

No. 16/27/2019-PA (N)/1768-98  
**Government of India**  
**Central Water Commission**  
**Project Appraisal Organization**

Telefax: 011-29583526  
email: [ceprjap@nic.in](mailto:ceprjap@nic.in)

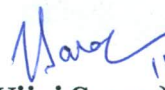
7<sup>th</sup> Floor (S), Sewa Bhawan,  
R.K. Puram, New Delhi.  
Dated: 18/12/2019

**Minutes of the Meeting**

Please find enclosed herewith the duly approved Summary Record of Discussions of the 143<sup>rd</sup> Meeting of the "Advisory Committee of Department of Water Resources, River Development & Ganga Rejuvenation (DoWR, RD&GR) for consideration of techno-economic viability of major & medium irrigation, flood control and multi-purpose project proposals", held under Chairmanship of Secretary DoWR, RD&GR on 09/12/2019 at CWC, Sewa Bhawan, New Delhi for information and necessary action.

Comments, if any, may kindly be sent to the undersigned within 15 days

Encl: As above.

  
18.12.19  
(Vijai Saran)

**Member Secretary of the Advisory Committee &  
Chief Engineer (PAO)**

To,

**Members of Committee:**

1. Chairman, CWC, Sewa Bhawan, R. K. Puram, New Delhi.
2. Secretary (Expenditure), Ministry of Finance, 1<sup>st</sup> Floor, North Block, New Delhi.
3. Secretary, Department of Power, Room No. 205, S.S. Bhawan, II Floor, New Delhi.
4. Secretary, Ministry of Environment & Forests & CC, 4<sup>th</sup> Floor, Prithvi Block, Indira Paryavaran, Jor Bagh, New Delhi.
5. Secretary, Department of Agriculture, Cooperation & Farmers Welfare, R. No. 126, Krishi Bhawan, New Delhi.
6. Secretary, Ministry of Tribal Affairs, Room No. 738, A-Wing, Shastri Bhawan, New Delhi.
7. Director General, ICAR, Room No-108, Krishi Bhawan, New Delhi.
8. Chairman, CEA, Sewa Bhawan, R. K. Puram, New Delhi.
9. Chairman, Central Ground Water Board, Jam Nagar House, New Delhi.
10. Adviser (Power), NITI Aayog, Room No. 248, Yojana Bhawan, New Delhi.
11. Adviser (WR), NITI Aayog, Room No. 230, Yojana Bhawan, New Delhi.
12. Joint Secretary & Financial Adviser, DoWR, RD & GR, Room No-401, S.S. Bhawan, New Delhi.

**Special Invitees:**

1. Additional Secretary, DoWR, RD&GR.
2. Member (D&R), CWC, New Delhi.
3. Member (RM), CWC, New Delhi.
4. Member (WP&P), CWC, New Delhi.
5. Chairman, GFCC, Patna, Bihar.

6. Joint Secretary (IC&GW), DoWR, RD&GR.
7. Secretary, Water Resources Dept, Govt. of Bihar, Patna.
8. Principal Secretary, Irrigation & Public Health Dept, Govt. of HP, Shimla
9. Secretary, Irrigation cum Flood Control Dept., Jammu & Kashmir.
10. Secretary, PWD&IW, Govt. of Karnataka, Bengaluru.
11. Principal Secretary, Irrigation Department, Govt. of Maharashtra, Mumbai.
12. Chief Advisor (Cost), Department of Expenditure, Ministry of Finance, 2nd Floor, Lok Nayak Bhawan, New Delhi.
13. Commissioner (State Projects), DoWR, RD & GR, Room No-411, S. S. Bhawan, New Delhi.
14. Commissioner (FM), DoWR, RD & GR, CGO Complex, 11th Block, 8th Floor, Lodhi Road, New Delhi.
15. Chief Engineer (PPO), CWC, New Delhi.
16. Chief Engineer (FMO), CWC, New Delhi.
17. Chief Engineer (MTBO), CWC, Gandhinagar.
18. Chief Engineer (P&D), CWC, New Delhi.

**Copy for kind information to:**

1. Sr. PPS to Secretary, DoWR, RD & GR, Room No. 407, Shram Shakti Bhawan, New Delhi.

\*\*\*\*\*

**Government of India**  
**Department of Water Resources, River Development & Ganga Rejuvenation**  
**Central Water Commission**

**SUMMARY RECORD OF DISCUSSIONS OF THE 143<sup>rd</sup> MEETING OF THE  
ADVISORY COMMITTEE FOR CONSIDERATION OF TECHNO-  
ECONOMIC VIABILITY OF MAJOR & MEDIUM IRRIGATION, FLOOD  
CONTROL AND MULTIPURPOSE PROJECT PROPOSALS HELD ON  
MONDAY, 9<sup>th</sup> December 2019 AT CENTRAL WATER COMMISSION, NEW  
DELHI**

---

The 143<sup>rd</sup> meeting of the Advisory Committee of Department of Water Resources, River Development & Ganga Rejuvenation (DoWR, RD&GR) for consideration of techno-economic viability of major & medium irrigation, flood control and multi-purpose project proposals was held under the Chairmanship of Shri U. P. Singh, Secretary to the Government of India, DoWR, RD & GR on Monday, 9<sup>th</sup> December, 2019 at Central Water Commission, New Delhi. The list of participants is enclosed as Annexure.

At the outset, the Secretary (DoWR, RD & GR) and Chairman, Advisory Committee welcomed the participants. Thereafter, the agenda items were taken up by Chief Engineer (PAO) and Member-Secretary of the Advisory Committee for discussions.

**(i) Confirmation of the minutes of 142<sup>nd</sup> meeting of the Advisory Committee**

CE (PAO), CWC and Member Secretary of the Advisory Committee stated that the 142<sup>nd</sup> meeting of the Advisory Committee was held on 08.07.2019. Summary Record of Discussions of the same was circulated vide letter No. 16/27/2019-PA (N)/1053-80 dated 25.07.2019. As no comments on the Summary Record were received, Advisory Committee confirmed the same as circulated.

**(ii) Follow up action after the 142<sup>nd</sup> meeting of the Advisory Committee**

No follow up action was required to be taken after the 142<sup>nd</sup> meeting of the Advisory Committee.



