upgradation of local skills and appropriate technology.
- Enhanced social activities among people.

□ **Environmental Benefits.**

- SHP is a part of rural landscape.
- A clean and renewable source of energy.
- Does not produce green house gases or causes air pollution.
- Leaves no process waste.
- Environmentally benign.
- Saving in carbon emission: 650 tons per MW per year

Company Experience & Leadership

- Total service provider in SHP from concept to commissioning. Consultancy provided to about 30 SHPs.
- Owning and operating a 800 KW SHP in Himachal Pradesh (India). This project was the 1st. SHP to be commissioned in the private sector in North India in 2001.
- Recently commissioned a World Bank funded,1.0 MW SHP project in Himachal
- Manufacturing and supplying turbines and other hydro power equipment for micro hydel projects.
- Associate of Nexant (USA), International Consultants

Key Personnel

- **S K Sharma, Managing Director.**
 - 40 years experience in SHP sector
 - Former National consultant with UNDP- GEF Hilly Hydro Programme in India
 - Former Chief Engineer, Himachal Pradesh State Electricity Board
 - Former Energy Advisor,

- Vinod Bhardwaj, Director.

- 20 years experience in design & manufacture of E&M

Conclusion

Thousands of widely spread SHP's owned & managed by thousands of entrepreneurs will...

- provide total Energy security in the region,
- create thousands of jobs at their doorstep &
- alter the socio-economic scenario of the region.

Thank You!