BHAKRA BEAS
NATION'S PRIDE

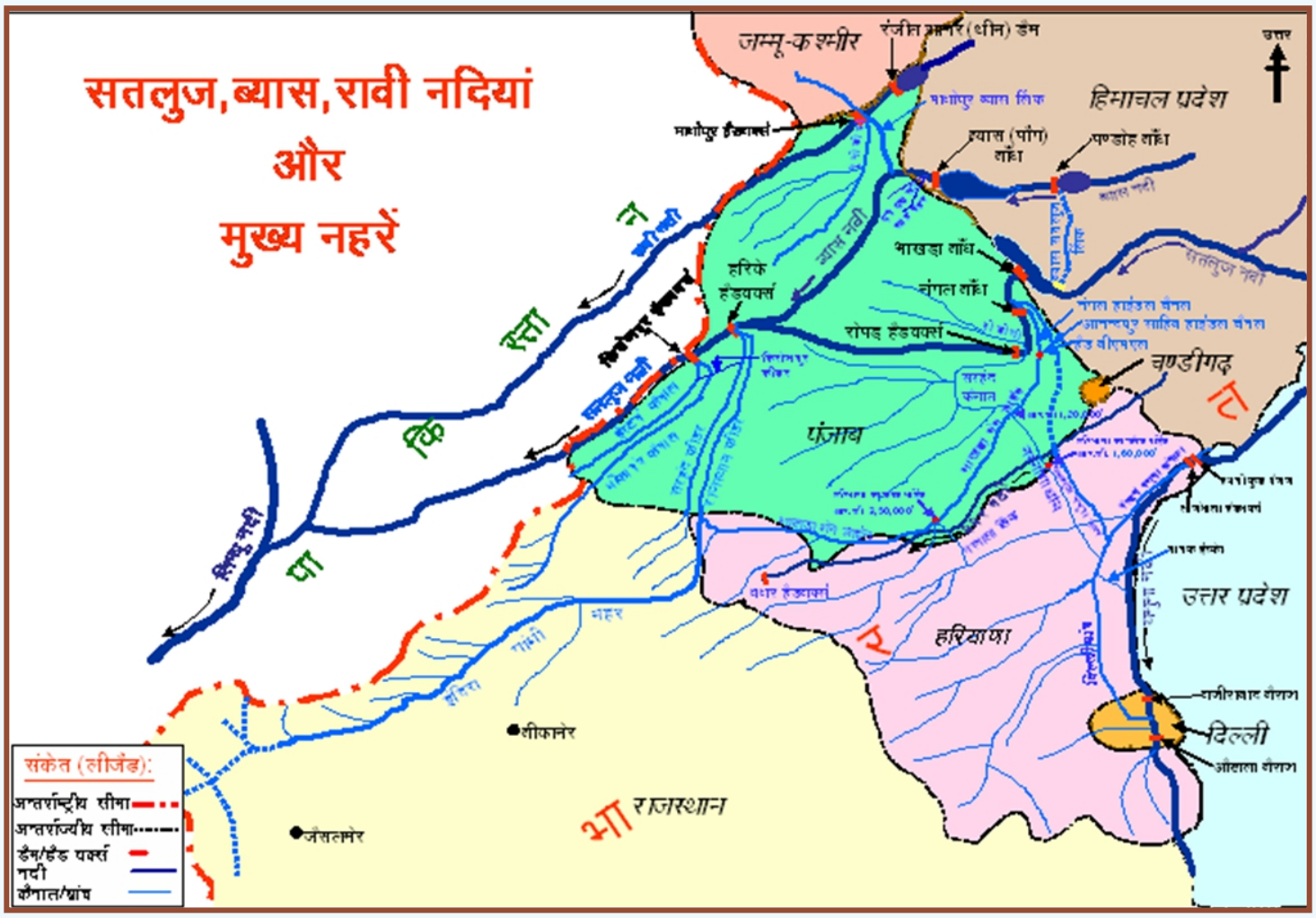
वार्षिक रिपोर्ट
2021-2022

भाखड़ा ब्यास प्रबन्ध बोर्ड

49वीं वार्षिक रिपोर्ट

49th Annual Report

2021-2022



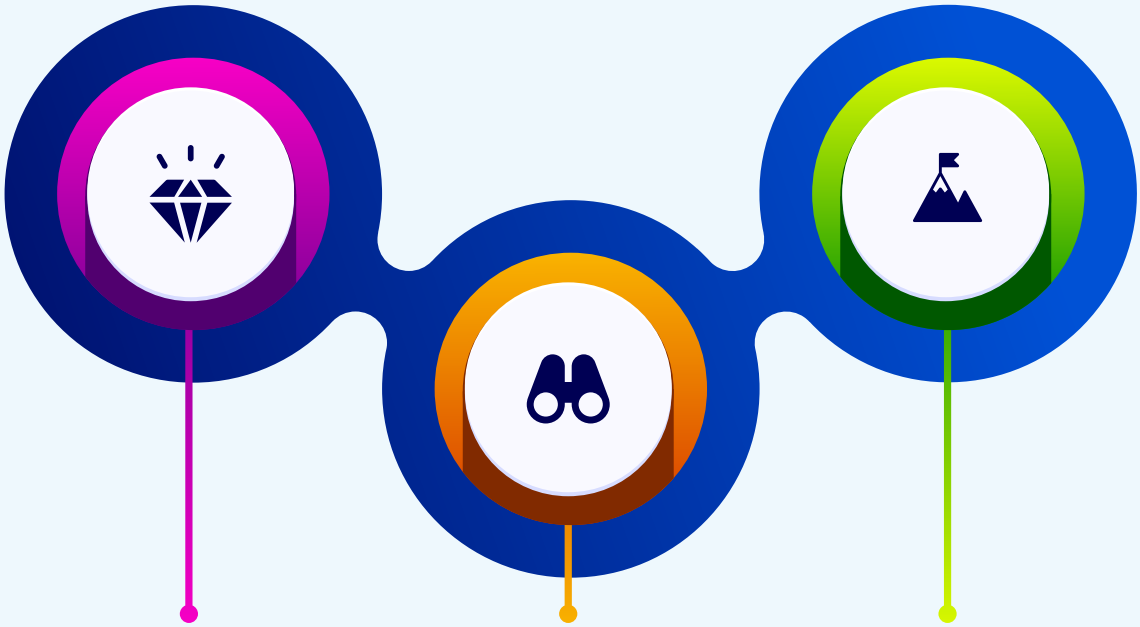
भाखड़ा ब्यास प्रबन्ध बोर्ड

BHAKRA BEAS MANAGEMENT BOARD

IS/ISO 14001 EMS

IS / ISO 9001 QMS

IS 18001 OHSMS



मान्यताएं

अनुशासन-कठिन परिश्रम परिचालन श्रेष्ठता और व्यावसायिकता

VALUES

Discipline-Hardwork-Operational Excellence and Professionalism

परिकल्पना

जल विद्युत परियोजनाओं, पारेषण, नहर प्रणालियों के परिचालन एवं अनुरक्षण तथा नवीनीकरण एवं आधुनिकीकरण में और विद्यमान मूलभूत ढांचे तथा संसाधनों के सर्वोत्तम उपयोग के लिए नई जल विद्युत अंतः शक्ति का लाभ उठाने के लिए उच्च मानकों की स्थापना में विद्युत क्षेत्र में अग्रणी रहना और एक ट्रेंड सैंटर बनना

VISION

To lead and be a trendsetter in Power Sector by establishing high standards in Operation & Maintenance, Renovation & Modernisation of Hydel Projects, Transmission System availability, Canal Systems and by exploiting new Hydro Power Potential with optimal utilization of existing infrastructure and resources

लक्ष्य

हमारी प्रणालियों को न्यूनतम लागत पर दक्षतापूर्वक चालू रखना

MISSION

To keep our systems running efficiently at the minimum cost

भाखड़ा बांध का सामने / नीचे से दृश्य

Bhakra Dam-Downstream View

"भाखड़ा नंगल परियोजना में कुछ आश्चर्यजनक है, कुछ विस्मयकारी है, कुछ ऐसा है जिसे देखकर आपके दिल में हिलोरें उठती हैं। भाखड़ा, पुनरुत्थित भारत का नवीन मन्दिर है और यह भारत की प्रगति का प्रतीक है"

Bhakra Nangal Project is something tremendous, something stupendous, something which shakes you up when you see it. Bhakra, the new temple of resurgent India, is the symbol of India's progress."

Members of the Board
During The Year 2021-2022

Chairman	
Sh. Sanjay Srivastava	01.04.2021 to 31.03.2022
Member/Representative	
Government of India	
Sh. Tanmay Kumar	01.04.2021 to 31.08.2021
Sh. Raghuraj Madhav Rajendran	31.08.2021 to 31.03.2022
Sh. P.K. Saxena	01.04.2021 to 31.03.2022
Partner States	
Punjab	
Sh. Sarvjit Singh	01.04.2021 to 31.03.2022
Haryana	
Sh. Devender Singh	01.04.2021 to 31.03.2022
Rajasthan	
Sh. Naveen Mahajan	01.04.2021 to 20.09.2021
Sh. Prithvi Raj	20.09.2021 to 31.03.2022
Himachal Pradesh	
Sh. Ram Subhag Singh	01.04.2021 to 03.06.2021
Sh. R.D. Dhiman	03.06.2021 to 31.03.2022
Member/Irrigation	
Sh. Sanjay Srivstava, Chairman, BBMB. (Addl. Charge of Member/Irrigation)	01.04.2021 to 31.03.2022
Member/ Power	
Sh. Harminder Singh	01.04.2021 to 31.03.2022

बोर्ड के सदस्य (31.3.2022 को)
MEMBERS OF BOARD (AS ON 31.3.2022)

P.K.Saxena
(Representative, Govt. of India)
Commissioner, Indus,
Ministry of Water Resource,
New Delhi

Sanjay Srivastava,
Chairman
Bhakra Beas Management Board,
Chandigarh

Raghuraj Madhav Rajendran Member,
Govt. of India
Joint Secretary/Hydro,
Ministry of Power,
New Delhi

Sarvjit Singh, IAS
(Representative, Govt. of Punjab),
Secretary,Irrigation Department,
Govt. of Punjab, Chandigarh.

Devender Singh, IAS
(Representative, Govt. of Haryana),
Additional Chief Secretary, Irrigation &
Water Resources Deptt.,
Govt. of Haryana Chandigarh

Prithvi Raj, IAS,
Govt. of Rajasthan, Jaipur
Secretary,
Water Resources Department, Govt. of
Rajasthan,Jaipur

R.D.Singh, IAS
(Representative, Govt. of HP),
Additional Chief Secretary to
Government of Himachal Pradesh,
Shimla

Harminder Singh,
(Whole Time Member)
Member(Power),
Bhakra Beas Management Board,
Chandigarh

Sanjay Srivastava,
Chairman
Holding additional charge of Member
(Irrigation)
Bhakra Beas Management Board,
Chandigarh

विषयसूची
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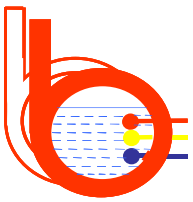


भाखड़ा ब्यास
राष्ट गौरव

अध्याय-1

Chapter-1

प्रस्तावना

Introduction

1.1 BBMB - ORIGIN

- Bhakra-Nangal Project was taken up immediately after independence of India in the joint collaboration of the erstwhile State of Punjab and the State of Rajasthan.
- After re-organisation of Punjab, ***Bhakra Management Board*** was constituted on 1st October, 1967 under the Punjab Re-organisation Act, 1966 for administration, operation and maintenance of ***Bhakra-Nangal*** Project.
- The works of ***Beas Projects*** were entrusted to ***Beas Construction Board*** as per the provisions of the Punjab Re-organisation Act, 1966. On completion of Beas Projects, these were transferred to ***Bhakra Management Board*** on 15th May,1976 and it was re-named as ***Bhakra Beas Management Board*** as per the provisions of the Punjab Re-organisation Act.

1.2 FUNCTIONS

- Administration, Operation & Maintenance of Bhakra-Beas Projects.
- Regulation of the supply of water from Bhakra-Beas Projects to the States of Punjab, Haryana and Rajasthan.
- Regulation of the supply of power generated at Bhakra-Beas Projects to the states of Punjab, Haryana, Rajasthan, Himachal Pradesh& U.T. Chandigarh.
- Any other function as the Central Government may assign after consultation with the Governments of States of Haryana, Punjab & Rajasthan.
- The Govt. of India in the year 1999 entrusted additional functions of providing & performing engineering and related technical consultancy services in field of Hydro Electric Projects & Irrigation Projects.
- Ministry of Power has assigned the work of construction and execution of 2X20 MW Baggi Power House to BBMB vide letter No.5-4/1/2019-BBMB dated 22nd October, 2019.

1.3 Power Wing

General Review

The Power Wing is entrusted with the administration, operation and maintenance of Power Houses, Transmission System and System Load Dispatch Centre (SLDC) of BBMB and Consultancy Services in field of Hydro Electric Projects.