**(iii) Project Proposals considered by the Advisory Committee**

**A. Irrigation and Multi-purpose Projects**

**1. Renukaji Dam Project, Himachal Pradesh (Multi-purpose; Estimated Cost Rs. 6946.99 Crore @ October 2018 Price Level)**

The project Authority i.e official from Himachal Pradesh Power Corporation Limited (HPPCL) made a detailed presentation on the proposal. The Renukaji Dam Project has been contemplated as a storage scheme on river Giri, a tributary of river Yamuna, to augment the drinking water supply of National Capital Territory of Delhi. The Project envisages construction of 148-m high rockfill dam at about 5 km upstream of existing Jateon Barrage and about 375 m downstream of confluence of Jogar-ka-Khala with river Giri in District Sirmaur of Himachal Pradesh. This project will provide 498 MCM of live storage in its reservoir and a firm water supply to the tune of 23 cumec of water to NCT Delhi for 9 months. The additional water available due to construction of this dam will be made available to Delhi on priority to meet the drinking water needs of Delhi as worked out by Upper Yamuna River Board (UYRB). This arrangement will continue until other storages viz., Lakhwar and Kishau MPPs in upper Yamuna catchment are created. Afterwards releases from Renukaji Dam shall be carried out keeping in view the overall annual allocation of Yamuna water as per MoU dated 12.05.1994 between the co-basin States. It is also proposed to utilize the available head to generate 40 MW (2x20 MW) of power in the power house proposed at the toe of the proposed dam.

The project was earlier accepted by TAC in 72<sup>nd</sup> meeting in January, 2000 for Rs. 1224.64 Cr (PL-May, 1997) and its RCE was accepted in 132<sup>nd</sup> meeting in March, 2017 for Rs. 4596.76 Crore (PL2015-16). However, construction of the project could not be taken up due to non signing of Interstate Agreement which was later signed on 11.01.2019. The Project was declared National Project in February 2008.

Due to increase in the land acquisition cost as per the direction of the High Court of Himachal Pradesh and cost escalation, it was found necessary to update the cost of the Project and accordingly the further revised estimate was finalized by CWC for Rs 6946.99 crore at October 2018 price level. The cost of water component works out as Rs. 6647.46 crore and power component as Rs. 299.53 crore. The levelised tariff has been worked out by CEA as Rs. 3.33/kWh.



The Additional Chief Adviser (Cost), Office of Chief Adviser Cost, MoF, DoE, observed that this project is RCE wherein cost estimate has been proposed to be increased by approximately 51% from earlier approved cost of Rs. 4596.76 crore (price level 2015-16) to Rs. 6946.99 crore (at October, 2018 price level). She informed that all such proposals where the increase in total cost as per RCE of the project is beyond 20% of the firmed cost estimates, such proposal should first be placed before the Revised Cost Committee (RCC) which is chaired by Financial Adviser (consisting of Joint Secretary in-charge of the Programme Division) and representative of the Chief Adviser (Cost) and others as Members.

Secretary (DoWR, RD&GR) and the Chairman of the Committee mentioned that the OM No. 24(35)/PF-II/2012 dated 05 August 2016 of Department of Expenditure, MoF is applicable for the project earlier approved by GoI. However, since this proposal has so far not reached the stage of CCEA approval for funding, hence the OM is not applicable in this case. Also, this is a new Project, hence it is not required to be put before RCC.

The Committee was appraised that the procedure for calculating the B.C. Ratio prescribed in the MoJS (erstwhile MoWR) guidelines for preparation of DPR for multipurpose projects, 2010 is exclusively for irrigation projects with incidental benefits of power, drinking, industrial water, etc., and criteria for B.C. Ratio calculation of drinking water project is not prescribed in the same. Hence, B.C ratio calculations are not required in case of Renukaji Dam Project. However, as per the directions of 132<sup>nd</sup> TAC, the BC ratio was computed on notional basis considering 1 MCM of water equivalent to 500 ha of irrigated land as per the recommendations of "Mohile Committee". Accordingly, the B.C. ratio has been worked out to be 2.88, which is more than the required value of 1.0 in case of irrigation multipurpose projects in hilly States.

The Committee was also appraised that while determining the cost of the project, the provision of Local Area Development Funds (LADF) @ 1.5 % of the project cost, which works out to be Rs. 104.2 crore has not been considered as this provision is as per the policy of Govt. of Himachal Pradesh which is specific to the State of Himachal Pradesh and the same is beyond the regular provision of R&R Plan in the aforesaid guidelines of MoJS.

The project authority submitted that in terms of Clause No. 7(iii) of "Intestate Agreement" dated 11.01.2019 "Cost of land and property acquired/under submergence due to

construction of project, rehabilitation package for oustees and environment protection package, in accordance with prevalent policies/practice of the States having submergence, shall be a part of the cost of the project.” Hence, inclusion of the same is necessary. The Secretary, DoWR, RD&GR made it clear that GOI cannot fund the LADF part but inclusion of the same in the RCE need to be re examined by CWC. The issue of R&R policy of HP having been examined earlier by the Hon’ble NGT in the process of challenge to “Environment Clearance” initiated by local people was also discussed.

After detailed discussions, the Advisory Committee accepted the Revised Cost Estimate of Renukaji Dam Project for Rs. 6946.99 cr @ PL Oct 2018 subject to following conditions.

1. Submission of State Finance Concurrence for the Revised Cost Estimate of the Project.
2. Submission of final Forest Clearance (Stage-II) for the project.
3. Minimum environment flow in the downstream of the river may be ensured as per the prevailing law / as per the terms and conditions stipulated by MoEF&CC.
4. Obtaining statutory clearances (Environment, Forest, Wildlife, Tribal Affairs & R & R etc.) as applicable.

**2 Seven Pneumatically Operated Gated Weirs in Series on Girna River (Medium Irrigation Project), Jalgaon, Maharashtra (Estimated Cost Rs. 781.32 Crore @ PL 2017-18, B.C. Ratio 1.57:1)**

Executive Director, Tapi Irrigation Development Corporation (TIDC), Government of Maharashtra made a brief presentation of the Project. Seven Pneumatically Operated Gated Weirs in series in District Jalgaon is proposed to be constructed across river Girna. These weirs will be located near Mehunbare, Bahal, Pandharad, Bhadgaon, Pardhade, Kurangi and Kanalda villages which are about 10.60km, 27.0km, 43.20km, 54.3km, 74.90km, 79.2km and 123.20km respectively downstream of existing Varkhede Londhe Barrage Medium Irrigation Project on Girna river. The project has Gross capacity of 21.49 Mm<sup>3</sup>, total water requirement of 25.42Mm<sup>3</sup> and live storage of 19.82 Mm<sup>3</sup>. A provision of 2.77 Mm<sup>3</sup> has been made in the project proposal for drinking water supply. Project is having CCA of 5540 ha and annual irrigation of 6471 ha for serving the nearby areas which are drought prone. The cost estimate of the project has been finalized for Rs. 781.32 Crore at 2017-18 price level and the BC ratio of the project is 1.57: 1 which is more than 1 and is acceptable being in Drought Prone Area. The total expenditure incurred by the State Government till November 2019 is Rs. 1.72 Crore.

