Planning of Hydro Power Projects

(New Projects)

1	Middle Kolab Hydro Electric Project
2	Balijori Hydro Electric Project
3	Salki Hydro Electric Project
4	Barmul Hydro Electric Project
5	Lower Vansadhara Project (in lieu of Rushikulya-Vansadhara Link)
6	Tel Integrated Project
7	Hirakud (Mahanadi) – Rengali (Brahmani) River Link Project
8	Status of Small Hydel Projects

IMPORTANT NOTES

- The study on above projects is based on Toposheets and hydrological data collected from different sources.

- The exact no. of villages, population affected & forest area coming under submergence can be assessed only after detailed Survey & Investigations.

1. MIDDLE KOLAB Hydro Electric Project

The project involves a barrage conctructed across river Kolab, 5km below the confluence of Jouranala with Kolab river near Dumajodi village with pond level 542m within Orissa state boundary. The water is diverted from the barrage through a flood of flow channels of about 2km length to a reservoir with FRL 540m to be formed on Kasabal nallah & Maulajhori, tributaries of Kolab river. The water is then taken to another reservoir with FRL 528m on Kerajhodi through a link channel of about 24km length. The water is then utilised for generation of power at a power house in the d/s, where the tail water level is 260m. Thus there is a gross head of 268m available which can be utilised to generate power with installed capacity of 285MW and annual generation of 1554MU. The power house release will be picked up by constructing a d/w or barrage in the d/s of Kerajhodi nallah before its confluence with Kolab river and the water will be utilised to irrigate about 30,000Ha. of CCA in the Malkangiri district of Orissa.

Salient Features

General

- State : Orissa
- District : Koraput / Malkangiri
- River : Kolab
- Type : Barrage & Dams
- Barrage Location : 5km d/s of confluence of Joura nallah with Kolab river & u/s of Dumajori village.
- Lat : 18-59-45N Long : 82-17-12E

Irrigation

- CCA : 30,000 Ha.

Power House

- Location : Near Kodukugurha village
- Lat : 18-44-35N Long : 82-08-56E
- Installed Capacity : 285 MW
- Average annual generation : 1554 MU
- Average annual output : 177 MW

2. BALIJORI Hydro Electric Project

The project involves construction of a dam across river Baitarani about 1km below confluence of Sim Nadi with Baitarani river near village Balijori in the district of Keonjhar. The location of the dam site at Balijori is about 40km d/s of proposed Bhimkund Dam scheme at Rajnagar. Since proposed Bhimkund project involves submergence of 64 villages, the Bhimkund Dam is proposed to be changed to a barrage project and an additional hydel component at Balijori. The water from the power house will join the river and contribute to irrigation through proposed project of Anandapur barrage located downstream.

Salient Features

General

- State : Orissa
- District : Keonjhar
- River : Baitarani
- Type : Dam
- Location : 40km d/s of proposed Bhimkund Barrage
- Lat : 21-32-00N Long : 86-00-30E

MAIN Dam

- Type : Earth Dam
- Max. height : 60m
- Length : 1500m

Irrigation

- Khariff : 60,000 Ha. (Stabilisation of ayacut of proposed Anandapur barrage)
- Rabi : 20,000 Ha.

Power House

- Location : near Baigundi village
- Lat : 21-26-30N Long : 86-01-15E
- Installed Capacity : 160 MW
- Average annual generation : 845 MU
- Average annual output : 96 MW

3. SALKI Hydro Electric Project

The project involves construction of a dam across river Salki, about 6.5km d/s of confluence of Pila Salki near village Gumi in the district of Phulbani/Boudh with FRL 470m. The water from Salki reservoir will be taken to a power house through 7km long pressure conduit down to a level of 200m to generate electricity with installed capacity 125 MW and annual generation of 842 MU. The power house release can be used to stabilize the command area of 19800 Ha. under Salki diversion scheme besides providing irrigation during rabi season to an extent of 9000 Ha. At present, the area being irrigated during Khariff is 19890 Ha. and Rabi area is 1500 Ha. under Salki Diversion Scheme.