Installed Capacity

(As on 31.3.2022)

Power House	No. of machine X Capacity of machine	Installed Capacity (MW)
Bhakra (Right Bank)	5x157	785
Bhakra (Left Bank)	1x108+4x126	612
Ganguwal	1x27.99+2x24.20	76.39
Kotla	1x28.94+2x24.20	77.34
Dehar	6x165	990
Pong	6x66	396
	Total	**2936.73**

ROOF TOP SOLAR:

Location	Capacity (kWp)
Jalandhar	125
Jamalpur	130
Narela	20
Delhi	80
Jagadhari	70
Panipat	285.19
Kurukshetra	113.93
Bhiwani	283.24
Hisar	49.5
Chandigarh	175
Ganguwal	100
Nangal	950
Talwara	790
Sangrur	60
Dhulkote	94.13
Samaypur	49.91
Total Installed Capacity	**3375.9**

Transmission System

(As on 31.3.2022)

BBMB transmission system, spread over the States of Punjab, Haryana, Himachal Pradesh, U.T., Chandigarh and Delhi, operates in integrated manner with Northern Regional Power Grid. The details of BBMB Transmission System is tabulated below:-

Sr. No.	Voltage Level	No. of Sub-Stations	Line Length (Ckt. km)
i)	400kV	03	573.95
ii)	220kV	17	2993.54
iii)	132kV	02	21.72
iv)	66kV	02	115.50
	Total:	**24**	**3704.71**

System Load Dispatch Center (SLDC)

The System load dispatch Center (SLDC) of Bhakra Beas Management Board is assigned with the responsibility of Round the Clock Monitoring, Operation and Control of BBMB Transmission and Generation Assets.

1.4 Irrigation Wing

General Review

The Irrigation Wing is entrusted with the administration, maintenance and operation of the following Project components:-

I. BHAKRA-NANGAL PROJECT

(a) Bhakra Dam & Reservoir and Works appurtenant thereto including Nangal Workshop and Nangal Township, Hospital, School, Rest House etc.

(b) Nangal Dam and Nangal Hydel Channel.

II. BEAS PROJECT

a) Unit-I (BSL Project)

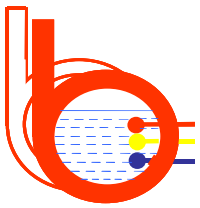
Beas Satluj Link Project comprising Pandoh Dam, Pandoh-Baggi Tunnel, Sundernagar Hydel Channel, Balancing Reservoir, Sundernagar-Satluj Tunnel & connected civil works and townships at Sundernagar, Slapper and Pandoh, Hospital, School, Rest House etc.

b) Unit-II (Beas Dam at Pong)

Beas Dam at Pong including Reservoir, Outlet Works, Spillway & works appurtenant thereto and Talwara Township.

National Hydrology Project (NHP)

Bhakra Beas Management Board (BBMB) has already set up Earth Receiving Station (ERS) at Chandigarh for Inflow Flood Forecasting (i.e. short term 3 days and medium term 7 to 10 days) for optimum utilization of Bhakra and Pong Reservoirs and Canal Network.



भाखड़ा ब्यास
राष्ट गौरव

अध्याय-2

Chapter-2

बोर्ड के निर्णय

Decisions of the Board

2.1 Meetings of the Board held during the Year 2021-22

1. 238th meeting of the Board held on 23.07.2021
2. 239th meeting of the Board held on 08.10.2021
3. 240th meeting of the Board held on 27.12.2021
4. 241st meeting of the Board held on 16.03.2022

2.2 Important Decisions Taken in the Board Meetings

2.2.1 238th meeting of the Board held on 23.07.2021

Item No. 238.02

Deployment of Central Industrial Security Force (CISF) at all the three Hydro Power Project of BBMB.

Director (Security), BBMB while explaining the agenda note stated that the Ministry of Power, Govt. of India vide letter dated 19.01.2009 had instructed BBMB to take immediate action on the recommendations of Intelligence Bureau including the proposal to entrust the security of BBMB projects to a single agency like CISF. The matter was again flagged by the Ministry of Power vide their letter dated 10.05.2018. The proposal to deploy CISF in BBMB has been deliberated in various Board meetings since 2009 and in the 237th Board meeting held on 19.03.2021, the Board accorded an in-principle approval on the issue. **In pursuance to the in-principle approval in the last 237th Board meeting, the deployment of CISF at all the three Hydro Projects of BBMB was deliberated with CISF and earlier conducted surveys in 2018 got re-visited by holding meetings / discussions with the Director General, CISF and their other senior officers & conducting Joint Site visits with CISF. The total strength after detailed surveys was optimized to 824 Nos. for all the three Projects of BBMB as against the earlier strength of 923 Nos.** Further, as per decision taken by the Board in its 237th meeting, the state-wise tentative share of financial implications was communicated to the Board Members of the partner States vide letter dated 15.06.2021 and the same also stands depicted in the agenda note. He further intimated that the annual recurring expenditure on account of salary component of CISF personnel including supervision charges @11.88%, leave salary contribution charges @11%, pension contribution charges @12% and GST @18% works out to Rs. 81.50 cr. per annum. The non-recurring expenditure on account of arms & ammunitions, uniforms, LTC, adhoc bonus, encashment of compensatory leave and children education allowance works out to Rs. 4.70 cr. and the non-recurring expenditure towards refurbishment/ upgradation of existing facilities/ infrastructure as per CISF norms is estimated at about Rs.8.80 cr. during the first year of deployment of CISF. Thus, the overall estimated expenditure in the first year works out to Rs.95 cr. approx. He further intimated that the recurring expenditure on account of mobiles, telephone bills, stationary, transportation, etc. works out to Rs.1.25 cr. approx.

However, the exact liability towards cost of infrastructure and recurring operational cost can only be worked out after detailed site survey with CISF after the approval for deployment of CISF is accorded by the Board.

Among the Board members, there was a general consensus on the issue of deployment of CISF for the security of projects, however Member (Punjab) stated that the proposal entails additional financial liability to the tune of Rs.21.45 cr. per annum on the State of Punjab, for which concurrence of their Finance Department is awaited. He further stated that at present some Punjab Police personnel are also deputed for the security of BBMB Projects which will be rendered surplus in case the security of these projects is handed over to CISF. On this Chairman, BBMB clarified that out of 561 security personnel presently deployed for the security of BBMB Projects, only 92 are from Punjab Police and these personnel are manning the security of BBMB Projects falling in the state of Punjab i.e. Nangal Dam and Ganguwal & Kotla Power Houses only, whereas the Himachal Police is manning the majority of installations i.e. Bhakra Dam & power houses, Pong Dam & power house, BSL project and Dehar power house.

Member (Rajasthan) also intimated that they have sought the consent of their Finance Department to bear the additional financial liability of about Rs.12.47 cr. per annum for deployment of CISF at BBMB Projects, which is still awaited.

Member (MOP) stated that the security of BBMB Projects is of paramount concern and keeping in view the increased security threats, the deployment of CISF must be done expeditiously. He requested the Board Members to authorize BBMB to proceed further in the matter and also requested board members of Punjab and Rajasthan to seek necessary internal approvals in a time bound manner.

Member (HP) concurred the views of Member MOP and conveyed the consent of Himachal Pradesh on the proposal keeping in view the importance of security of BBMB Projects.

Member (Haryana) also conveyed the consent of Haryana on the proposal and suggested that the proposal may be approved for the deployment of CISF for the security of BBMB projects, while Punjab and Rajasthan takes consent of their finance departments.

After detailed deliberations, the following decisions were taken:-

a) **Approval for the deployment of Central Industrial Security Force (CISF) at all the three Project Stations of BBMB i.e. Bhakra Dam Project complex, Beas Dam Project and BSL Project. The States of Punjab & Rajasthan will expedite formal consent from their Finance Deptt. within a period of one month, so that BBMB could go ahead with actual deployment of CISF.**

b) **Chairman, BBMB has been authorised to approve the further modalities like MOU, Agreements, etc. on the behalf of BBMB, as required for the deployment of CISF at all the three Project Stations of BBMB i.e. Bhakra Dam Project, Beas Dam Project and BSL Project.**

c) **The cost towards deployment of CISF at the Project Stations of BBMB shall be entirely to the account of BBMB and its cost sharing shall be borne by all the Partner States as per the existing agreements in vogue, as in the case of present deployment of the State Police.**

Item No. 238.03

Regarding Court cases being filed by the employees of partner states seeking pension benefit on the basis of last pay drawn in BBMB-Repatriation to their parent department before retirement thereof.

Special Secretary, BBMB briefly explained the agenda note. He intimated that as per decision taken in the 143rd meeting of Board held on 19/07/1991, BBMB adopted Pay and allowances of PSPCL (PSEB). Employees of partner states can opt for either parent department scales or BBMB adopted Pay scales. Maximum employees opt for BBMB scales as they are on higher side as compared to their original scales in parent department. As per Civil Services Rules, Leave Encashment and Pension is calculated on last pay drawn. Due to vast variation in Basic pay of employees in BBMB and their Basic Pay in parent department, some employees go for litigation with their parent department for pension on the basis of last pay drawn by them in BBMB, when they superannuate directly from BBMB. Some employees drawn from the partner states/State Utilities after retirement from BBMB had filed court cases and obtained judgement in their favour resulting in additional financial liability on concerned State Governments on account of pension and pensionary benefits on the basis of last pay drawn by the employees form BBMB. After discussions and in order to avoid any recurring financial liability as well as to avoid legal complication, the Board approved the following:

To avoid future litigations as well as additional financial liability upon BBMB Partner States/State Power Utilities, it was decided that partner States/State power utilities shall repatriate/recall their employees to their parent department, at-least one month before their date of superannuation.

Item No. 238.04

Open Long Term Access (LTA) charges & SLDC charges for evacuation of power on STU lines of BBMB partner states from proposed Ground Mounted and Floating solar power plants of BBMB.

Special Secretary, BBMB, while explaining the agenda note intimated that the Ministry of New & Renewable Energy, GoI has assigned a solar power target of 500MW to BBMB. The Board in its 231st & 233rd meeting decided that BBMB shall go ahead with the tendering process and comprehensive proposal including rates, financial implications, viability and feasibility for setting up of Ground Mounted and Floating Solar Power Plant before award of the work shall be placed before the Board for its approval. While working out the possibilities for power evacuation from these solar power plants it

was observed that at some locations power evacuation through transmission system owned by State Transmission Utilities (STU) of BBMB partner States is the most techno-economical solution but BBMB projects being multi-state projects, the STUs have intimated exorbitant Long Term Access (LTA) charges for power evacuation. For power evacuation from 15 MW Floating Solar Power Plant at Nangal Dam, HPPTCL has intimated LTA charges of 44 paisa per unit and for 10 MW Ground Mounted Solar Power Plant at Talwara, PSTCL has intimated LTA charges to the tune of Rs. 1.70 per unit. In case BBMB has to pay these charges, these solar power projects will become commercially unviable or BBMB will have to opt for sub-optimal solution for power evacuation which will result in recurring loss to BBMB partner states. Matter regarding waiver of Long Term Access (LTA) Charges & SLDC Charges was taken up with PSPCL and HPPTCL. However, it has been intimated that they are bound by the Regulations notified by their respective State Electricity Regulatory Commissions and they cannot waive off the said charges unilaterally. He further intimated that the transmission system of BBMB is being used by the partner State Power Utilities not only for evacuation of power from BBMB projects but also for transmission of additional inter-state and intra-state power, but BBMB is not claiming any Transmission charges from its partner States. Accordingly, an agenda has been placed before the Board to direct the power transmission utilities of BBMB partner states, particularly PSPCL/PSTCL & HPSEBL/HPPTCL to allow waiver of LTA and SLDC charges for the solar power projects being installed by BBMB.

Initiating the discussion, Director/Technical, RRVPNL suggested that rather than going in for evacuation of power through LILO of existing 66kV transmission lines of STU, a separate transmission line should be erected for each project and its erection, operation, maintenance and transmission losses should be kept in the scope/account of SPD for better reliability and avoid any outage of Solar Power Plant due to fault in transmission line. In this regard, Member (Power), BBMB, clarified that the transmission line availability is more than 99% and any outage of transmission lines can be planned concurrently with the maintenance activity of Solar Plant. He further stated that erecting a separate line is not cost effective and entails recurring power loss, which ultimately will have to be borne by the partner states in terms of enhanced tariff. Agreeing with the clarification of Member (Power), Director/ Technical, RRVPNL stated that as per provisions of Section 108 of the Electricity Act 2003, State Government is empowered to direct the State Electricity Commission on policy issues. He also conveyed the consent of RRVPNL on the proposal.

Member (H.P) desired to know whether the power generated from these solar power plants shall be distributed amongst the partner states by BBMB. In this regard, Special Secretary, BBMB clarified that the power generated from these plants shall be apportioned amongst BBMB partner states as per agreements in vogue. Upon this, Member (H.P) conveyed his consent on the proposal.

Member (Punjab) intimated that though he agrees with the proposal in-principal, a consent of their power corporation is required on the issue. He assured to

take up the matter with PSPCL/PSTCL and convey the consent of Punjab on the matter within a period of one month.

Member (Haryana) while agreeing to the proposal stated that BBMB transmission system is carrying lot of inter-state and intra-state power for its partner states without levying any transmission charges, so the partner states must also waive these charges to BBMB on reciprocal basis.