The Project proposal was earlier appraised in Mahi and Tapi Basin Organization (MTBO), CWC, Vadodara and the Cost Estimate was finalized based on the latest Schedule of Rates (SoR) as available with the Project Authorities at a cost of Rs 781.32 Crore at 2017-18 Price Level.

*Har*

The Additional Chief Adviser (Cost) raised certain issues regarding high value of establishment charges, audit charges, T&P charges and pension charges etc. in the cost estimate of project. In this regard, the Project Authorities clarified that these provisions are kept as per CWC/DoWR, RD & GR publication of 2010 on "*Guidelines for Preparation of Detailed Project Reports of Irrigation and Multi-Purpose Projects*". Further, it was mentioned that the area under irrigation in pre project and post project condition has increased from 4432 ha to 6471 ha and the number of crops has gone up from 7 to 18 and total production has also increased and hence the basis of such assumption was enquired. It was clarified by the Project Authority that these values/data in pre and post-project conditions is as per the information/certificates given by the State Agriculture Department.

Secretary, DoWR, RD&GR enquired about any experience in the past in India of such pneumatically operated gated weir. The Executive Director, TIDC stated that the Mumbai Municipal Corporation has already taken up such work at Pise Weir some time back and it is working satisfactorily. As the technology of pneumatically operated gated rubber weir is new in Indian scenario, the Project Authorities further informed that they will adopt/install this new technology for one weir site initially and only after observing its performance at one site, the works at other 6 sites will be taken up. It was suggested by JS & FA to increase the time frame for completion of the project from 3 to 5 years to facilitate implementation of the Projects in phases.

It was also intimated by ED of TIDC that there is 32% saving in cost due to application of Pneumatically Operated gated Weirs vis-à-vis conventional Barrages. Secretary, DoWR enquired about O&M cost in future in the implementation of new technology. Executive Director, TIDC stated that since the main structure does not require any maintenance and only the spares are required for the gates and pneumatic system which will not be of high value, the spares are also readily available thus may not pose any problem. Further, the O&M cost is also on the lower side compared to conventional mechanism.

It was further intimated by him that there is no requirement of forest land in this project and environmental clearance is awaited from State Authorities. State Finance concurrence of Rs 711.15 Crore at Price Level of 2013-14 has also been submitted by the project authority on 9.12.2019. However, the concurrence of the State Finance Dept. for the latest estimated cost i.e. Rs. 781.32 cr @ 2017-18 PL shall be submitted by the Project Authority at the earliest possible.

Total land requirement in this project is 910.92 ha out of which 580.32 ha is Government land. No village/gaothan fully or partially will be affected by the submergence of this project. Hence, there is no issue of Rehabilitation and Resettlement in this project.

After detailed discussions, the project was accepted by the Advisory Committee subject to following:

1. Submission of Environmental Clearance.
2. Submission of State Finance Concurrence for Rs 781.32 Crore at (PL-2017-18)



3

**Shelgaon Barrage Medium Irrigation Project, Revised Cost Estimate (RCE), Maharashtra (Estimated Cost Rs. 961.11 Crore at 2017-18 Price Level with B.C. Ratio 1.86:1)**

Executive Director, TIDC, Government of Maharashtra made a presentation on the Shelgaon Barrage Medium Irrigation Project. It envisages construction of 419.65 m long barrage across river Tapi in Tapi Basin. The proposed project is ongoing and located near village Shelgaon, Taluka Jalgaon and District Jalgaon in Maharashtra. The project is planned to irrigate annually an area of 11,318 ha (CCA- 9589 ha.) benefiting 19 villages of Jalgaon District. Besides this, the project will cater for domestic requirements of 14 villages, Bhusawal Municipality and Industrial water requirements of MIDC, Jalgaon. Total annual utilization from the project will be 127.529 MCM. The project has gross storage capacity of 116.366 MCM and live storage of 110.348 MCM.

The Representative of Ministry of Finance put up her apprehensions regarding the increase in cost of project which has almost doubled since last approval. She also stated that the project should be completed on time so that there is no further increase in cost. The Executive Director, TIDC stated that initially the project was lagging because of fund constraint. However, now the project has been included under Special Package from DoWR, RD&GR, Govt of India and hence it will now be completed as per Schedule.

It is intimated by project authorities that environmental and forest clearance have been received by the project. No village/Gaothan fully or partially will be affected by the submergence of this project, hence there is no issue of Rehabilitation and Resettlement. In this regard, it was informed by project authorities that the total expenditure up to September, 2019 is Rs. 555.39 crore ( works component - Rs 508.83 crore) which is more than the earlier approved cost by Planning Commission for investment clearance of Rs. 446.49 crore. Hence, approval of latest cost is required for continuation of central assistance funding under special package. The reasons for cost escalation (115.26% w.r.t. earlier cost) was explained by Executive Director, TIDC and he stated that 51.85%, 33.29% and 29.47% cost escalation have occurred in C-works, R-communication and B-Land respectively.

The Project was approved earlier for Rs. 446.49 Crore at price level 2008-09 ( Works - Rs 406.83 crore) by the Advisory Committee in its 105<sup>th</sup> meeting held on dt.25.06.2010 and investment clearance was accorded by Planning commission vide their letter dated 5.12.2010. The estimated cost was revised to Rs. 699.48 crore @ price level 2011-12 ( Works – Rs 620.58 crore) and it was approved vide Maharashtra Govt. Resolution dated 30.11.2016. This cost was considered to work out balance cost as on 1.4.2018 for Central Assistance under the Special Package. This estimated cost was further revised to Rs. 968.97 crore at price level 2017-18 ( Works – Rs. 881.42 crore) and it was approved by Maharashtra Govt. Resolution dated 9.9.2019. In the present case, the revised cost estimate of Rs 968.97 crore was scrutinized in CWC Regional Office and Rs. 961.11crore (works-879.49 crore) at price level 2017-18 was finalized by CWC with BC Ratio of the

project as 1.86. State Finance concurrence for Rs. 968.97 Crore has also been submitted by the project authority on 9.12.2019.

Secretary, DoWR, RD&GR clarified that the approval of revised cost of Rs. 961.11 cr will not make the State Govt. eligible for any additional Central Assistance under the Special Package as it has already been frozen on the basis of balance cost as on 01.04.2018 as per the Cabinet Note. It was also clarified by the Secretary, DoWR that the reimbursement under Special Package will be limited to the cost accepted under the earlier approved Cabinet Note. The increase in the project cost will be fully borne by the State Government.