Salient Features

General

- State : Orissa
- District : Phulbani / Boudh
- River : Salki (Mahanadi Basin)
- Type : Dam
- Location : near village Gumi
- Lat : 20-33-20N Long : 84-11-15E

Dam

- Type : Earth Dam
- Max. height : 75m
- Length : 750m

Irrigation

- Khariff : 19,800 Ha (Stabilisation of ayacut of Salki d/w)
- Rabi : 8,000 Ha

Power House

- Location : near Sikaora village
- Lat : 20-36-09N Long : 84-11-13E
- Installed Capacity : 125 MW
- Average annual generation : 842 MU
- Average annual output : 96 MW

4. BARMUL Hydro Electric Project

The project involves construction of barrage across river Mahanadi at Barmul in the district of Nayagarh. The water will be diverted to a power house to be constructed in the vicinity. The reservoir is proposed on Kalighai, a small tributary of Mahanadi near the village Baideswar in Banki block to cater partly the Rabi demand. The power house releases can be utilised for irrigation purposes to irrigate an area of about 1.0 lakh ha in Nayagarh, Khurda and Ganjam districts during Khariff season in a portion of Manibhadra ayacut below RL 55m.

Salient Features

General

- State : Orissa
- District : Nayagarh
- River : Mahanadi
- Type : Barrage
- Location : near village Barmul
- Lat : 20-30-30N Long : 84-52-00E

Power House

- Location : near Barmul village
- Installed Capacity : 200 MW
- Average annual generation : 516 MU
- Average annual output : 60 MW

5. MAHANADI-BRAHMANI River Link Project

The Mahanadi-Brahmani river link project is one of the intra state water links identified in the State Water Plan 2004 for transfer of water from surplus basin to the deficit areas of other basins It is proposed to divert the spill waters of Hirakud reservoir in Mahanadi basin to the Brahmani basin for optimum utilisation of available water and moderate the floods in Mahanadi basin.

The spill water of Hirakud reservoir will be diverted through a flow channel and discharged into Garda nalla. The proposed FSL of the flow channel at the head is 182.50m. The length of the channel upto Garda nalla is 100 km (approx.). It is proposed to construct a dam on Garda nalla with maximum height of 36m. The proposed power house will have an installed capacity of 150 MW near periphery of Rengali reservoir providing a gross head of 46.5m between Garda reservoir (FRL.170.0m) and Rengali reservoir (FRL.123.50m). The spill water of Hirakud reservoir transferred to Garda Nalla dam site will be further carried down to the proposed power house through a pressure conduit and shall be utilised to generate power upto 342 MU during August to October.

In addition to power generation, the spill water can be utilised for providing irrigation during August to October in Khariff season. About 13,000ha of GCA is available on the left side of Garda nalla. Considering 55% to 60% of GCA as CCA, irrigation can be provided to about 7000Ha of CCA.

In this proposal the 15 cumecs of spill water of Hirakud reservoir will be diverted from RD53.5 km (approx.) of the flood channel and discharged into Sankha nalla which finally joins Tikira nalla, a tributary of Brahmani River. It is proposed to construct a barrage with pond level 120m across Tikira nalla in the d/s below the confluence of Aunli nadi and Hinjuli nadi with Tikira. The water is diverted from barrage to provide irrigation in the command area of Tikira valley. The total GCA available is 14285 ha. Considering 55% to 60% GCA as CCA, irrigation can be provided to a CCA of about 8000ha. But if the coal mines area will be taken in considertaion then at least an area of 4000ha will be provided with irrigation. The flows available in Tikira will further help in the success rate of this project.

SALIENT FEATURES

FLOW CHANNEL

Full Supply Level at offtaking point	182.50m
Full supply depth	4.5m
Bed level	178.00m
Bed width	75m
Longitudinal slop	1 in 10000
Mannings	0.017
Side slops	1.5 H:1 V

Full supply level at outfall point near Garda nala	170.5m
Length of Flow channel	100Km (approx.)

GARDA NALA DAM

Location	Latitude	21° 19' 21" N
	Longitude	84° 49' 30" E
Stream		Garda nala
Full reservoir level		170 M
Deepest bed level at dam site		137.5 m
Max. height of dam above average bed level		36 m
Gross storage capacity		16691 Ha.M
No. of Villages under submergence		7 Nos.

POWER COMPONENT

Installed Capacity	150 MW
Power generation (only 3 months during monsoon)	342 MU

IRRIGATION

Assured Irrigation can be provided to about 7000 Ha. below RL 150m.

Second stage

Length of flow channel	53.5 Km.
Section of flow channel	Same upto RD 53.5 Km

TIKIRA BARRAGE

Pond level	120m
Bed level	108m

IRRIGATION

Assured Irrigation can be provided to about 8000 Ha. below RL 120 m. during Khariff season subjected to availability of command area.