After detailed discussions, the Board approved the proposal as under subject to concurrence from Punjab:

Board Members of Punjab and H.P. will take up with their respective State Governments to impart necessary directions to respective State Electricity Regulatory Commissions under relevant sections of the Electricity Act, 2003 in public interest to waive Long Term Access (LTA) & SLDC charges for transmission of solar power on State Transmission Utility (STU) network from Solar Power Projects being installed by BBMB on Built Own Operate (BOO) basis through Solar Power Developers.

Item No. 238.05

Grant of Performance based annual incentive to BBMB employees in recognition of their excellent contribution towards efficient maintenance and operation of BBMB Projects.

Special Secretary, BBMB, while explaining the agenda note stated that during the year 2020-21 BBMB has generated 19.60% excess energy than the target fixed by CEA. During this period Plant availability of BBMB was 97.04% and Transmission System availability was 99.47%. Further, BBMB has earned Rs. 21.18 Crores under Deviation Settlement Mechanism (DSM) through optimal operation of its Power Houses. Further, the availability of water conductor system of BBMB during the year was 100%. He further stated that as per the policy for performance based annual incentive approved by the Board in its 233rd Meeting, incentive for the year 2020-21 works out to 20.4 days salary. He further intimated that the total financial implication for grant of incentive for the year 2020-21 will be Rs. 24.18 crore. He further intimated that in the 233rd Meeting it was also decided that 3 days incentive be reduced each time, to provide financial assistance to the employees working in BBMB as per BBMB Employees Family Support Fund. In view of the above, he requested the Board to approve the agenda proposal. After deliberations, the Board approved the proposal as under:-

To grant 20.4 days salary [B.P. + G.P. + D.A. + I.R. (in unrevised pay scales) and B.P + D.A (in revised pay scales)] as incentive for the year 2020-21, in recognition to the excellent performance of BBMB as per approved incentive Policy, out of which 3 days incentive shall be deduced and transferred to BBMB Employees Family Support Fund to

provide financial assistance to the families of affected employees as per BBMB Employees Family Support Fund.

Item No. 238.06

Approval for drawl of 1.4077 cumec (49.71 cusec) water from BBMB Hydel Canal (Sundernagar Hydel Channel) for proposed water supply and irrigation schemes under Jal Shakti Circle Sundernagar, District Mandi, Himachal Pradesh.

Taking up the agenda Secretary, BBMB, stated that the Additional Chief Secretary to the Govt. of H.P. has requested to grant NOC for drawl of 1.4077 cumec (49.71 cusec) water from Sundernagar Hydel Channel for proposed water supply and irrigation schemes under Jal Shakti Circle Sundernagar. Since the water is proposed to be lifted from Sundernagar Hydel Channel, which is a part of BSL Project and supplies water to Dehar Power House, the tentative power loss on account of loss of generation has been worked out to about 521.40 L.U. per annum. He further stated that even though Himachal Pradesh has no share of water in BBMB projects but in the past, Board has concurred such requests of Himachal Pradesh to lift water from BBMB reservoirs and water conducting system.

Member (Haryana) stated that though they are in favor of catering to the genuine water requirements of Himachal Pradesh being a riparian state, the resultant power loss should be booked to the share of State of Himachal Pradesh.

Member (Punjab) also concurred the views of Member (Haryana).

Member (Himachal Pradesh) however strongly objected to the views of Member (Haryana) and Member (Punjab). He stated that the people of Himachal Pradesh have sacrificed a lot for construction of BBMB projects and there is lot of anguish in the people due to their displacement. He requested the Board to be compassionate towards the people of Himachal Pradesh and accept their genuine demands without any riders.

In this regard Member (Haryana) stated that they are not averse to providing water to H.P, but other states should not be made to suffer on account of generation loss occurring due to this. Chairman, BBMB, intimated that earlier Board has also allowed drawl of water as a goodwill gesture without any cost and power loss on account of water drawn by Himachal Pradesh. Member (Haryana) clarified that earlier Himachal Pradesh had no share of power in BBMB projects and therefore it was allowed to draw water without any such rider but now Hon'ble Supreme Court has allowed 7.19% share of power to H.P. from BBMB projects. Therefore, power loss occurring on account of water being consumed by H.P. should be booked to their share.

Member (MoP) suggested that BBMB may explore the possibility of providing water to H.P. without any power loss. In this regard, Secretary, BBMB informed the members that in case H.P. can explore the possibility of withdrawing the water

before/through the silt ejector from Head Reach of Sundernagar Hydel Channel where capacity of canal is 9000 cs, then it will not result in power loss during monsoon period.

After detailed deliberations, the Board approved the proposal to grant of NOC to Himachal Pradesh for lifting an additional 49.71 cusec of water from Sundernagar Hydel Channel by providing syphon for Irrigation and water supply schemes subject to following:

1. **That BBMB and I&PH Department of Himachal Pradesh will jointly explore the possibility of lifting the water from the Sundernagar Hydel Channel before/through silt ejector, so that the loss of Power Generation could be avoided.**
2. **That proper metering of existing and proposed withdrawal will be done by the I&PH Department, Himachal Pradesh using SCADA system and real time data shall be provided to BBMB.**

Item No. 238.08

A) **Appointment of Dr. Anil Gupta, Surgeon in BBMB on contract basis in relaxation of provision No. 1 of Part - B "Contractual Employment of retired Doctors" of the Revised Policy for Contractual Employment of Doctors in BBMB dated 29.12.2015 ratification thereof.**

B) **Amendment in provision no. 1 of Part - B "Contractual Employment of retired Doctors" of the Revised Policy for Contractual Employment of Doctors in BBMB.**

Secretary, BBMB, while explaining the agenda stated that as per Part - B of the revised Doctors policy dated 13.06.2018 issued by BBMB in pursuance to the approval of Board granted in its 229th Meeting held on 24.05.2018, there is a condition that doctor who retire from BBMB or from the partner states viz Punjab, Haryana, Rajasthan, Himachal Pradesh including Chandigarh after attaining the age of superannuation can be considered for contractual employment in BBMB. Dr. Anil Gupta, Surgeon, worked as Medical Officer in BBMB Hospital, Nangal (from Pb. Health & Family Welfare dept.) during the period 1982-1987. He was also appointed as Medical Officer (Specialist) in BBMB on contract basis by the Health & Family Welfare Department, Punjab under National Health Mission and his tenure expired on 07.01.2021 upon attaining the age of 65 years. Though Dr. Anil Gupta did not retire from BBMB or its Partner States, however, in view of exigencies prevailing due to Covid-19 pandemic, appointment of Dr. Anil Gupta, Surgeon, was approved by Chairman, BBMB, in relaxation to the said condition, subject to post-facto concurrence of the Board.

He further stated that there is acute shortage of Specialist Doctors in BBMB Hospitals, wherein against the total 27 no. sanctioned posts of Specialists in BBMB, only 11 no. Specialists are working. Despite making protracted efforts for engaging of specialist doctors in BBMB, requisite no. of specialist doctors could not be engaged.

Accordingly, it is proposed that the provision No. 1 of Part - B: "Contractual Employment of retired Doctors" of the Revised Policy for Contractual Employment of Doctors in BBMB may be relaxed.

After deliberations, the Board approved the proposal as under:-

a) **Concurred the appointment of Dr. Anil Gupta, Surgical Specialist, on contract basis in BBMB Hospital, Nangal from the date of his joining by relaxing the condition that the doctor should have superannuated from BBMB or any of the partner states of BBMB as contained in the policy for contractual employment of Doctors in BBMB dated 29.12.2015.**

b) **Amendment in the provision of Part-B "Contractual Employment of retired doctors" of the Revised Policy for Contractual Employment of Doctors as under:-**

   1. **General Doctors (MBBS) who retire from BBMB or from the Partner States viz Punjab, Haryana, Rajasthan, Himachal Pradesh including Chandigarh after attaining the age of superannuation shall be considered for contractual employment.**

   2. **Specialist Doctors (MS/MD etc.) who were appointed on regular basis in any of the State Govt. or Central Govt. or Defence Services and have served there for a minimum period of 5 years continuously and have attained the age of superannuation as applicable in BBMB, shall be considered for contractual employment in BBMB.**

<u>Item No. 238.14</u>

Regarding enhancement of capacity of tapping point at RD 10100/LS of NHC from 0.37 cusec to 6.31 cusec for a canal water based project by joining of 32 water supply schemes which are close/near to NHC from Anandpur Sahib to Nangal.

Taking up the agenda, Secretary, BBMB, intimated that the Principal Secretary to Government of Punjab, Department of Water Resources vide his D.O. dated 02.07.2021 has requested to grant NOC for enhancing the capacity of tapping point at RD 10100/LS of Nangal Hydel Channel from 0.37 cusec to 6.31 cusec for household water supply for 32 Water Supply Schemes of Rupnagar District. The water drawn by Punjab shall be booked to the share of Punjab.

After deliberations, the Board approved the proposal as under:-

a) Issue of NOC to State of Punjab for enhancing the capacity of tapping point at RD10100/LS of Nangal Hydel Channel from 0.37 cusec to 6.31 cusecs water for house hold water supply for 32 water supply schemes of Rupnagar District and to book this quantum of water to the water account of Punjab

b) Proper metering of all the withdrawals from Nangal Hydel Channel will be done by the State of Punjab using SCADA system and real time data shall be provided to BBMB.

Item No. 238.15

1. **Issue of NOC for construction of High Level Steel Bridge on Nangal Hydel Channel at village Jandla RD 28925 in District Ropar.**
2. **Issue of NOC for construction of Foot Bridge on Nangal Hydel Channel from Old NH-21 to Bhaowal Shamshanghat at village Bhaowal in Distt. Rupnagar.**

Secretary, BBMB, while explaining the agenda stated that the Principal Secretary, Department of Water Resources, Govt. of Punjab, Chandigarh vide D.O. No. PS/PSWR/973 dated 22.07.2021 has intimated that there is a long pending demand of villagers for construction of high level bridge over Nangal Hydel Channel at RD28925 at Village Jandala and a Foot Bridge from Old NH-21 to Bhaowal Shamshanghat at village Bhaowal in Distt. Rupnagar. The design has been submitted to BBMB by PWD. BBMB has been requested to grant NOC for construction of these bridges subject to the final approval of the designs before actual execution.

After deliberations, the Board approved the proposal as per the terms & conditions attached with the agenda note as under:-

a) **Issue of NOC for construction of High Level Steel Bridge on Nangal Hydel Channel at village Jandla RD 28925 in District Ropar.**
b) **Issue of NOC for construction of Foot Bridge on Nangal Hydel Channel from Old NH-21 to Bhaowal Shamshanghat at village Bhaowal in Distt. Rupnagar.**

2.2.2 239th meeting of the Board held on 08.10.2021

Item No.239.01

Removal of Tariff Cap/Ceiling Tariff and revision of CUF for 15MW Grid Connected Floating Solar PV Power project at Nanga lPond, Near Village Neilla District Bilaspur, Himachal Pradesh,BBMB.

Special Secretary, BBMB, while explaining the agenda informed the board that Request for Selection (RfS) regarding tender for setting up of 15MW Grid Connected Floating Solar PV Power Plant at Nangal Pond was floated through Solar Energy Corporation of India (SECI), but no response was received from the developer. A pre-bid meeting was convened by SECI wherein the developers raised concerns about the high CUF i.e. 21.41% and low ceiling tariff. Accordingly, SECI revalidated and suggested to reduce the CUF for this project to 21% and to float bid without ceiling tariff.

Initiating the discussions, Member (Haryana) suggested that final Unitrate/tariff must be placed before the Board prior to placing the order. All the Board Members also agreed with the suggestion of Member (Haryana).

After detailed deliberations, Board approved the following:

1) To amend the provision mentioned in clause No.4.4.1 of the PPA approved by the Board in its 235th Meeting from "The declared annual CUF shall in no case be less than 21.41%" to "The declared annual CUF shall in no case be less than 21%."
2) To float are vised NIT for the project without mentioning the ceiling tariff.
3) To authorize Chairman, BBMB to review Capacity utilization Factor (CUF) of 15 MW Floating Solar Project at Neilla, Nangal in future if required as per CERC regulations.
4) After competitive bidding a comprehensive proposal including unit rate be put up to the Board for approval before awarding of contract to Solar Power Developer (SPD) by Solar Energy Corporation of India (SECI).

Item No.239.02

Transfer of Land from 88 MB to Northern Railways inconnection with construction of Nangal Dam-Talwara Mukerian New BG Rail link (Approx. 22 hectare).

Secretary, BBMB briefly explained the sequence of events regarding the agenda item and the circumstances leading to realization of interest component alongwith the decision of the Board under Item No.237.04 & No.237.05.

Initiating the discussions, Member (GoI-MoP) stated that both BBMB as well as Indian Railways are public sector organizations and the work of construction of Nangal Dam -Talwara -Mukerian New BG Rail Link is also a public work, therefore, in the national interest it would be prudent that the issue of realization of interest be delinked from the issue of transfer of land and requested all members to consider the same.