Additional Chief Adviser (Cost) raised apprehensions that the increase in cost of project is beyond 20% and such proposal may be placed before the Revised Cost Committee of Ministry of Finance. In this regard it was clarified that since the financial liability of the Central Govt. is already frozen, the RCE need not to be placed before the Revised Cost Committee of Ministry of Finance. Regarding high value of establishment charges in the cost estimate of project it was clarified that these provisions are kept as per CWC/DoWR, RD & GR publication of 2010 on "*Guidelines on Preparation of Detailed Project Reports of Irrigation and Multi-purpose projects*".

After detailed discussion, the project was accepted by the Advisory Committee with the central assistance /funding frozen at 25% of Balance cost as on 1.4.2018 as per the Cabinet Note of 2018 for Special Package. Cost escalation, if any, shall be fully borne by the State Government.

**4. Bodwad Parisar Sinchan Yojna, (Major Irrigation), Revised Cost Estimate (RCE), Maharashtra (Estimated Cost Rs. 3763.60 Crore at 2018-19 Price Level with B.C. Ratio 1.57:1)**

Executive Director, TIDC, Government of Maharashtra made a presentation on the project. Bodwad Parisar Sinchan Yojana envisages lifting of 198.54 Mm<sup>3</sup> water from flood waters of Tapi river in Tapi basin. The proposed project is located near village-Khamkheda, Taluka-Muktainagar of Distict Jalgaon in Maharashtra.

The project is planned to irrigate an area of 53,449 ha (C.C.A.- 53,025 ha ) by benefiting 43 villages from Bodwad Taluka, 14 villages of Jamner Taluka, 6 villages of Muktainagar Taluka of Jalgaon District and 23 villages of Malkapur Taluka, 15 villages of Motala Taluka of Buldhana District, total 101 villages.

The area will be irrigated by constructing intake well, Jack well in submergence of existing Hatnur dam near village Khamkheda Taluka Muktainagar, and conveying the water by rising main to Junone & Jamthi dams, proposed to be constructed under this scheme. Irrigable command area of 42420 ha. is proposed from both the dams. Total annual utilization from the project will be 198.54 MCM. The Project was approved for Rs.

2178.67 Crore (PL 2009-10) by Advisory Committee of DoWR, RD & GR in its 109 th meeting held on dt.14.03.2011 and investment clearance was also accorded by Planning commission on 04.05.2011.

The revised cost estimate of project was finalized by CWC for Rs. 3763.60 crore (price level 2018-19) with BC Ratio of 1.57.

Pipe distribution network is proposed for canal and distribution system. No provision for drinking water supply & Industrial use has been proposed in this project. R & R is also not required in this project as no village or population will be displaced.

The BC ratio of the Project is 1.57:1 which is more than 1 and is acceptable as the Project is in Drought Prone Area. The total expenditure incurred by the State Government on this project till March 2019 is Rs. 167.59 Crore.

Additional Chief Adviser (Cost) raised apprehensions that the increase in cost of project is beyond 20% and such proposal may be placed before the Revised Cost Committee of Ministry of Finance. In this regard it was clarified that since the financial liability of the Central Govt. is frozen, the RCE need not to be placed before the Revised Cost Committee of Ministry of Finance. Secretary, DoWR, RD & GR clarified that although, one time grant of Rs 500 Crores was sanctioned by Govt of India in July 2012 based on approved cost of Rs. 2178.6 cr at 2009-10 PL and out of which, central assistance amounting to Rs 66.66 Crores was released on 19.11.2014. However, no Utilization Certificate/Status of physical and financial progress was submitted by the State Govt during 2014-2017. Secretary, DoWR, RD & GR also clarified that at present, there is no funding mechanism under which this project can be funded. The RCE is being approved subject to condition that it will not involve any financial burden on Central Govt. and additional cost shall be fully borne by the State. State Govt. will also submit State Finance concurrence for Rs. 3763.60 crore at price level of 2018-19.

After detailed discussion, the project was considered accepted by the Advisory Committee subject to submission of State Finance concurrence of Rs 3763.60 Crore at price level 2018-19.

## **B. Flood Control Projects**

### **1. Providing flood protection/stabilization work to Naker Khad and its tributaries from Rainta (RD 0) to Sour Kalan Bridge (RD 30000) Distt Kangra (HP) (Estimated Cost Rs. 231.02 Crore @ Dec 2018 Price Level, B.C. Ratio 1.63:1)**

A presentation on the proposal was made by the Project Authorities. It was informed that this scheme is proposed to protect an area of 274 ha with a population of about 3,678 (as per Census-2011) from floods in Naker Khad and its Tributaries in District Kangra Himachal Pradesh. Naker Khad is one of the major tributaries of River Beas in Kangra District & joins River Beas on its Right Bank.

The proposed scheme is based on Mathematical Model Studies conducted by CWPRS, Pune as per their Technical Report No. 5600 of June 2018 updated in January 2019 and envisages construction of 22.870 km earthen embankments with wire crated aprons & stone pitching (12.120 km on Left Bank & 10.750 km on Right Bank) and 6.05 km wire crated Gabion Walls (3.400 km on Left Bank & 2.650 km on Right Bank) in different vulnerable reaches from Sour Kalan bridge to confluence point of Naker Khad with River Beas on both banks of Naker Khad.

It is also proposed to provide 16 No. Check Structures across the tributary where the velocity of the flow is more than 4 m/s and 45 RCC Box Culverts at every 500m for countryside drainage.

It was apprised by the project authorities that if the Flood Protection Measures are not provided immediately in vulnerable reaches in Naker Khad as suggested by CWPRS Pune, then there are chances of heavy damages to agriculture land, residential areas, public and private Properties.

It was informed that the annual benefits from the project are estimated to be Rs. 64.23 cr on the basis of damages to the properties during the last 14 years and the annual cost of the project is estimated at Rs. 39.633 cr. Accordingly, the BC ratio works out to 1.63:1.

Additional Chief Adviser (Cost) mentioned that contingency charges of 3 percent, appears to be very high and enquired about the components of contingency charges. The Project Authority informed that, the project is meant for protection from flash floods which may cause severe damages to the works under execution; therefore contingency charges are kept as 3%. As per the provisions, contingency charges can be kept upto 3% depending upon nature/type of works. The contingency charges are levied on C-works of the estimate.

It was mentioned that in the computation of Benefit Cost (BC) ratio of 1.63, average amount of Rs. 48.49 crore (based on data for the period 2003 to 2016) has been included towards annual losses due to land erosion & submergence in the total annual benefit of Rs.64.23 crore. The basis of computation of figure of annual loss of land erosion was enquired. It was also enquired whether land erosion and submergence is annual feature. The Project Authority informed that average annual losses have been calculated on the basis of damages certified by the competent authority of State Govt and flash floods cause severe erosion and submergence of the affected area annually.

