

Project Review: Arun III Hydroelectric Project



Background

The Investment Board Nepal (IBN) and the Indian developer Satluj Jal Vidyut Nigam Limited (SJVN Limited) have signed the Project Development Agreement (PDA) on a 900 MW Arun III Hydroelectric Project on November 25, 2014. The PDA was signed on the sidelines of the SAARC Summit in the presence of Prime Minister of Nepal Sushil Koirala and Indian PM Narendra Modi.

The IBN and SJVN Limited started PDA talks in 2013 after Nepal and India signed a Memorandum of Understanding with the Govt. of Nepal for the execution of 900 MW Arun – III HEP on March 2, 2008.

Introduction

The Arun River is one of the major tributary of the Koshi River in the Sapta Koshi basin. The catchment area of the project is 26747 km² upstream from the proposed Dam site. The Project envisages utilization of a design discharge of 342.23 m³/s through an effective head of 308 m in order to generate a maximum of 900 MW of power. The scheme shall have a 68 m high Dam; a 11.74 km headrace tunnel and an underground cavern powerhouse with four Vertical Francis Turbine-driven generating units each of 225 MW with an annual average

energy production of 3684.651 GWh. The estimated cost of the project is NRs. 104 billion.

Location and Accessibility

Arun-III Hydroelectric Project is a Run-of-River scheme, located on the River Arun in Sankhuwasabha District in eastern development region of Nepal. The closest point of road access is Num Bazaar, which is close to the proposed dam site of the Project. Num Bazaar can be reached from

Kathmandu by taking a flight to Tumlingtar, then driving approximately 15 km on an all season road to Khandbari, followed by approximately 40 km on a fair weather road. The fair weather stretch is planned to be upgraded to an all season road.



Project Proponent

The project proponent company is SJVN Arun - 3 Power Development Company Pvt. Ltd.

(SAPDC). SAPDC is sole undertaking of Satluj Jal Vidyut Nigam Limited. SJVN Limited is a joint venture company between the Govt. of India (with 74.5%) and Govt. of Himachal Pradesh (with 25.5%) which is incorporated in the year 1988.

The project will affect 203 houses located in six VDCs of Sankhuwasabha District. The project will carry

out rural electrification in affected areas under which affected households will receive 30 units energy free each month. As per the PDA, the Indian company will allot Rs 1.6 billion worth of shares to the locals. Fifty

percent of it will be allotted within two years of project construction commencement. The rest will be allotted later by charging a premium. The project will provide 21.9 percent free energy to Nepal.

Salient Features

Capacity	900 MW
Basin	Arun
Project Type	Run-of-River
Type of Dam	Concrete Gravity Dam
Height of Dam	68 m
FRL	849 m
Nos. of Sluice Gates	6
Crest Level	808 m
Length/ Dia of DT	466 m/ 11 m
No. of Intakes	4
Desilting Chambers	Underground, 4 nos. 420 m (L)x16m(W)x 24m(H)
No. of Adits	4
Length of HRT	11.74 KM
Dia of HRT	9.5 m Circular
Discharge	343.42 Cumecs

Type of Surge Shaft	one, orifice Type
Height of Surge Shaft	149 m
Dia	24 m
Type of Pressure Shaft	vertical steel lined
No. of Pressure Shaft(s)/ Penstocks	2
Type of Powerhouse	Underground Cavern
No./ Capacity of generating units	4/225 MW
Type of Turbine	Francis
Gross Head	308 m
Design Head	287.m
Length/ dia of TRT/Tail Race Tunnel	212m/10m
Energy in 90 % Dependable Year	3684.61 GWh

References:

1. Arun III Hydroelectric Project (2015). Retrieved 25 July, 2015, from <http://sjvn.nic.in/>
2. <http://www.investmentboard.gov.np/> Retrieved 26 July, 2015

*Presented by: Keshab Pyakurel
Victoria University, Australia*