Member (Haryana) stated that the construction of new railway line, being a National project, should not be delayed on account of realization of interest payment and suggested that the matter be taken up in Dispute Resolving Mechanism existing under Ministry of Power and further requested Member (MoP) to sincerely take up the matter with Ministry of Railways regarding early realization of interest components since the money belongs to the Partner States.

The special invitee of Railways submitted that the interest component should not be realized as it is a government to government transaction. Member (Haryana) contended that the plea of Railways is not maintainable as Audit Para

to this effect was raised in the year 2000 by office of Account General (AG) Punjab and they were well aware of the fact that both the agencies involved are government departments and the States are well in their right to demand the interest component.

After detailed discussions, the Board decided as under:

i) To delink the interest component due from Railway to BBMB on account of delayed payment of Rs. 2,13,60,782/- from the issue of proposed transfer of about 22 hectares of land for construction of New BG Railway line from Nangal to Mukerian.

ii) To request MOP to take up the matter with Ministry of Railways regarding early realization of interest component.

iii) To grant permission to the Railways to start the work at site till the official transfer of the land.

2.2.3 240th meeting of the Board held on 27.12.2021

Item No.240.02

Participation of BBMB in execution of New Hydro Power Projects, Renewable Energy Projects (Solar/ Wind/ Biomass etc.) and Pump Storage Projects (PSPs) within the geographical area of BBMB Participating States – Delegation of Power thereof.

Special Secretary, BBMB while explaining the agenda note, intimated that the Hon'ble Cabinet Minister of Power, New & Renewable Energy, Govt. of India, visited BBMB Projects on 30th& 31st Oct., 2021. During the visit, he directed BBMB to utilize its expertise by taking up new hydro power projects as part of its capacity addition and contribute towards fast increasing power demand in the country. The initiative is particularly required in view of faster pace of growth in economy, which would need more electricity from clean sources like hydro power and renewable. GoI has setup a target of installed capacity from renewable sources as 500GW by 2030.

Keeping in view the directions of Govt. in this regard, BBMB proposes to participate in setting up new Hydro Power Projects, Renewable Energy Project and Energy Storage Projects within the geographical area of participating States of BBMB. This will not only enhance the installed capacity of BBMB, but also allow BBMB to cater to the fast rising power demand of partner States in times to come.

Initiating the discussions, Chairman BBMB mentioned that BBMB may utilize its expertise, manpower and infrastructure in taking up new Hydro Power Projects, Renewable Energy Projects (Solar/Wind/Biomass) and Pump Storage Projects. He stated that the Partner States of BBMB have huge potential for renewable energy resources, e.g. Himachal Pradesh has a huge potential of Hydro power projects, Rajasthan has potential for solar and wind power, Punjab and Haryana have potential for mini & micro hydel projects, solar, biomass based power projects. He further

mentioned that in case approval to proposal is accorded, BBMB will search and conduct preliminary studies/ investigations to zero in on a viable power project, thereafter shall come to the Board for necessary approvals for actual construction related activities.

Member/Punjab stated that canals network in Punjab is a property of State and BBMB can't be allowed to use this network for enacting power projects on them without explicit approval of the State Govt. He also mentioned that Punjab already has a department of renewable energy which has been assigned the responsibility of exploiting renewable energy projects. However, in case BBMB wants to take up new projects, it should execute a separate MoU with the State in which it wants to execute the new project with agreed terms and conditions. For sharing of cost and benefits out of new projects, BBMB must come to Board for specific approvals on case-to-case basis.

Chairman, BBMB clarified that the present proposal is only an in-principle approval of the Board to enable BBMB to look for techno-economically feasible new projects in the field of hydro power and renewable energy sector in addition to its existing functions, so that BBMB could increase the generating capacity from clean & green sources and at the same time enhance its technical expertise and other capabilities. Power projects normally take lot of time from inception stage to a stage where actual execution starts, in between many statutory clearances relating to forest, environment, land acquisition, R&R issues, etc. are required from State Govts. & GoI departments. During the process, BBMB will come to the Board, time to time, for directions on various aspects including sharing of cost & benefits and other technical/ financial/ manpower related matters on case-to-case basis.

Member (GoI – MoP) stated that as per the current provisions of Punjab Reorganization Act, BBMB has been entrusted with the O&M of the existing projects. Since BBMB has not executed any new project since decades, the organization is losing its expertise and a day may come when BBMB would not be able to even satisfactorily maintain its existing projects. The proposal is just a dispensation before the Board to make the organization more vibrant and expand its scope in the upcoming areas of hydro & renewable energy and allow optimum utilization of the resources already available within BBMB. This will also allow the organization to expand and increase its capability and efficiency.

Member/Rajasthan mentioned that the primary function of BBMB is the regulation and management of water and power from its existing projects among the partner States. He also mentioned that he does not agree with the views that if BBMB does not execute projects, it would loose its expertise over a period of time, as there are many other ways through which expertise can be retained. He further opined that this issue has come for the first time and needs more discussions, therefore this agenda must be deferred. He also mentioned that there are already many public sector undertakings in the field of hydro power and renewable energy sector, in case of Rajasthan there are separate departments for taking up conventional and renewable

energy projects, as such there is no emergent need for one more organization to enter into these areas. In addition, there are many Govt. agencies which are already doing the similar job and Govt. is going for disinvestment in many of public sector undertakings, therefore there is no rationale for enhancing the scope of BBMB.

Member/Rajasthan also mentioned that Rajasthan has many issues with BBMB such as inadequate representation of State in BBMB including appointment of fulltime member in BBMB from Rajasthan, which needs to be addressed. Further, he mentioned that justice so far has not been done to Rajasthan with regard to water and it gets less water than its share, therefore just by enhancing the scope of work would not bring efficiency in BBMB.

Regarding delivery of water to Rajasthan, Chairman BBMB clarified that as per data of last 10 years, Rajasthan has consistently been getting more water than its share. He further clarified on the contention of Members that each State has its own agencies for development of hydro and renewable energy and there is no need for BBMB to further its scope, he said the target set for clean energy is huge and each organization of the power sector has to add capacities to collectively achieve the goal of 500GW by 2030 through clean & green energy sources. BBMB being one of the oldest and most prestigious organization in the water & power sector is advantageously placed to take up such new projects in most techno-economic manner and produce electricity at competitive tariff.

Representative of Member, Himachal Pradesh generally agreed with the agenda proposal with the condition that after proper identification of every new project, BBMB management should come to the Board for specific approval of the project on case-to-case basis.

Member (MoP–GoI) mentioned that the present agenda is to send a proposal to MoP to open up a route for BBMB to take up new projects in the field of hydro power and renewable energy sector under relevant section/ clause of Punjab Re-organization Act. Therefore, the present proposal is only an additionality of the dispensation route which is to be created, so that as and when Board decides, the new projects could be taken up for implementation. He also mentioned that increase in technological expertise comes in an organization when it is also involved in new technologies by way of taking up new projects and the organisation tends to becomes more agile and abreast with the new age realities of power generation. He further suggested that BBMB can take up projects by executing MoU with the States or BBMB could form a special purpose vehicle (SPV) or any other mode as felt appropriate at the time of undertaking new project. However, he mentioned that the proposal should be more generic and should not mention about specific schemes, etc. He agreed with other Members that the approval of individual project should be considered by the Board separately on case-to-case basis.

Member (GoI–MoWR) concurred the view of Member (GoI-MoP) and stated that he is generally in agreement with the proposal.

Member/Punjab reiterated that for every new power project, there must be a specific approval of the BBMB Board and the State where such project would be located, on case-to-case basis.

Member/Haryana broadly agreed with the proposal however he desired that terms and conditions of the new projects including details about share of each State out of any new project must be settled with the States as per the statutory provisions, policies, rules & regulations, etc. prevailing at that point of time. These should be on case-to-case basis, as specific project details would be available only after proper due diligence. Further, he mentioned that other modalities relating to sharing of project cost, benefits, timeframe, etc. among States can be worked out later at the time of specific Board approval to the project, as these aspects would vary from project to project.

Member (Power), BBMB assured the Board members that every new project will only be taken up after due deliberations and approval of the Board on case-to-case basis. However, he requested the Board to accord an in-principle approval on the issue, so that BBMB can refer the proposal to the Ministry of Power to allow BBMB to expand its area of operation beyond O&M of existing projects and develop new projects to meet the growing energy requirements of BBMB partner States.

After deliberation, the proposal was approved with modifications suggested by the Board Members as under:-

1. In addition to existing functions and responsibilities entrusted to BBMB under the Act, BBMB may be authorized to take up new Hydro-electric Projects, Pump Storage Projects, Renewable Energy Projects (Small hydro/ Solar/ Wind/ Biomass, etc.) within the geographical area of BBMB Participating States. This is subject to the condition that after every project identification by BBMB, the specific approval of the BBMB Board shall be sought on case-to-case basis and also requisite in-principle approvals, as per the applicable statutory provisions, rules & regulations, etc., of the State where the new project would be located.
2. The mode to undertake the project, sharing of cost and benefits, execution modalities, technology, timelines, manpower, etc. for every new project shall be decided by the BBMB Board on case-to-case basis.
3. Chairman BBMB is authorized to accord all necessary approvals as deemed necessary to take up the initial activities relating to techno-economic identification of new projects like reconnaissance, reassess, survey, pre-feasibility, feasibility, site investigations, techno-economic evaluation, detailed project report (DPR), etc. These activities may be carried out by BBMB officials, external individual expert(s), reputed consultancy firm(s), Centre/ State Government funded institutions/ agencies/ CPSEs, Centre/ State empanelled agencies, etc.

In view of above, a proposal shall be sent to the Ministry of Power, Government of India for requisite approvals required under clause (d) of sub-section (3) of Section 79 of the Punjab Re-organization Act 1966.

Item No. 240.03

A) Resettlement & Rehabilitation (R&R) issues of Bhakra Dam Oustees.

Taking up the agenda regarding R&R of Bhakra Dam oustees, Secretary, BBMB informed that the allotment for agricultural as well as abadi plots has already been done except for the cases held up due to various litigations and court cases. The mandate for the allotment for Artisans plots was not in scope of BBMB as Bhakra Rehabilitation Committee (BRC) vide Agenda Item No. 4 of the 29th meeting had given the mandate to the original allottees to persuade the Kamians and village Artisans to apply for the allotment of land to DC (R&R) Fatehabad. As per the information given by Government of Himachal Pradesh through their various Deputy Commissioners/SDMs of the concerned Districts, no case of allotment/request regarding the allotment of Artisan plots is pending with their respective offices. However, the designated land meant for these Artisans is available with DC Fatehabad. Since, a considerable time has already elapsed and no application for allotment is pending either with Govt. of Himachal Pradesh or with DC Fatehabad, the issue stands closed from the BBMB's prospective under the BBMB's ambit of R&R. He requested the Board to deliberate and decide the issue please.

Initiating the discussions, the representative of Member (Himachal Pradesh) conveyed the consent of H.P. Govt. on the proposal to close the R&R of Bhakra Dam oustees.

Upon consent of Himachal Pradesh, the Board unanimously agreed to close the Resettlement and Rehabilitation of Bhakra Dam Oustees from BBMB's perspective.

B) Resettlement & Rehabilitation of Pong Dam oustees.

Special Secretary/BBMB explained the agenda along with efforts made by BBMB towards resolution of the issues and intimated that BBMB has been pursuing the matter with states of HP and Rajasthan for resolution of pending R&R issues of Pong Dam Oustees. The matter has been taken up at highest level by BBMB. Chairman, BBMB visited Chief Minister, Himachal Pradesh and Chief Secretary, GoHP on 19.08.2021 and discussed outstanding issues pertaining to R&R of Pong Dam Oustees. Also, DO letters dated 30.09.2021 have been written by the Chairman, BBMB to Chief Secretary/GoHP, Shimla and Chief Secretary/GoR, Jaipur to draw their attention towards the long pending issues of R&R of Pong Dam Oustees for quick disposal of pending cases.

Chairman, BBMB further intimated that the Hon'ble Cabinet Minister of Power, New & Renewable Energy during his visit to BBMB projects on 30th& 31st Oct. 2021 raised the concern on long pending issues of Pong Dam oustees & directed to

settle these issues expeditiously. Special Secretary, BBMB also intimated that a meeting was taken by JS/Hydro, MoP, GoI, on 09.11.2021 to review the progress in the matter, wherein senior officers from the States of H.P, Rajasthan and BBMB were present. A DO letter dated 29.11.2021 was also written by the Secretary (Power), GoI to the Chief Secretary (HP) requesting the Govt. of HP to identify the remaining oustees & expedite the process of issuing eligibility certificates to them.

Chairman, BBMB further highlighted the need to reconcile and rectify the figures being provided by the states of H.P. and Rajasthan. He stated that a high powered committee (HPC) constituted under the directions of Hon'ble Supreme Court had decided that both the states will develop an MIS System for the oustees to avoid duplicity for faster allotments, which is yet to be put in place. He further mentioned that the HPC meeting is supposed to be held after every six months but no meeting has been held since Feb. 2021.

Member (H.P.) intimated that the Govt. of H.P. and its people are very sensitive to the issue bur taking necessary steps for expeditious resolution of pending problems. He assured that necessary steps will be taken to reconcile the data with Rajasthan authorities shortly.