It was also enquired about past experience of floods in Kangra area. In response to that, the Project Authority informed that losses due to flash floods are annual phenomenon and same has been mentioned in the project report.

On a query whether annual loss amount considered for computation of BC ratio has been certified by the Revenue Department of State of Himachal Pradesh, the Project Authorities informed that annual loss amount are duly certified by the Revenue Department of State of Himachal Pradesh.

It was further mentioned that average amount of Rs. 9.93 crore (based on data for the period of 2003 to 2016) has been included towards annual loss due to loss of crop in the computation of BC ratio and the basis of calculating loss of crop was enquired whether it is based on the compensation paid to the farmers or some value of loss calculated by the State Govt. The Project Authorities informed that calculation of loss of crop is based upon the affected cropped area and annual loss of yield of various crops in the affected area.

After detailed deliberation, the Advisory Committee accepted the project. However, the acceptance of the project by the Advisory Committee of DoWR, RD& GR does not guarantee any eligibility towards release of fund under any existing scheme of DoWR, RD& GR.

**2 “Providing Flood Protection Works/Anti erosion measures for Sakrain, Malthod, Thothu, Dol and Samour Khad in Dharampur Constituency, Distt Mandi (HP) (Estimated Cost Rs. 145.73 Crore @ June 2019 Price Level, B.C. Ratio 3.54:1)”**

A presentation of the proposal was made by the Project Authorities. It was informed that this scheme is proposed to protect an area of 300 ha with a population of about 3,289 (as per Census-2011) from floods in Sakrain, Malthod, Thothu, Dol and Samour tributaries of Beas River in District Mandi, Himachal Pradesh. All these tributaries join Beas river on its left bank.

The proposed scheme is based on Mathematical Model Studies conducted by CWPRS, Pune as per their Technical Report No. 5717 of June 2019 and envisages construction of 7.200 km earthen embankments with wire crated aprons & stone pitching (4.45 km on Left Bank & 2.75 km on Right Bank), 15.300 km wire crated Gabion Walls (7.750 km on Left Bank & 7.550 km on Right Bank) & 4.300 km Revetments (1.30km on left bank & 3.00 km on right bank) in these 5 tributaries at different vulnerable reaches.

It is also proposed to provide 36 Check Structures across the tributaries where the velocity of the flow is more than 4.00 m/sec and 13 RCC Box Culverts for countryside drainage.

It was apprised by the project authorities that if the Flood Protection Measures are not provided immediately in vulnerable reaches in these tributaries as suggested by CWPRS then there are chances of heavy damages to agriculture, residential, public as well as private properties.

It was informed that the annual benefits from the project are estimated to be Rs. 88.13 Cr on the basis of damages to the properties during the last 14 years, whereas the annual cost of the project is estimated to be Rs. 24.89 Cr. Accordingly, BC ratio works out to 3.54:1.

Additional Chief Adviser (Cost) mentioned that contingency charges of 3 percent, considered for the purpose of estimation of proposed cost Rs. 145.73 crore, appears to be very high and enquired about the components of contingency charges. The Project Authority informed that the project is meant for flash floods which may cause severe damages to the works under execution; therefore contingency charges are kept as 3%. As

per the provisions, contingency charges can be kept upto 3% depending upon nature/type of works. The charges are levied on C-works of the estimate.

It was mentioned that out of the total benefit of Rs. 88.13 crore considered for the computation of BC ratio of 3.54, the damage/losses to crops is Rs. 20.44 crore and losses of land due to erosion & submergence is Rs.61.64 crore. The basis of computation of figure of annual loss of land erosion/crop losses was enquired. It was also enquired whether land erosion and submergence is annual feature. Supporting documents with regard to losses of permanent erosion of land was sought along with data on land erosion on annual basis if available on official website of State of HP. The Project Authorities informed that average annual losses have been calculated on the basis of damages certified by the competent authority of State Govt and flash floods cause severe erosion and submergence of the affected area annually.

It was further mentioned that the period considered in the project is from year 2003 to year 2016 and in this connection it was enquired whether there were floods in all these 14 years and how these land erosion figures/damage to crops have been worked out. The past experience of floods in Mandi area was enquired. Project Authorities informed that losses due to flash floods are annual phenomenon and the same has been mentioned in the project report.

On a query whether annual loss amount considered for computation of BC ratio has been certified by the Revenue Department of state of Himachal Pradesh, it was informed that annual loss amount are duly certified by the Revenue Department of state of Himachal Pradesh.

After detailed deliberation, the Advisory Committee accepted the project. However, the acceptance of the project by Advisory Committee of DoWR, RD& GR does not guarantee any eligibility towards release of fund under any existing scheme of DoWR, RD& GR.

**3. Revised DPR for protection work of left edge of River Ganga from Kewala village to Baghmara village in the length of 5200m (Estimated Cost Rs. 105.60 Crore @ 2017 Price Level, B.C. Ratio 1.8:1)**

A presentation on the project was made by the Project Authority. It was informed that during 2015 flood, attempts were made by State Govt. to save Kewala villages and its school from erosion of Ganga. However these attempts did not prove to be successful. Further, during flood 2016, erosion of left edge was so severe that the river edge was eroded further by 195m. During flood 2017, severe erosion was observed, consequently most part of the Maheshpur and Soulia village was submerged and the river edge came closer (50m away) to Katihar-Manihari Railway line. NF-Railway is pressing hard to take up anti-erosion works immediately for protection of railway line.

In Ganga river system, the bank erosion and consequent loss of land is major concern. River bank erosion is dynamic in nature which is caused due to meandering behaviour and presence of deep channel adjacent to bank line. Variation of water level of Ganga also

gives severe effect in the bank erosion. It is felt that erosion of bank by river Ganga is more chronic problem than inundation of the area. So, river bank protection is better solution for people residing nearby. It was informed that the scopes of work under the scheme are as given below:

- Boulder pitching of 0.60 m in thickness (300 mm thick in two layers) over a layer of geo-textile filter on prepared earthen slope 2: 1.
- Vertical separator made of crated boulder having size 3.00m x 1.50m x 0.60m @ 30 m c/c of revetment.
- Launching apron of crated boulder having size 3.00m x 1.50m x 0.75m in two layers (1.5 m thick) having width 21.00 m.
- Top capping 1.50 m wide with crated boulder having size 3.00m x 1.50m x 0.60m throughout the slope length flushing with N.S.L.

