



Information Brochure 01  
**PROPOSED HYDROELECTRIC PROJECT  
TAMAKOSHI 3 (TA3)**  
August 2009

## ► Information on the Proposed Tamakoshi 3 (TA3) Hydroelectric Project

### The Proponent/Developer

SN Power is a growing international renewable energy company with projects in Asia, Latin America and Africa. SN Power is a long-term industrial investor and is committed to social and environmental sustainability throughout its business. The company's current portfolio includes hydropower projects in Nepal (Khimti Hydropower Plant), India, the Phillipines, Sri Lanka, Chile, Peru and Brazil. SN Power was established in 2002 as a Norwegian limited company owned by Stratkraft, Norway's largest utility company, and Norfund, Norwegian state's investment fund for private companies in developing countries. In the course of seven years, SN Power has established a strong platform for long-term growth. SN Power is headquartered in Oslo, Norway.

### The Consultants

Sweco Norge AS, a member of the Sweco Group, an international consulting company, and SchEMS a higher education and research institute affiliated to Pokhara University in Nepal are conducting the feasibility and environmental and social impact studies. Sweco has been conducting the Feasibility Study (FS) and Environmental Impact Assessment (EIA) for the Project since November 2008. SchEMS is engaged as the local partner to Sweco for conducting the EIA studies. Several local consulting firms are also hired for different tasks such as investigations, topographical survey, sediment study flow etc.

### Project Description

The Government of Nepal awarded the Survey Licenses to SN Power on March 5<sup>th</sup> 2007, to conduct the FS and EIA studies of Tamakoshi-2 (TA-2, 207 MW) and Tamakoshi-3 (TA-3, 275 MW) Hydroelectric Projects. After finishing the Concept Study and Project Options Study, SN Power decided to combine the two projects, TA-2 and TA-3 into one project and applied for a revised survey license. An amended survey license

for the project with new boundaries between Tamakoshi-Singati confluence, and about 100 m upstream of the Tamakoshi bridge, at Kirnetar was obtained on March 6<sup>th</sup> 2009. The TA-2 and TA-3 projects have now been combined into one, i.e. the Tamakoshi 3 (TA3). The installed capacity of the amended licence is 600 MW.

TA3 Project is located in Dolakha and Ramechhap districts. The proposed project will utilize the flow of Tamakoshi River to generate electricity by diverting the river at Betane and discharging the water back into the river near Kirnetar. The project is under the optimization process and various options are under evaluation.

The project is a Peak Run-of-River (PROR) type project. It is proposed to build a 102 m high dam near Betane to create a reservoir. The water will be diverted through a 13 km tunnel from the dam to an underground powerhouse located at Sitapaila. From the powerhouse the water will be



The settlement of Nagdaha on the right bank of the Tamakoshi River in the reservoir area.

**Note:** Any of the information in this brochure is subject to change based on the final report of the Feasibility Study and Environmental Impact Assessment.

taken through a 4.5 km tailrace tunnel to Kirnetar and discharged into the river. There will be five adits.

Rig areas, project offices and camps will be located at or near the dam, powerhouse sites, and adit areas along the tunnel. In addition, there will be contractors and labor camps, quarry and spoil deposit areas, and access roads to project areas.

### Current Status of the Feasibility and EIA Studies

The Feasibility study is in progress and is expected to be completed by the end of 2009. The optimization process is now exploring alternatives.

The EIA of this proposed project is in progress of collecting baseline data and singling issues that require detailed study. The EIA will cover the study of forests and agriculture, fauna, aquatic life, socio-economic conditions and livelihoods of project affected households, infrastructure, community forests, cultural and ritual elements, health, pollution and water quality, etc. Detailed impacts and mitigation activities are yet to be worked out. A framework for a resettlement action plan will be prepared. The EIA is expected to be completed by the end of 2009, when it is planned to be submitted to the Government of Nepal (GoN) for review/approval.

When the EIA is approved by the GoN plans will be made for how and when land acquisition and resettlement could take place.

It is planned that TA3 HEP information offices will be set-up in the Tamakoshi area. One office has just been opened at Gopitar.

### Expected Project Influenced Area

Project Affected VDCs/Municipality:

18 VDCs and 1 municipality in Dolakha district and one VDC in Ramechhap district may be influenced by the implementation of TA 3 Project Hydropower project.