Member (GoI-MoP) advised that to avoid confusion, both the States should first reconcile the record before it is put in a public domain.

Member (GoI-MoWR) mentioned that while Rajasthan has assured quick disposal of allotments to the oustees but DC (R&R) and his team needs to work more proactively. Himachal Pradesh needs to ensure that the translation of records from Urdu, as agreed more than two years ago is done expeditiously and monthly meeting of allotment committee is regularly attended by the officials of H.P. He also informed that the 27th meeting of the High Powered Committee is being contemplated and will shortly be held.

Member (Rajasthan) stated that his office will extend full cooperation on the issue and he will also write to the Commissioner, Colonization to extend every possible help to HP and BBMB.

Representative of Member (H.P.) assured the house that the Govt. of H.P is serious about the issue and earnest efforts are being made to resolve the underlying problems expeditiously. He assured to extend all possible help to expedite the process of R&R of Pong Dam oustees.

Chairman, BBMB requested the members from Himachal Pradesh and Rajasthan to make concerted efforts to resolve the issue as more than 60 years have already passed since the land for Pong Dam was acquired.

After deliberations, following emerged as under:-

1. Member/HP & Member/Rajasthan to direct their concerned authorities to make the MIS System operational and reconcile the data/figures between Rajasthan & H.P before putting them in public domain.

2. Himachal Pradesh to complete translation of record from Urdu expeditiously.
3. Himachal Pradesh to expedite the process of issuing eligibility certificates to the remaining Pong Dam Oustees and Rajasthan to issue allotments to the beneficiaries who have been issued eligibility certificates by H.P expeditiously.

Item No.240.04

Permission for drawl of 5.5. MLD (2.248 Cusecs) of water from tail race of Bhakra Dam (Satluj River) and construction of civil structure for source level augmentation of various water supply schemes in village Nehla, GP Tarsooh, District Bilaspur under Jal Shakti Sub Division, Swarghat, Tehsil Sh.Naina Devi Ji, District Bilaspur, Himachal Pradesh.

Secretary, BBMB informed the Members that this Agenda has been placed on the request of State of Himachal Pradesh and is regarding grant of permission to draw 5.5 MLD (2.248 Cusec) water from the Left Bank of River Satluj downstream of Bhakra Dam near village Neilla, District Bilaspur for source level augmentation of 28 small water supply schemes of Jal Shakti Department, Himachal Pradesh.

Initiating the discussions Member (GoI - MoP) mentioned that as requirement projected by the state of Himachal Pradesh is for drinking purpose, the Board should approve the request as per previous practice.

After due deliberations, the Board approved the following:-

a) Grant of NOC to Himachal Pradesh for drawl of 5.5. MLD (2.248 cusec) water from the Left Bank of River Satluj downstream of Bhakra Dam near village Neilla, District Bilaspur for water supply schemes with the condition that proper metering of existing and proposed withdrawal will be done by I&PH Department, Himachal Pradesh using SCADA system and real time data shall be provided to BBMB.
b) The power loss on account of above drawl shall be considered as deemed generation.
c) To book this water supply to the Common Pool.

Item No.240.12

Pilot Project for installation of 210 kW Hydro Kinetic Turbine at Tail Race Canal (TRC) of Bhakra Dam Hydro Power Plant.

Secretary, BBMB informed that the Government of India (GoI) has set a target to add 175 GW of Renewable Energy (RE) capacity by the year 2022 and 500 GW by 2030. A Committee headed by Member (Hydro), CEA and comprising members from CEA, MNRE, NHPC Ltd., THDCIL and IIT-Roorkee was constituted by CEA on the directions of Ministry of Power, GOI to study the concept and Commercial Applications

of Hydro Kinetic Turbines developed by various OEM's. The committee has given its report and has suggested that a pilot project on the basis of open tender may be taken up at various places for validation of the nascent technology. He further informed that BBMB, on the basis of extensive survey, has prepared a detailed project report for the installation of 210 kW HKT in River Satluj near Olinda Bridge downstream of Bhakra Dam, with the help of OEM. He also informed that sharing of cost and allocation of power generated from the project shall be in the same proportion as applicable in case of Bhakra Complex Power Houses. Board may kindly consider the proposal as contained in the agenda item.

Representative of Member (H.P) stated that though they are in agreement with the proposal but its cost seems to be on higher side, which should be looked into. In this regard, Chairman, BBMB informed that the actual cost shall be discovered through the competitive bidding. Keeping in view the fact that the PLF of the project is about 75%, per unit cost of the power produced must be competitive.

After detailed deliberations, the Board accorded an approval to the proposal as under subject to the condition that before awarding the work, final proposal shall be put-up before the Board for approval:

1. To take up the pilot project for installation and commissioning of 210 kW Hydro Kinetic Turbine at River Satluj downstream of Bhakra Dam near Olinda Bridge.
2. To invite an open tender for design, development, installation and commissioning the project.

Item No.240.13

Delegation of Powers to Chairman, BBMB, in consultation with the respective Whole Time Member of BBMB for getting the studies/consultancy/ works done on nomination basis from Centre or State Govt. funded institutes/ Central or State PSUs Apart from IITs/NITs etc.

Secretary, BBMB informed the Board that previously under Agenda Item No. 233.05, the Board has approved to delegate the powers to Chairman, BBMB in consultation with respective Whole Time Member of BBMB, to award studies/consultancies on nomination basis to premier government educational institutes such as IITs etc. He further informed that BBMB is exploring various projects in conventional /renewable energy sector for which at present there is no mechanism available in BBMB to engage any Central or State Government, PSU etc. as a consultant. Accordingly, the present agenda has been placed for partial modification of approval already granted under Item No.233.05.

All Members agreed to the modification as proposed in the Agenda Note and accordingly following was approved:

"To authorise Chairman, BBMB, in consultation with the respective Whole Time Member of BBMB, to get the studies/consultancies done on nomination basis from premier Government educational institutes of India such as IITs / NITs etc., Centre/State Government funded institutions/agencies/CPSEs, Centre/State Empanelled Agencies, CPSUs and other Centre/State Public Works organizations or its equivalent for ascertaining the health and safety of BBMB dams / Reservoirs & their allied structures / Power Houses/ Sub-Stations/ Transmission lines; survey, feasibility, site investigations, techno-economic evaluation, DPR, design & engineering, etc of new Hydro-electric Plants / Pumped storage Plants / Small Hydro Power Projects / Hydro Kinetic Turbines / Solar Power Plants / Wind Power Plants/ Bio-mass Power Plants, etc. at a total cost not exceeding Rs. 75.00 Lakh for single or multiple studies/consultancies awarded within in a financial year.

2.2.4 241st meeting of the Board held on 16.03.2022

Item No. 241.02

Budget Estimates for the year 2022-23 and Revised Budget Estimates for the year 2021-22.

FA&CAO, BBMB, while explaining the agenda, stated that as per Sub-Clause-5, Section 79 of the Punjab Re-organization Act, the partner States/State Power Utilities have to provide funds to BBMB to meet the expenses incurred in the discharge of its functions. Further as per Rule 11 (1) and (2) of BBMB Rules, 1974, BBMB is to prepare Budget Estimate for the next financial year, which is to be approved by the Board. He further informed that the original budget grant for the year 2021-22 was ₹ 1495.31 Cr., which has been revised to ₹ 1278.88 Cr. as per Revised Budget Estimate for the year 2021-22. The Budget Estimate for the year 2022-23 is ₹ 1489.34 Cr., which is lower than the original budget estimate of last year. Budget provisions for various projects as well as total financial implication on each partner state/state power utility was also explained. He further stated that the Budget Sub Committee in its meeting held on 07.01.2022 has considered the budget and recommended the same for approval by the Full Board.

Initiating the discussion, Member (Haryana) desired the reasons for low utilization of budget on works in this financial year so far. In this regard, Chairman, BBMB informed that the progress of work could not be achieved on expected lines mainly due to two COVID waves that had hit the country during the FY 2021-22 and restrictions on floating and awarding of the tenders due to imposition of model code of conduct in Punjab. Besides this, BBMB has shifted its e-tendering portal from M/s ABC Procure to NIC Platform, during which some teething problems were faced which took time to resolve.

After detailed deliberations, the Board passed the proposed Revised Budget Estimates for the year 2021-22 (₹ 1278.88 Cr.) and Budget Estimates for the year 2022-23 (₹ 1489.34 Cr.) as proposed in the agenda.

Item No. 241.03

Permission for drawl of 8.2 cusec water from Gobind Sagar at Right Bank of Satluj near Village Ghumai (downstream of Kandrour Bridge) in Tehsil Ghumarwin, District Bilaspur, HP for providing Lift Irrigation Scheme (LIS) to Auhar, Palthin, Sephra, Bakroa, Paleh, Pehrwin, Majhasu and adjoining area under Jal Shakti Division, Ghumarwin, District Bilaspur, HP.

BBMB while explaining the agenda stated that this agenda has been put up on the request received from Additional Chief Secretary (Power) to the Govt. of Himachal Pradesh vide letter dated 22.10.2021. Himachal Pradesh has requested BBMB to accord permission for drawl of 8.2 cusec water from Gobind Sagar at Right Bank of Satluj near Village Ghumai (downstream of Kandrour Bridge) in Tehsil Ghumarwin, District Bilaspur, H.P. for providing Lift Irrigation Scheme (LIS) to Auhar, Palthin, Sephra, Bakroa, Paleh, Pehrwin, Majhasu and adjoining area under Jal Shakti Division, Ghumarwin, District Bilaspur, HP. The Project envisages the Scheme proposed to lift the water from Gobind Sagar at right bank of Satluj River and irrigate the agriculture field of Ghumarwin Constituency. The Jal Shakti Vibhag has carried out detailed investigation regarding provision of water to above scheme and nearby source (i.e. Gobind Sagar Lake) at right bank of Satluj River 150 meter below site to Kandrour Bridge at Village Ghumai in Tehsil Ghumarwin, District Bilaspur, HP, which is found technically suitable. He further intimated that the tentative loss of power generation at Bhakra, Ganguwal & Kotla Power Houses of BBMB on account of aforementioned drawl of water works out to 31.609 LUs per annum.

BBMB further stated that no allocation of water has been made to the State of Himachal Pradesh (H.P.) out of Sutlej water and surplus Ravi-Beas waters as per Bhakra - Nangal Agreement, 1959 and Interstate Agreement dated 31.12.1981 respectively. However, on the request of Himachal Pradesh and as a goodwill gesture, Board has approved supply of water to Himachal Pradesh for their use, free of cost and out of common pool 15 times as per details brought out in the agenda note.

Initiating the discussion, Member (Haryana) stated that BBMB has already allowed Himachal Pradesh to lift water from BBMB projects about 15 times with a cumulative demand of about 350 cusecs, which is a significant quantum. The ever increasing demand of water by the State of Himachal Pradesh is affecting availability of water to BBMB partner states and this cannot go on indefinitely. He opined that the Board may consider the present request of Himachal Pradesh with a rider that no such demand shall be considered in future.

Member (Rajasthan) & Member (Punjab) also concurred the views of Member (Haryana).

However, Representative of Member (Himachal Pradesh) stated that the proposal envisages supply of water to the villages in the vicinity of BBMB projects for

their drinking and irrigation requirements, which is a basic necessity. He requested Board to approve the proposal without any conditions.

After deliberations the Board approved the proposal as under:

1. To grant NOC to Himachal Pradesh for drawl of 8.2 cusecs water from Gobind Sagar at right bank of Satluj River near village Ghumai (Downstream of Kandrour Bridge) for providing Lift Irrigation Scheme (LIS) to cover 33 villages of 4 Panchayats under Jal Shakti Division, Ghumarwin, District Bilaspur, H.P subject to proper metering of existing and proposed withdrawal will be done by I&PH Department, Himachal Pradesh using SCADA system and real time data shall be provided to BBMB.
2. To book this water supply to the Common Pool.