It was informed that the original scheme was approved by Advisory Committee of the then MoWR, RD&GR in its 135<sup>th</sup> meeting held on 12.04.2018 for the estimated cost of Rs. 66.2581 crore at 2015 price level. However, execution of work is yet to be taken up by WRD, Govt of Bihar. The proposed scheme having estimate cost of Rs. 105.60 crore at 2017 price level has been framed to meet the cost of anti erosion work for protection of left edge of river Ganga from Kewala village to Baghmara village in distt-Katihar, Bihar, for a length of 5200m. The Katihar-Manihari railway line is in danger due to continuous erosion of the left bank of river Ganga.

Additional Chief Adviser (Cost) mentioned that the original cost Rs.66.25 crore were approved in April, 2018 at 2015 Price Level (PL), now revised estimate cost of Rs.106.189 crore has been worked out at 2017 PL. The cost has increased by 60% in one year because of use of GI machine woven crates instead of hand woven wires crates and provision of new EC bags instead of old ones. It was enquired whether this was not envisaged in the original proposal and what benefit will accrue from this change. In this regard it was clarified that WRD, Govt of Bihar had issued an order for using machine woven crate instead of hand woven crate and new cement bag in place of old cement bag for better quality of anti-erosion work. It was informed that machine woven crates have longer life than hand woven crates as the voids are small and small boulders can be densely packed into it.

It was mentioned that out of the average annual benefit of Rs. 32.33 crore considered for the computation of BC ratio of 1.80 : 1, the average damage/losses to Raiyati property (based on data of 2010 to 2017) is Rs. 29.22 crore. The basis of computation of figure of annual loss of property was enquired also whether loss to property is annual feature. Whether any data on losses is available on any official website of State of Bihar. In this regard it was clarified that anticipated benefit had been worked out as per cost of eroded land (average area of land eroded during last eight years) given by the concerned authority of revenue department.

After detailed deliberation, the Advisory Committee accepted the project. However, the acceptance of the project by Advisory Committee of DoWR, RD& GR does not guarantee any eligibility towards release of fund under any existing scheme of DoWR, RD& GR.

**4. Anti Erosion Works before flood 2019 in between 0.00 km to 35.00 km of PP Embankment and at GH Embankment (Estimated Cost Rs. 44.53 Crore @ 2017 Price Level, B.C. Ratio 1.2:1)**

A presentation on the project was made by the Project Authority. It was informed that Gandak High Level Standing Committee (GHLSC) headed by Chairman, GFCC, Patna, during its 51 meeting held from 4 to 7 October, 2018, inspected the sites on the right bank of river Gandak and recommended the works to be taken up before the floods of 2019.

The project proposals of "Anti Erosion works before flood 2019 in between 0.00 km to 35.00 km of PP Embankment and at GH embankment" were framed by Water Resources Department, Govt. of Bihar as per recommendations (Bihar portion) of the 51 st meeting of GHLSC given for those particular reaches of the river Gandak. Subsequently, the works were taken up by the Water Resources Department, Govt of Bihar for execution before 2019 flood. The executed works were visited by GFCC during 15- 17 September, 2019. The scheme has been approved by State Flood Control Board of Bihar in its 55th meeting held on 29.12.2018.

The scope of work includes construction of Pusta in country side and geobag slope pitching on the slope of pusta, construction of godown for flood fighting materials, raising & strengthening of spur as per design and laying of GSB at the top, construction of toe with geo bag in PP rope gabion in two layers & geobag slope pitching in two layer in river side and in country side, Restoration of earthen section of spurs as per design and laying of GSB on top, Restoration of boulder apron of guide bundh and U/s portion of DRL as per design, laying of porcupine deflector in front of the apron of guide bundh and in curved portion over NC base, wherever required, restoration of disturbed portion of previous revetment along u/s shank, nose, d/s shank etc in different stretches as given in Advisory Committee Note.

It was mentioned that aforesaid works had already been completed. Regarding delay in appraisal of the scheme, it was explained by GFCC that the rate of machine woven crate was included in the SOR of WRD, Govt of Bihar in September 2019 and hence appraisal was delayed as machine woven crate was one of the item of work. Regarding query about consideration of the scheme by the Advisory Committee, after its completion, it was explained that it was required as per existing "Guidelines for Submission appraisal and clearance of Major, Medium Irrigation, Multipurpose and Flood Control Projects" of Govt of India.

Additional Chief Adviser (Cost) mentioned that annual benefits of Rs.10.34 crore (for working out BC ratio of 1.20:1) has been worked out on the basis of annual losses due to the flood. Nothing has been mentioned about the frequency of flood in the area and amount of loss thereto. Further, no authenticated data to check the claim was available with the note. In this regard it was clarified that the annual damage data for the period 2007-2014 is already available in the Advisory Committee Note, and the same is available on the website of Govt. of Bihar.

After detailed deliberation, the Advisory Committee accepted the project. However, the



acceptance of the project by Advisory Committee of DoWR, RD& GR does not guarantee any eligibility towards release of fund under any existing scheme of DoWR, RD& GR.

**5. Comprehensive Flood Management Plan Works on River Jhelum and its tributaries- Phase II (Part A) (Estimated Cost Rs. 1623.43 Cr, Price level Sep,2019, B.C. Ratio 1.33:1)**

A presentation on the project was made by the Project Authority. It was informed that after the devastating floods of September 2014, a three member group headed by Chairman, CWC was constituted by MOWR, RD&GR on 18.09.2014 to conduct an in-depth study and analysis of the unprecedented floods in J&K with an objective:

- a) To make suitable recommendations along with a detailed action plan to manage the future flood threat of river Jhelum
- b) To review the status of project "Comprehensive Flood threat management of river Jhelum & its tributaries" already submitted to CWC in 2009-10 for approval.

The core group comprising of Chairman CWC, Commissioner Indus and the Director, National Institute of Hydrology, Roorkee recommended the measures under three categories Viz. Immediate Measures, Short Term Measures and Long Term Measures. Brief description of these measures is as under:

**Immediate measures:** Under these measures, works to plug all the breaches in embankments and restoration works, before next monsoon, were completed under State Disaster Response Fund(SRDF-3320 spots) and Permanent Restoration(1235 spots)

**Short term measures: These measures are to be executed in two phases.**

**Phase I:** Till the long-term flood mitigation measures are conceived after carrying out detailed studies, it was decided during the series of meetings held since December 2014; that a Priority flood management project shall be formulated for urgent work which could be executed immediately. Accordingly the DPR with the cost of Rs. 399.29 Cr was formulated under "Priority works- Comprehensive Plan for Flood Management works on Jhelum: phase I", carved out of draft project report submitted earlier at a cost of Rs.2083.90 Cr. This project was finally approved in the 125th meeting of the Advisory Committee on 25.05.2015 and included for funding under FMP with scheme code JK-43. A Central Assistance of Rs 214.45 Cr has been released so far and remaining Central Assistance of Rs 20.59 Cr will be released in this financial year ie 2019-20. The scheme is proposed to be completed by March of 2020.