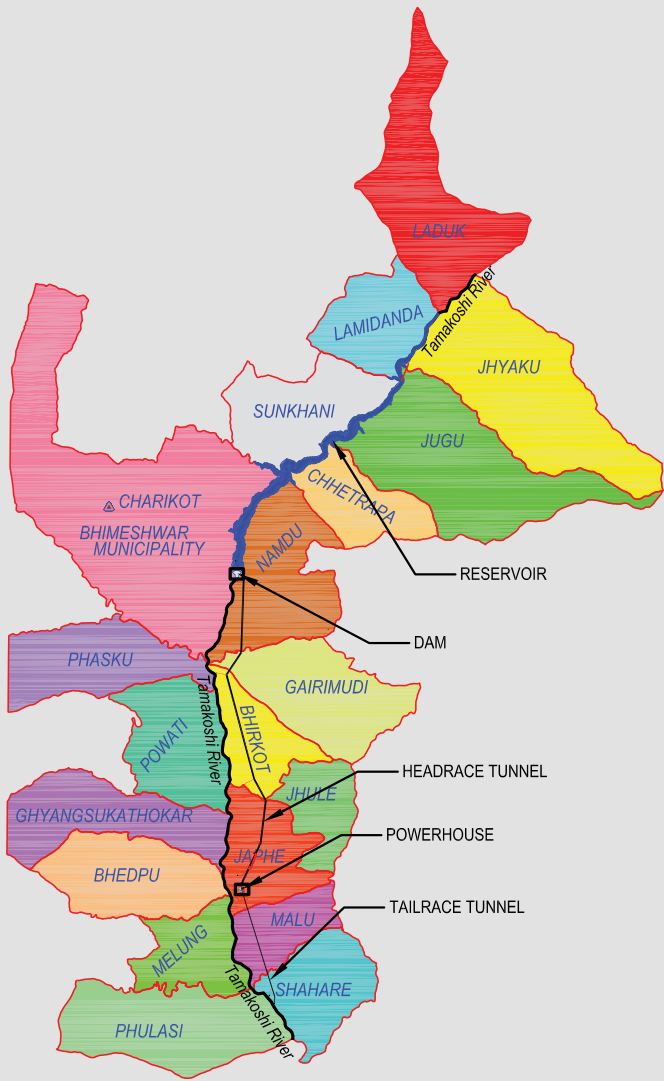
- Damand Reservoir: Laduk, Lamidanda, Sunkhani, Jhyaku, Jugu, Chhetrapa and Namdu VDCs and Bhimeshwor Municipality (7 VDC + 1 Municipality in Dolakha District)
- Low-Flow Zone: Bhimeshwor Municipality, and Phasku, Powati, Ghyang Sukathokar, Bhedpu, Melung, Namdu, Gairimudi, Bhirkot, Japhe, Malu and Sahare VDCs (11 VDCs + 1 Municipality) in Dolakha District, and Phulasi VDC in Ramechhap District
- Headrace Tunnel: Namdu, Gairimudi, Bhirkot, Jhule and Japhe VDCs in Dolakha district
- Powerhouse area: Japhe VDC in Dolakha district
- Tail Race Tunnel: Japhe, Malu and Sahare VDCs in Dolakha District



The settlement of Gumukhola Bazaar on the right bank of the Tamakoshi River in the reservoir, downstream of Singati Bazaar

► Project Location Map





## ► Salient Features of the Proposed Project

### Hydrology at Intake

Catchment Area at dam site	2,927 km <sup>2</sup>
Average annual mean flow	148.1 m <sup>3</sup> /s
Design discharge	220 m <sup>3</sup> /s

### Reservoir

Highest regulated Water level	940 masl
Lowest regulated Water level	890 masl
Reservoir volume at 940 masl	157.8 million m <sup>3</sup>
Reservoir length	15.7 km

### Diversion Dam Complex

Dam type	Hard fill concrete gravity
Crest length and Dam height	310 m and 102 m

### Headrace Tunnel

Tunnel length	13 km
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### Powerhouse

Type	underground
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### Turbine

Type	Vertical axis Francis
Rate output per unit	120 MW

### Installed capacity

Average Annual energy	600 MW 2,300 GWh with reservoir flushing
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### Tailrace Tunnel

Length	4.5 km
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### Transmission Line

Length	78 km from Powerhouse site at Sitapaila to Dhalkebar
Capacity	220 kV, alternative 400 kV double circuit

## Environmental and Social – Preliminary Anticipated Impacts

- About 123 households (665 people) from 15 villages (7 VDCs) in the dam and reservoir area may be directly affected. 75-80 households among these would probably be physically displaced requiring resettlement. About 26% of the total physically and economically displaced population belong to the marginalized and disadvantaged indigenous community, the 'Janajati'.
  - 325 ha of forest land, 189 ha of farmland and 149 ha of river and river banks is anticipated to be directly affected. Of these areas 137 ha of forest and about 100 ha of farmland will be submerged in the about 16 km long reservoir.
- Thirty-two community forests may be affected. An estimated 100,000 trees will be lost and 2,500,000 saplings (1,250 ha) will need to be planted to compensate the anticipated loss.
- River flow in a 19 km structure of the Tamakoshi River between the dam and powerhouse/ tailrace outlet will be significantly reduced. The dam will block the movement of Asla –Snow Trout (*Schizothorax* sp), Sahar –Golden Mahaseer (*Tor putitora*) and Katle - Copper Mahaseer (*Neolissochilus hexagonolepsis*) fish species. The EIA will assess the possibility of using the reservoir for the development of fisheries.

## Anticipated Time-Line

### Studies and Activities

Scoping and ToR for EIA Study  
 Feasibility Study  
 EIA Study  
 GoN approval of EIA  
 Detail design  
 Construction start  
 Commissioning

### Anticipated Approval/Completion date/period

Under process of approval  
 Completion – End of 2009  
 Completion – End of 2009  
 2010  
 2010 – 2011  
 2012  
 2016



Dam site area below Betane



Public Consultation at Nagdaha, April 2009

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SN|POWER SWECO 



SchEMS