अध्याय-3

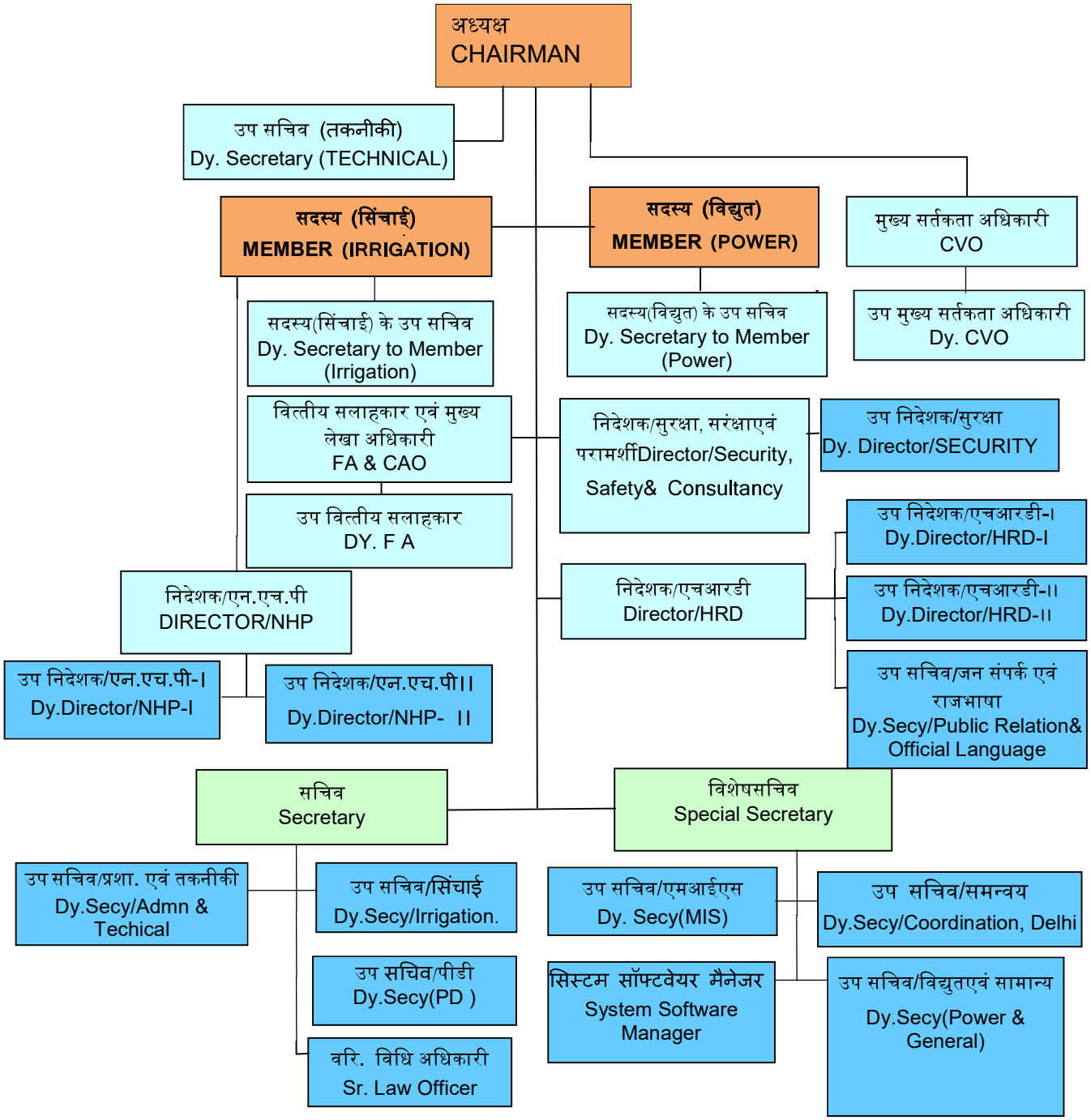
Chapter-3

संगठनात्मक व्यवस्था

Organizational Set-Up

बीबीएमबी सचिवालय की संगठनात्मक व्यवस्था

Organisational Set-Up of BBMB Secretariat



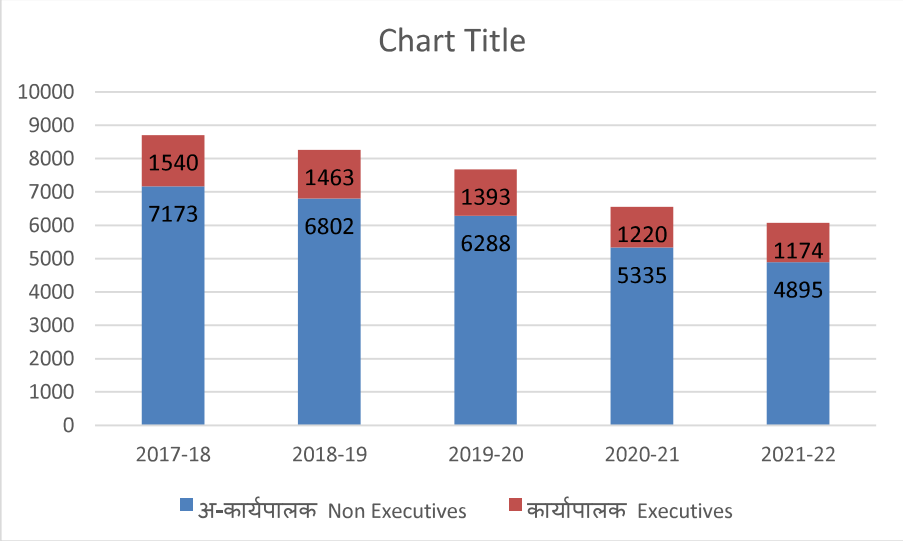
3.1 BBMB Manpower

Total sanctioned and in-position strength for entire BBMB as on 31.03.2022 is as under:-

Class of Establishment	Sanctioned Strength	In-position
Group A and B	2125	1174
Group C	4761	2289
Group D	5185	2606
Total	**12071**	**6069**

बीबीएमबी की जन शक्ति (कार्यपालक एवं अ-कार्यपालक)

BBMB's Manpower (Executives and Non-Executives)



3.2 BBMB Secretariat

The Chairman, Bhakra Beas Management Board is the Chief Executive of the Board and is assisted by two Whole Time Members viz. Member (Irrigation) and Member (Power).

A. Strength of Staff

The sanctioned and in-position strength of Corporate Office including BBMB Secretariat, Chandigarh and Dy.Secretary/Co-ordination office, New Delhi, as on 31.3.2022 is as under:-

Class of Establishment	Sanctioned Strength	In-position
Group-A	72	53
Group-B	83	56
Group-C	141	90
Group-D	141	50
Total	**437**	**249**

B. Allocation of Officers/Officials (in-position as on 31.3.2022 to various Sections of BBMB Sectt.):-

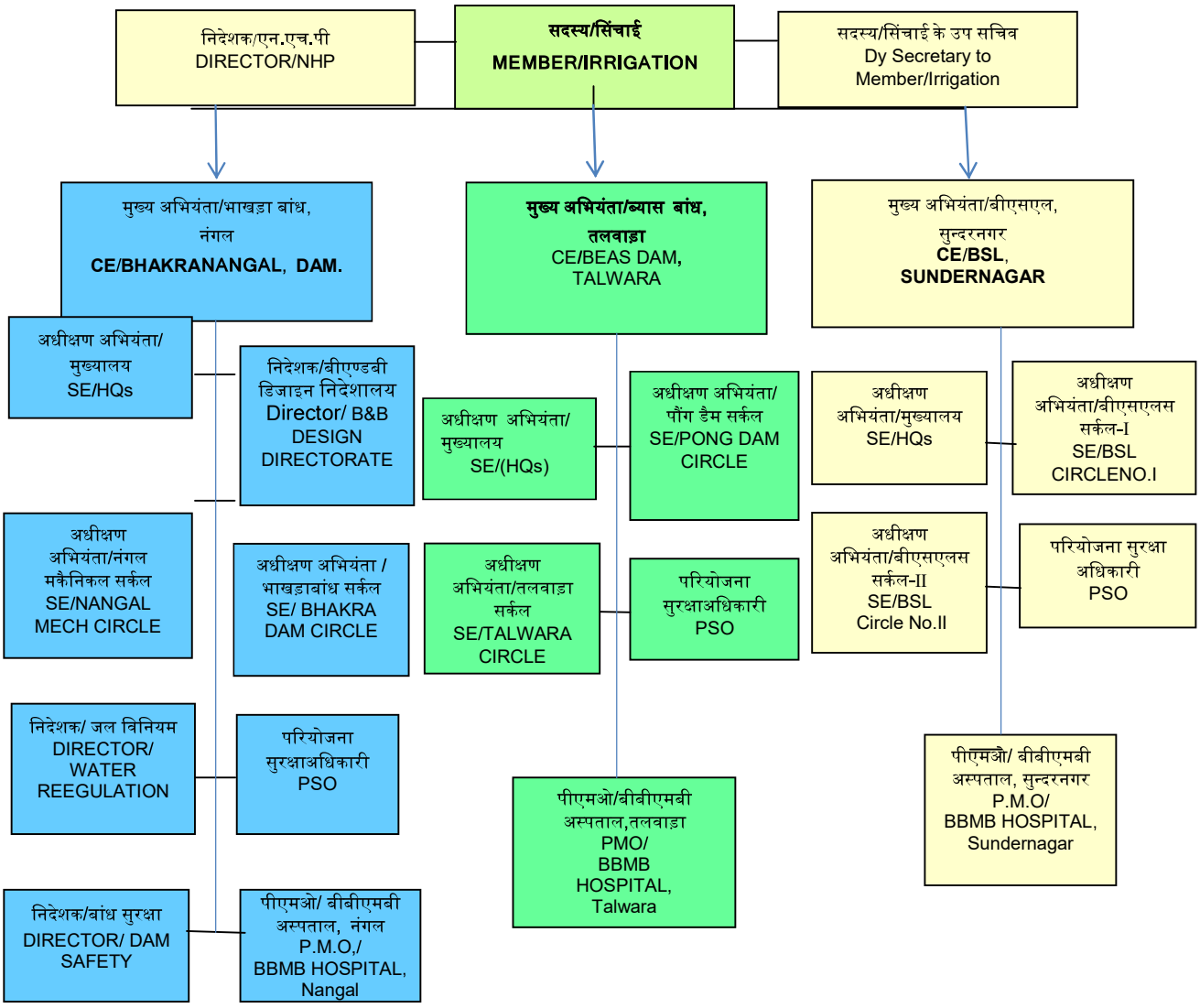
Category	Punjab	Haryana	Rajasthan	HP	C/Govt.	Punjab Power Utilities	Har.Power Utilities	Raj.Power Utilities	HPSEBL	BBMB				Total
										Regular	Contract basis	Adhoc	Other	
Officers (All Group)	6	8	3	0	1	15	11	0	4	9	NA			57
Officials (All Group)	28	23	7	0	0	20	7	1	6	100	NA			192
Total	**34**	**31**	**10**	**0**	**1**	**35**	**18**	**1**	**10**	**109**	**0**			**249**

3.3 Irrigation Wing

Chief Engineer/Bhakra Dam, Nangal, Chief Engineer/Beas Satluj Link, Sundernagar and Chief Engineer/Beas Dam, Talwara are heading the three project sites under Irrigation Wing. Director/Water Regulation, Nangal is responsible for water regulation matters.

बीबीएमबी (सिंचाई खण्ड) की संगठनात्मक व्यवस्था

Organisational Set-Up Of BBMB (Irrigation Wing)



A. Strength of Staff

The sanctioned and in-position strength of regular establishment as on 31.3.2022 is as under:-

Class of Establishment	Sanctioned Strength	In-position
Group-A	210	111
Group-B	646	294
Group-C	2614	1373
Group-D	3387	1902
Total	**6857**	**3680**

B. Allocation of Officers/Officials (in-position as on 31.3.2022 to various organisations):-

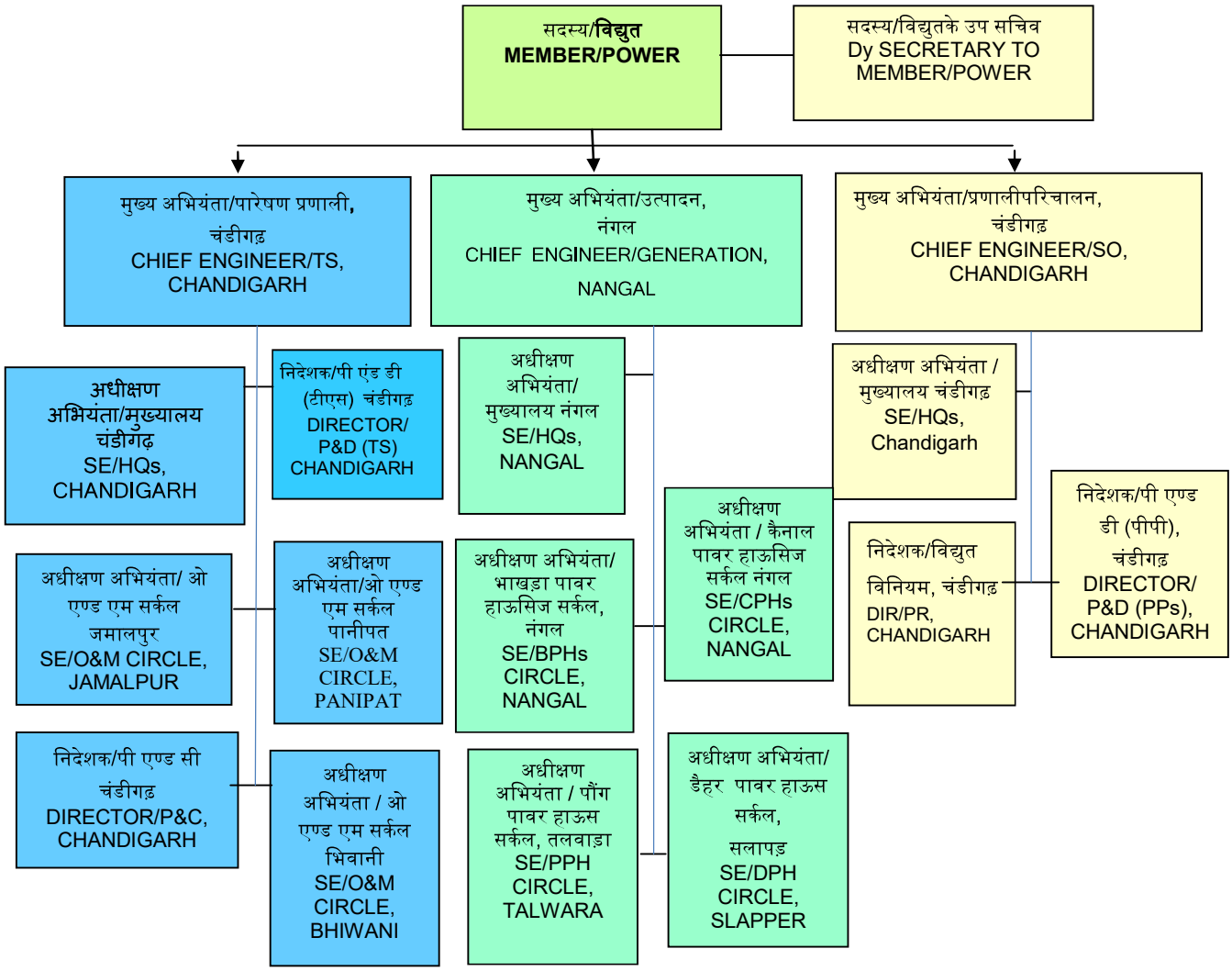
Category	Punjab	Haryana	Rajasthan	HP	C/Govt.	Punjab Power Utilities	Har.Power Utilities	Raj.Power Utilities	HPSEBL	BBMB				Grand Total
										Regular	Contract basis	Adhoc	Other	
Officers (All Group)	35	43	12	11	0	2	0	1	17	17	NA			138
Officials (All Group)	1237	99	11	13	2	19	8	3	39	2111	NA			3542
Total	**1272**	**142**	**23**	**24**	**2**	**21**	**8**	**4**	**56**	**2128**	**0**			**3680**