Outcome of phase-I:

- (i)** Carrying capacity of river Jhelum from Sangam to Padhshahibagh will be increased from 31,800 cusecs to 41,000 cusecs.
- (ii)** Carrying capacity of Flood Spill Channel (FSC) at Padhshahibagh will be increased from 4,000 cusec to 8,700 cusecs.

**Phase II:** Under these short term measures, DPR for Comprehensive Flood Management works on river Jhelum phase II to mitigate a flood threat upto 60,000 cusecs (1700 cumec) at Sangam in South Kashmir was proposed. Accordingly 1-D mathematical model studies of whole river system from Sangam in South Kashmir to Lower Jhelum Barrage in Baramullah were conducted through CWPRS, Pune. On the basis of these studies, DPR for "Comprehensive Plan for Flood Management works on river Jhelum & its tributaries phase II" – at an estimated cost of Rs. 5411.54 Cr (part-A: Rs 1684 Cr & part-B: Rs 3727 Cr)



was formulated by WAPCOS Ltd. The scheme was submitted to CWC in Feb, 2019.

State Flood Control Board meeting was held on 12.06.2019 in which it was decided that prioritization of the main works of DPR of phase-II with tangible flood mitigation benefits that can be executed within approved funding under PMDP i.e Rs. 1684.60 Cr.

State Administrative Council accorded "In principle" approval of the project with instructions to implementation of part-A of phase-II of the project utilizing the available funds and to explore financing options for part-B of phase-II of the project in its meeting held on 20.06.2019.

Accordingly, modified DPR "Comprehensive plan for Flood Management works on river Jhelum & tributaries-short term measure-Phase-II-part-A "costing Rs 1783.26 Cr with an objective to increase carrying capacity of river Jhelum from 41,000 cusecs to 60,000 cusecs at Sangam was received in CWC on 20.09.2019 which was finalized for Rs. 1623.43 cr @Sep 2019 Price Level.

**Long term measures:** Under long term measures, it is proposed to enhance the carrying capacity of river Jhelum to 1,15,000 cusecs.

Every year there are heavy damages to agriculture land as well as public & private properties by floods in river Jhelum. The magnitude of these damages are very high and as sufficient flood protection structures are not provided in the vulnerable reaches of river Jhelum, there are chances of heavy loss to the residential properties as well as public and private properties which are situated on the banks of river Jhelum. Therefore, it has become top priority of the State Govt. to provide suitable flood protection /stabilization structures in these vulnerable reaches of the river Jhelum.

Additional Chief Adviser (Cost) mentioned that annual benefits of Rs.521.45 crore (for working out BC ratio of 1.33) has been worked out on the basis of damages to the property for the floods of 2014 & 2015 and enquired about the frequency of floods/damages after 2015 as Benefit cost ratio cannot be worked out based on data of two years unless it is annual in nature. It was clarified by Project Authorities that the flood damage of two years have been divided by 10 for calculating the annual average flood damage and same has been used for calculating the BC ratio.

After detailed deliberation, the Advisory Committee accepted the project. However, the acceptance of the project by Advisory Committee of DoWR, RD& GR does not guarantee any eligibility towards release of fund under any existing scheme of DoWR, RD& GR.



## C. Coastal Protection Project

### 1. Implementation of Coastal Protection Measures at Someshwara, Mangalore taluk, Dakshina Kannada Distt, Karnatka. (Estimated Cost Rs. 84.87 Crore @ 2016-17 SOR, B.C. Ratio 1.53:1)

A presentation on the project was made by the Project authority. It was informed that Someshwara, Dakshina Kannada District Coastal Protection is one of the sub-projects selected for implementation under the ongoing ADB loan project “ Sustainable Coastal Protection and Management Investment Program(SCPMIP)- Tranche 2” in Karnataka.

The proposed solution is construction of two offshore reefs each 200 m long and placed 600 m offshore and beach nourishment for protection of 3 Km length of coast experiencing frequent erosion problem.

Initially 129<sup>th</sup> meeting of the Advisory Committee held on 8<sup>th</sup> July 2016 approved the Someshwara project under SCMIIP Tranche-2. The proposed coastal protection option at Someshwara was construction of a revetment using sand filled geotextile. However it was later found by project management unit, SCPMI, Mangaluru that Someshwara beach was very narrow for the revetment solution. So project authority after consultation with ADB and CWPRS adopted compound coastal protection proposal which includes 10 short Groyes and 2 offshore reefs and beach nourishment in Phase 1 and Phase 2 respectively.

The designs have been approved by CWPRS, Pune after due technical examination.

The cost for Someshwara Coastal Protection Project has been finalised as Rs 84.87 Crore @ 2016-17 SOR including provision of 18% GST (wherever applicable) and on the basis of the finalised cost and benefits, the benefit cost (B.C.) Ratio is **1.53**.

It was also informed that Coastal Regulation Zone (CRZ) clearance by the concerned State Government Authority has been accorded vide Govt. of Karnataka letter no. FEE204CRZ2019 dated 13.09.2019.

Additional Chief Adviser (Cost), Department of Expenditure observed that in para 5.2 of the Advisory Committee Note it has been mentioned that the risks considered while calculating the BC Ratio includes, (i) increase of cost by more than 62% and (ii) risk of benefits being over estimated, however, under sensitivity analysis, the BC ratio is varying between 1 to 1.53. It was further enquired whether this project is viable if BC Ratio is 1



and whether the increased cost/reduced benefits have also been considered.

The Project authorities informed that the economic analysis has been carried out considering different scenarios as below (given at tables 4 & 5 of the Advisory Committee Note):

- Capital Cost increase by 20%
- O & M costs increased by 20%
- Benefits reduced by 20%
- Delay in accrual of benefits by 1 year and
- Combined adverse condition.

Economic risk analysis at para-5.2, considering 62% increase in cost and over estimated benefits have been discussed which is most unlikely scenario and due care has been taken while quantifying the benefits. Generally, B.C ratio more than 1.0 is considered viable as per CWC guidelines in flood protection Projects.

On a query on the ratio of funding of the project, it was informed by the Project Authority that the ratio of funding shall be 70:30 (ADB:State Govt.)

After detailed deliberations, the proposal was accepted by the Advisory Committee of MoWR, RD & GR subject to applicable Statutory Clearances to be obtained by Project Authority.

The meeting ended with a vote of thanks to the Chair.