6. LOWER VANSADHARA Project

The project involves construction of a pickup weir with pond level 128m across river Vansadhara near village Barhagurha about 11 Km upstream of confluence of Badanala.The Lower Vansadhara project envisages construction of 58m high & 1700m long dam intercepting a free catchment of 2201 Sq.Km near village Minajhola in Rayagada district. Power generation is possible as a gross head of 62m is available at the pond created by the pickup weir. The FRL of Lower Vansadhara is 190m and the MWL is 195m.The catchment area at Sana nadi site is 415 Sq.Km.

The inflows from Sananadi will further help increasing the success rate of the project.The proposed Lower Vansadhara project will irrigate a total CCA of 31000 Ha. On left side,it will irrigate area lying below RL 120m (which includes area below Katraguda,Neradi & Kashinagar right upto the State boundary) & on right side, it will irrigate area lying below RL 120m upto Padagedda river in Orissa portion. As per inter state agreement between Govt. of Orissa & Govt. of Andhra Pradesh reached on dated 30th September 1962, the yield of Vansadhara river at Gotta reservoir which is estimated to be 115 TMC then, is to be shared on 50:50 basis.

The 75% dependable as approved by CWC at Gotta barrage is 70.452TMC.The total water utilisation from existing, ongoing & proposed projects works out to 36.43 TMC. Also projects like Nandini,dimur,Bhangi weir etc are at present in planning stage to utilise the Orissa share in Vansadhara basin. Also the combined surplus water of Nagavali and Vansadhara can be transferred at a later stage to the needy Bahuda and Rushikulya basins through the proposed Mahendratanaya Project by extending the length of left canal by 42km involving a tunnel length of 22km.

Salient Features

General

- State : Orissa
- District : Rayagada
- River : Vansadhara
- Type : Barrage
- Location : near village Barhagurha
- Lat : 19-31-00N Long : 83-44-30E

Dam / Spillway

Total length of Dam (earth dam) including Spillway: 1700m(approx.)

Length of Spillway : 696m.

Deepest Bed Level : 140m.

Maximum height of dam above deepest bed level : 58m(approx.)

Design Peak Flood : 19865 Cumecs

Vansadhara Barrage

Type of structure: Barrage / Gated weir

River : Vansadhara

Village : Near Barhagurha

District : Rayagada (Orissa)

Location :

Longitude : 83-46-00E

Latitude : 19-22-58N

Length of Barrage (m): 600m.

Salandi Barrage

Type of structure: Barrage

River : Salandi

Village : Near Taramala

District : Rayagada (Orissa)

Location :

Longitude : 83-54-30E

Latitude : 19-08-30N

Length of Barrage (m): 600m.

Other Benefits

(a) Water Supply to 1.0 lakh people in the command area.

(b) Provision for industrial water requirements -50 Cusecs.

Flood Routing

The Peak flood of 19865 cumecs can be moderated to 9865 cumecs as outflow by allowing the water level to rise upto RL 195m.

Blocks to be benefited

Gunupur,Padampur & Gudari blocks of Rayagada district & Kashinagar, Parlakhemundai (Gosani),Gumma,Rayagada blocks of Gajapati district.

7. TEL Integrated Project

It is proposed to construct a dam across river TEL, a tributary of Mahanadi River at about 2 km along the river from interstate border between Orissa and Chhatisgarh (Lat : 82-20-00N, Long : 19-50-00E).

- FRL : RL.500m
- Maximum ht of the dam : 60m
- Intercepted catchment at dam site : 550sq.km.
- Water spread area : 1375 Ha.

The water from this reservoir is carried down to a power house to generate power on the right side of river near village Phataki in the Orissa territory. The powerhouse release will be picked up by a proposed fore bay dam with FRL 320m. A canal of length 14km will offtake from the forebay dam with DSL 315m and it will connect to the proposed Banjari barrage. The Banjari barrage with pond level 300m is proposed on river Banjari at a location Lat : 82-29-00N and Long : 19-49-00E.Two canals, one with length 7km and another with length of 13km will offtake from Banjari barrage. About 6,250ha GCA is available below Tel dam and GCA of 7000ha is available below Banjari barrage. Thus, a total GCA of 13,250ha is available combined under Tel Dam and Banjari barrage. Against the available GCA, it is proposed to bring under irrigation to a CCA of 4000ha under Tel Dam and 4000ha under Banjari barrage including 2000ha CCA of existing Phuljhari MIP. The canal will have its boundaries as Tel river on one side and the inter-state boundary of Orissa with Chhatishgarh on the other side.