3.4 Power Wing

Three Chief Engineers i.e. Chief Engineer/Transmission System, Chandigarh, Chief Engineer/Generation, Nangal and Chief Engineer/System Operation, Chandigarh head the Transmission, Generation and System Operation organization respectively under Power wing of BBMB.

बीबीएमबी (विद्धयुत खण्ड) की संगठनात्मक व्यवस्था

Organisational set up of BBMB (Power Wing)



Strength of staff

The sanctioned and in-position strength of regular establishment as on 31.3.2022 is as under:-

Class of Establishment	Sanctioned Strength	In-position
Group-A	296	220
Group-B	641	321
Group-C	1838	768
Group-D	1564	612
Total	**4339**	**1921**

B. Allocation of officers/officials (in-position as on 31.3.2022 to various organisations):-

Category	Punjab	Haryana	Rajasthan	HP	C/Govt.	Punjab Power Utilities	Har.Power Utilities	Raj.Power Utilities	HPSEBL	BBMB				Grand Total
										Regular	Contract basis	Adhoc	Others	
Officers (All Group)	0	4	1	1	0	77	75	33	20	49	NA			260
Officials (All Group)	129	30	1	1	0	144	100	84	7	1165	NA			1661
Total	**129**	**34**	**2**	**2**	**0**	**221**	**175**	**117**	**27**	**1214**	**0**			**1921**

3.5 Finance, Accounts And Audit

The Financial Adviser & Chief Accounts Officer is the Principal Officer to operate the 'Personal Ledger Account (PLA) of the Board and to issue necessary accounts instructions. The functions of the Financial Adviser & Chief Accounts Officer are three-fold viz:

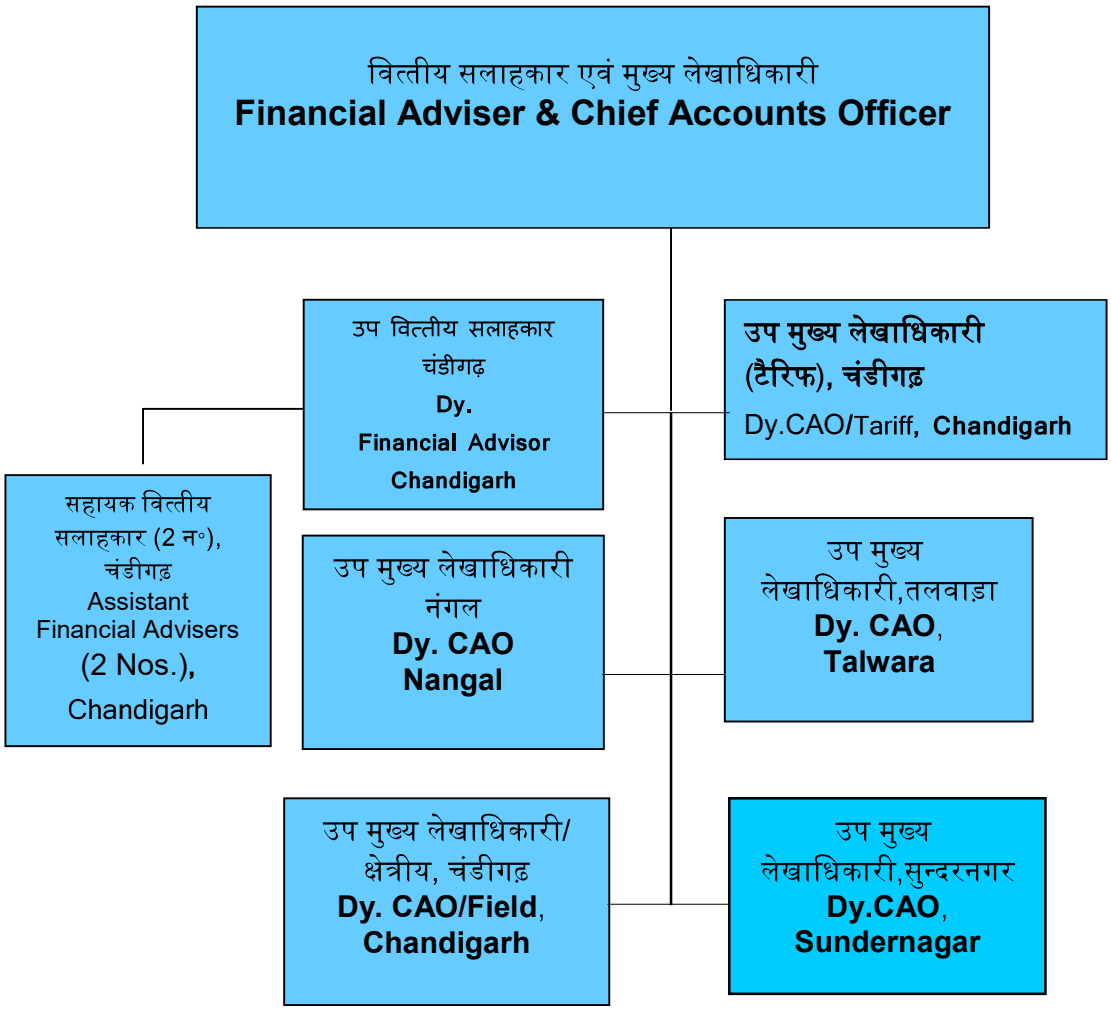
a) the Financial Adviser to the Board on all financial matters.

b) the Chief Accounts Officer for compiling the income and expenditure accounts of the Board and

c) the Chief Internal Auditor for doing the Internal Audit and Scrutiny of the financial transactions of the Board.

वित्तीय सलाहकार एवं मुख्य लेखा अधिकारी, बीबीएमबी की संगठनात्मक व्यवस्था

Organizational Set-Up of FA & CAO, BBMB



A. Strength of Staff

The sanctioned and in-position strength of regular establishment as on 31.3.2022 is given in the table below:

Class of Establishment	Sanctioned Strength	In-position
Group-A	35	25
Group-B	142	94
Group-C	168	58
Group-D	93	42
Total	**438**	**219**

B. **Allocation of Officers/Officials (in-position as on 31.3.2022 to various organisations):-**

Category	Punjab	Haryana	Rajasthan	HP	C/Govt.	Punjab Power Utilities	Har.Power Utilities	Raj.Power Utilities	HPSEBL	BBMB				Grand Total
										Regular	Contract basis	Adhoc	Other	
Officers (All Group)	1	9	0	2	2	7	3	0	0	1	NA			25
Officials (All Group)	50	24	1	2	1	27	10	1	2	76	NA			194
Total	**51**	**33**	**1**	**4**	**3**	**34**	**13**	**1**	**2**	**77**	**0**			**219**

अध्याय-4

Chapter-4

वित्तीय कार्य-निष्पादन

Financial Performance

FINANCIAL REVIEW OF BBMB

- The Bhakra Beas Management Board has been constituted under Section 79(1) of the Punjab Re-organization Act, 1966, for administration, operation and maintenance of works mentioned in Section 79 of the Act. According to Sub-Section 5 of Section 79 of the Act, the Governments of the successor States of the erstwhile Punjab and the State of Rajasthan are required at all times to provide necessary funds to BBMB to meet all expenses required for discharge of its functions. The Board, in consultation with the FA&CAO, prepares the revised Budget Estimates for the current year as well as Budget Estimates for the next financial year as provided under Rule 11 of BBMB Rules.
- The revenue expenditure debitable to Irrigation Wing is financed by the Partner State Governments of Punjab, Haryana and Rajasthan from their own resources in the agreed ratios. Similarly, for the Power Wing, revenue expenditure is partly met out of the receipts realized from Common Pool Consumers and partly by the partner State Power Utilities from their own resources, in the agreed ratios.
- Ministry of Power, Govt. of India, New Delhi on the direction of Hon'ble Supreme Court of India vide its notification No. 02/13/96-BBMB (Vol. VI) dated 31.10.2011 has revised the sharing of allocation of energy in Power Wing from Bhakra-Nangal and Beas Projects w.e.f. 01.11.2011.
- The obligations of the Partner State Governments/State Power Utilities based upon the Revised Budget Estimates for the year 2021-22, after deducting the share of Revenue Receipts of Power Wing, are determined as under :-

(**Rs. in Lakhs**)

Punjab Govt.	14976.29	PSPCL	23513.17
Haryana Govt.	9737.85	HVPNL	20156.08
Rajasthan Govt.	12329.99	RRVPNL	13676.82
		HPSEB Ltd.	3515.62
		UT, Chandigarh	1711.37

- The amount of advances made by the participating State Governments and State Power Utilities are credited to the Personal Ledger Account of the FA&CAO opened in the Public Account of the Government of India. As and when the expenditure is incurred, the proportionate share of the State Governments/State Power Utilities is passed on to the concerned Accountant General/State Power Utilities for exhibition in the State/State Power Utilities' accounts.

1. The PLA of BBMB, which remained positive throughout the year under review, closed with a credit balance of Rs. 21786.90Lakhs on 31st March, 2022.

2. The PWD System of accounting is being followed and there has been no change in Accounting Policy during the year.

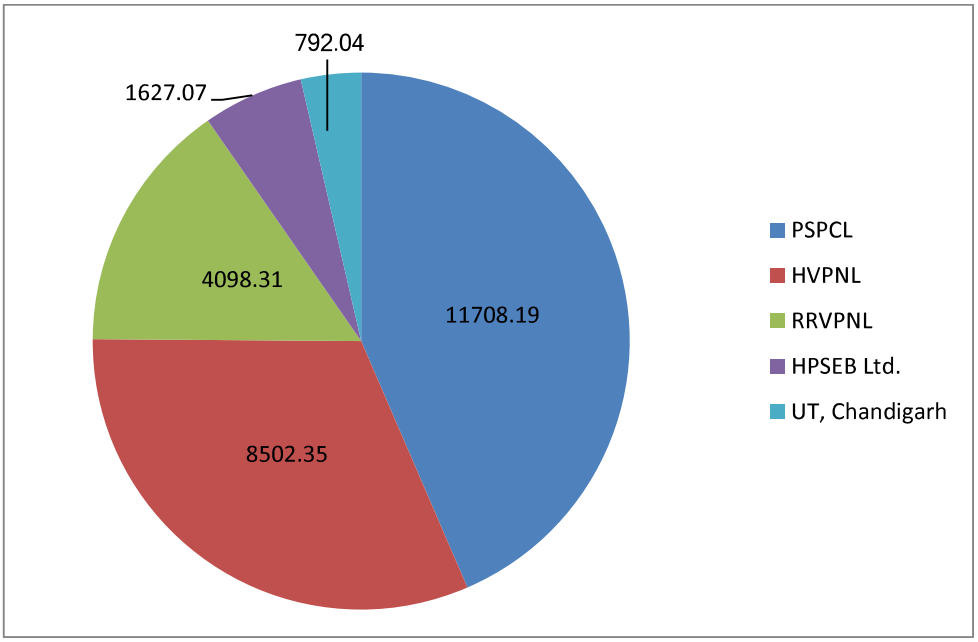
3. i) Notional Operating Expenditure Rs. 78436.62 Lakhs.
(Chargeable to Power Wing)

ii) Units generated (ex-Bus) 9685.86 MU

4. **Notional Operating Expenditure**
per unit of energy 80.98 paise
(Generation & Transmission)