\*\*\*\*\*



**LIST OF THE OFFICERS PRESENT IN THE 143<sup>rd</sup> MEETING OF THE ADVISORY COMMITTEE OF DoWR, RD&GR ON IRRIGATION, FLOOD CONTROL AND MULTI-PURPOSE PROJECTS ON MONDAY, 09<sup>th</sup> December, 2019 AT 11:00 AM IN THE COMMITTEE ROOM (2<sup>ND</sup> FLOOR), CWC, SEWA BHAWAN, R. K. PURAM, NEW DELHI:**

Shri U. P. Singh, Secretary, DoWR, RD&GR

In Chair

**Members of the Advisory Committee or their representatives/nominees**

**S/Shri**

- |   |                  |
|---|------------------|
| 1. R. K. Jain, Chairman, Central Water Commission   | Member           |
| 2. Jagmohan Gupta, JS & FA, MoWR, RD& GR  | Member           |
| 3. P. C. Jiloha, Chief Engineer, HPA, CEA (Representing Chairman, CEA)  | Member           |
| 4. C. M. Pandey, National Consultant, DAC&FW (Representing Secretary, Department of Agriculture, Cooperation & Farmers Welfare) | Member           |
| 5. Saidul Haq, Scientist-D, CGWB, (Representing Chairman, CGWB)   | Member           |
| 6. Kundan Kumar, Under Secretary, Ministry of Power (Representing Secretary, Department of Power)                               | Member           |
| 7. Vijai Saran, , Chief Engineer, PAO, CWC  | Member Secretary |

**Special Invitees:**

**DoWR, RD&GR**

**S/Shri**

1. Atul Jain, Commissioner (FM)
2. D.P. Mathuria, Member Secretary, UYRB

**O/o Chief Adviser (Cost)**

**S/Shri**

1. Smt. Racna Chopra, ACA (C), O/o CAC, Ministry of Finance.
2. Amardeep Singh, Director (Cost), O/o CAC, Ministry of Finance.

**Central Water Commission**

**S/Shri**

1. S.K. Haldar, Member (WP&P)
2. R. K. Sinha, Member (RM)
3. R.K. Pachauri, Chief Engineer, PPO
4. B.K. Karjee, Chief Engineer, FMO
5. Bhupinder Singh, Director, NP Dte
6. Vivek Pal, Director (IP-S) Dte
7. Rajiv Kumar, Director, PA(C) Dte.
8. Kiran Pramanik, Director, Cost Appraisal (HWF) Dte.
9. Piyush Ranjan, Director, PA(N) Dte
10. N. Mukherjee, Director, PA(S) Dte
11. Piyush Kumar, Director, FMP Dte.
12. Y.S. Varshney, Director, M&A Dte., Vadodara.

13. Naresh Porwal, Dy. Director, M&A Dte., Vadodara.
14. Dharmendra Singh, Dy. Director, FM-1 Dte.
15. Ashish Singh Kushwah, Deputy Director, Cost Appraisal (Irrigation)-2 Dte.
16. Pradeep Kumar, Deputy Director, Cost Appraisal (Irrigation-1) Dte.
17. K. Iyappan, Dy. Director, PA (N) Dte.
18. A.K. Madhok, Dy. Director, PA (C) Dte.
19. D.S. Prasad, Dy. Director, PA (S) Dte.
20. Hradesh Kumar, Dy. Director, PA (S) Dte.
21. Ankit Sahay, AD, CA (HWF) Dte.
22. Durgendra Singh, AD-II, PA (N) Dte.
23. R.P.Singh, AD, PA (N) Dte.

### **Officers from the Ganga Flood Control Commission (GFCC)**

#### **S/ Shri**

1. M.S.Dhillon, Chairman, GFCC, Patna
2. C.K.L. Das, Member, GFCC, Patna
3. Ajay kumar, Director, GFCC, Patna.
4. Kumar Vaibhav, Dy. Director, GFCC, Patna.

### **Officers from the State Government of Bihar.**

#### **S/Shri**

1. Sanjeev Hans, Secretary, WRD, Govt. of Bihar, Patna.
2. Indu Bhushan Kumar, Technical Adviser, WRD, Govt. of Bihar, Patna.
3. Padma Kant Jha, SE, Liaison Office, WRD, Govt. of Bihar, Patna.
4. C. Chandra Mishra, EE, DI & Mon. Division-13, WRD, Patna.

### **Officers from the State Government of Himachal Pradesh**

#### **S/Shri**

1. R.S.Chauhan, GM (CP), HPPCL, Shimla.
2. Sharad Bhendrel, Manager, (CP), HPPCL, Shimla.
3. Ajay K Jasti, SE/DGM, HPPCL, Shimla.
4. N.M. Saini, Chief Engineer (PMU), Irrigation & Public Health Dept., Mandi.
5. Mukesh Hira, Superintending Engineer, Irrigation Dept., Hamirpur.
6. Rajesh Kanunjo, Executive Engineer, I&PH Division, Dehra District, Kangra.
7. Rajiv Schgal, AE, I&PH Division, Dharampur, Bharasi, Mandi.
8. Muneesh Sharma, JE, I&PH Sub-Division, Dharampur.
9. R.S. Minhas, Managing Director, Minhas Tec Pvt. Ltd., Dehra.

### **Officers from the State Government of J&K.**

#### **S/Shri**

1. M.M. Shahnawaz, Chief Engineer, I&FC, Kashmir.
2. Mohd Irfan Reshi, AEE, FSC Division, Narbal.
3. Fayaz Ahmed Yatoo, AE, I&FC, Kashmir.

**Officers from the State Government Karnataka.**

**S/Shri**

1. K.B. Kulkarni, Project Director, SCPMIP-PMU, Mangalore.
2. B. Gopal Naik, Joint Director, SCPMIP-PMU, Mangalore.
3. Dr. Joseph Mathew, Team Leader, PMDCK-2, SCPMIP, Mangalore.
4. Prof. Shdua, Consultant, PMDCK-2, SCPMIP, Mangalore.

**Officers from the State Government of Maharashtra**

**S/Shri**

1. Anand More, Superintendent Engineer, JIPC, TIDC, Jalgaon.
2. S.D. Kulkarni, Exective Director, TIDC, Jalgaon
3. G.S. Mahajan, Executive Engineer, TIDC, Jalgaon.
4. Prakash R. Patil, Consultant, TIDC, Jalgaon
5. Prashant R. More, Executive Engineer, TIDC, Jalgaon.
6. Sachin R. Patil, Asst. Executive Engineer, TIDC, Jalgaon.
7. B.R. Chaudhari, SDO, TIDC, Jalgaon.
8. M.D.Sonawane, SDE, TIDC, Jalgaon

\*\*\*\*\*