5. **Energy Sales Revenue: Rs. 26727.96 Lakhs**

i) PSPCL = Rs. 11708.19 Lakhs
ii) HVPNL = Rs. 8502.35 Lakhs
iii) RRVPNL = Rs. 4098.31 Lakhs
iv) HPSEB Ltd. = Rs. 1627.07 Lakhs
v) UT, Chandigarh = Rs. 792.04 Lakhs

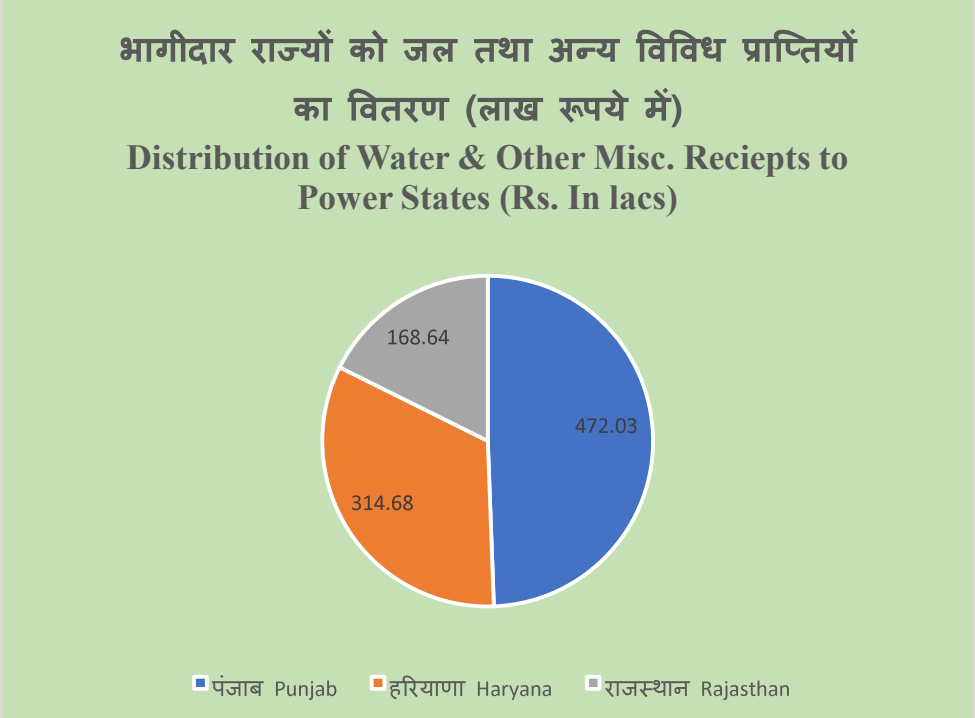


6. Water Sales Revenue & Other Misc. Receipts: Rs. 955.35 Lakhs

(i) Punjab State = Rs. 472.03 Lakhs

(ii) Haryana State = Rs. 314.68 Lakhs

(iii) Rajasthan State = Rs. 168.64 Lakhs

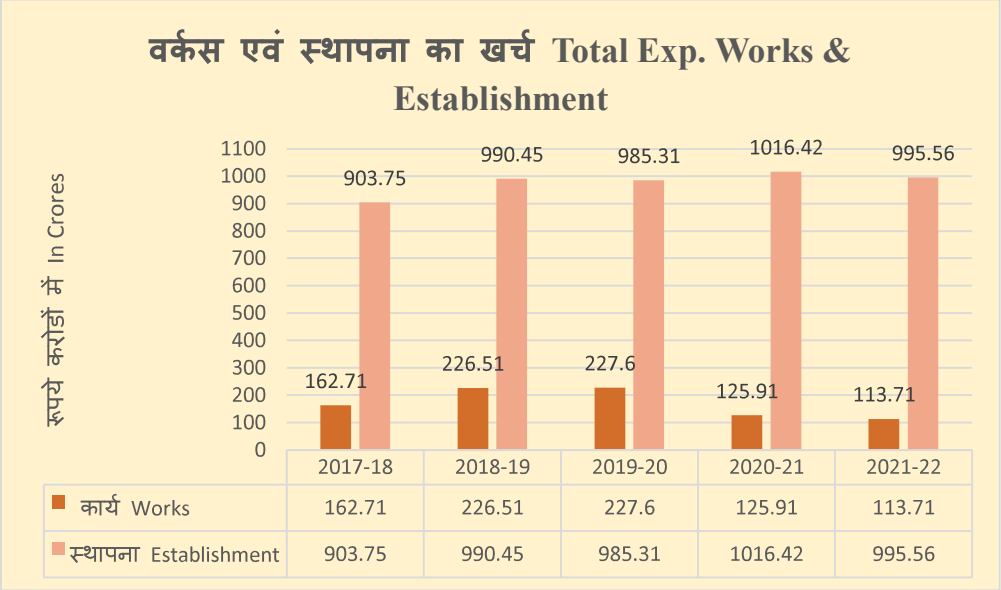


7. Capital Expenditure

(₹ in Lakhs)

	Punjab Govt.	Haryana Govt.	Rajasthan Govt.	Total
Bhakra	**-62.43**	**-41.62**	**-18.68**	**-122.73**
Beas (Residual Works)	**0.01**	**0.01**	**0.03**	**0.05**

8. Total Expenditure of BBMB (Works & Establishment).



4.1 POWER WING

4.1.1 Beneficiaries

The following beneficiaries are drawing electric energy from the BBMB Projects as decided by Ministry of Power, Govt. of India, New Delhi on the direction of Hon'ble Supreme Court of India vide its notification No. 02/13/96-BBMB (Vol. VI) dated 31.10.2011 w.e.f. 01.11.2011:-

a) Punjab
b) Haryana
c) Rajasthan
d) Himachal Pradesh
e) Chandigarh U.T

COMMON POOL CONSUMERS

A	National Fertilizer Ltd., Naya Nangal	1.02 LU/day
B.	Old Himachal Pradesh	1.2 LU/day
C.	Supply of power for Fertilizer factory in Rajasthan	5 LU/day
D.	U.T. Chandigarh	1 LU/day plus Special Assistance of 10 LU/day
E.	Project supplies to Irrigation Wing at Nangal, Talwara & BSL Complex	

4.1.2 Revenue Receipts and Expenditure

The revenue expenditure of Power Wing is primarily met out of Revenue Receipts realized from Common Pool Consumers. In the contingency of Revenue Expenditure exceeding Revenue Receipts derived from Common Pool Consumers, the excess expenditure is required to be met by the Partner State Power Utilities as per provisions under the Punjab Re-organization Act 1966. The position of revenue receipts, advances realized and expenditure incurred and balance available is given below:

A. Revenue Receipts

(₹ in Lakhs)

1	Bhakra	25830.26
2	Beas Transmission Lines	79.39
3	Dehar Power Plant, S .Nagar (Other Receipt)	143.64
4	Dehar Power Plant (Sale of Power)	9.96
5	Pong Power Plant, Talwara (Other Receipt)	12.32
6	Pong Power Plant (Sale of Power)	13.85
7	Transfer from Bhakra I.B.	570.88
8	Transfer from Unit No.1 BSL Sundernagar	63.49
9	Transfer from Unit No.2 Pong Dam Talwara	4.17
	Total	**26727.96**

B. Revenue Expenditure

Following are the figures of Revenue Expenditure during the year 2021-22:-

(₹ in Lakhs)

Sr. No.	Particulars	Works	Estt.	Total
OPERATION & MAINTENANCE				
1.	Bhakra Left Power Plant/Generation	716.14	5845.02	6561.16
2.	Bhakra Left Power Plant /Transmission	666.00	3394.61	4060.61
3.	Bhakra Right Power Plant /Generation	334.41	3588.78	3923.19
4.	Bhakra Right Power Plant/Transmission	1387.75	10137.75	11525.50
5.	Beas Transmission Lines	1190.10	7159.67	8349.77
6.	Dehar Power Plant	2714.05	3834.27	6548.32
7.	Pong Power Plant	68.43	710.90	779.33
8.	Transfer from Bhakra Irrigation Branch	434.98	15885.71	16320.69
9.	Transfer from Unit No. I of Beas Project (Beas Sutlej Link, Sundernagar)	1025.84	16080.91	17106.75
10.	Transfer from Unit No.2 of Beas Project (Pong Dam, Talwara)	101.10	3160.20	3261.30
	TOTAL	**8638.80**	**69797.82**	**78436.62**
RENOVATION, MODERNISATION & UPRATING (RM&U)				
11.	RM&U of Bhakra Left Power House	1150.69	--	1150.69
	TOTAL RM&U	**1150.69**	**--**	**1150.69**
TOTAL EXPENDITURE (POWER WING) (O&M + R,M&U)		**9789.49**	**69797.82**	**79587.31**

C. Capital Expenditure

No Capital Expenditure has been booked to Capital Head of Account. However, expenditure relating to Renovation, Modernization and uprating scheme for the year is given above.

4.1.3 Sharing of Revenue Receipts & Expenditure

Revenue receipts and expenditure of Power Wing is apportioned amongst the partner State Power Utilities as under:-

A. Bhakra Complex

Revenue receipts and expenditure, including RM&U expenditure, is apportioned amongst Partner State Power Utilities in the following ratios:-

R.R.V.P.N.L.	15.22%
P.S.P.C.L.	51.80% (after deducting RRVPNL Share)
H.V.P.N.L.	37.51% (after deducting RRVPNL Share)
H.P.S.E.B. L.	7.19% (after deducting RRVPNL Share)
Electricity Department, UT, Chandigarh.	3.5% (after deducting RRVPNL Share)

B. (i) Beas Project Unit-I (Dehar Power Plant)

Gross revenue receipts/expenditure on Dehar Power Plant is apportioned between Power and Irrigation in the ratio of 94:6. The net revenue receipts/expenditure on Power side is apportioned amongst partner State Power Utilities in the ratios given on next page:-

R.R.V.P.N.L.	20%
P.S.P.C.L.	51.80% (after deducting RRVPNL Share)
H.V.P.N.L.	37.51% (after deducting RRVPNL Share)
H.P.S.E.B.L.	7.19% (after deducting RRVPNL Share)

Electricity Deptt., UT, Chandigarh.	3.5% (after deducting RRVPNL Share)

(ii) Beas Project Unit No. II (Pong Dam)

Gross revenue receipts/expenditure on Pong Power Plant is apportioned between Irrigation and Power in the ratio of 76.5 and 23.5. The net revenue receipts/expenditure on the power side is apportioned amongst partner State Power Utilities in the following ratios:-

R.R.V.P.N.L.	58.5%
P.S.P.C.L.	51.80% (after deducting RRVPNL Share)
H.V.P.N.L.	37.51% (after deducting RRVPNL Share)
H.P.S.E.B.L.	7.19% (after deducting RRVPNL Share)
Electricity Deptt., UT, Chandigarh.	3.5% (after deducting RRVPNL Share)

iii) Beas Transmission Lines

The reallocation of share between partner Power Utilities is as under:-

R.R.V.P.N.L.	23.80%
P.S.P.C.L.	28.72% (after deducting RRVPNL Share)
H.V.P.N.L.	60.59% (after deducting RRVPNL share)
H.P.S.E.B.L.	7.19% (after deducting RRVPNL Share)
Electricity Deptt., UT, Chandigarh.	3.5% (after deducting RRVPNL Share)

4.1.4 Outstanding O&M Charges against Partner State Power Utilities:

The position of amount recoverable from partner State Power Utilities against their share in revenue expenditure as on 31st March, 2022 is as under:-

(-) Advance
(+) Recoverable Amount **(₹ in Lakhs)**

Particulars	PSPCL	HVPNL	RRVPNL	HPSEBL	UT, Chd.	Total
Outstanding as on 01.04.2021	**8511.52**	**-1199.65**	**-534.85**	**-235.16**	**-401.71**	**6140.15**
Revenue Receipts realized during the year.	11708.19	8502.35	4098.31	1627.07	792.04	26727.96
Advances released by partner States Power Utilities during the year.	18392.57	15994.18	11229.13	2768.07	1060.42	49444.37
Total amount available	21589.24	25696.18	15862.29	4630.30	2254.17	70032.18
Expenditure incurred during the year.	31114.80	25063.57	15533.96	4522.70	2201.59	78436.62
Outstanding/ Balance available as on 31.03.2022	**9525.56**	**-632.61**	**-328.33**	**-107.60**	**-52.58**	**8404.44**

4.1.5 SUMMARY OF OUTSTANDINGS AS ON 31.03.2022

(-)Advance
(+) Recoverable Amount **(₹ in Lakhs)**

Sr. No.	Total O&M charges	Total RM&U Charges	Total outstanding amount
PSPCL	9525.56	311.48	9837.04
HVPNL	-632.61	225.60	-407.01
RRVPNL	-328.33	108.01	-220.32
HPSEBL	-107.60	50.29	-57.31
UT, Chd.	-52.58	21.07	-31.51
Total	**8404.44**	**716.45**	**9120.89**

4.1.6 Dues from Common Pool Consumers on account of Sale of Power

During the year, the common pool consumers were M/s. National Fertilizer Limited, Naya Nangal, old Himachal Pradesh, Union Territory of Chandigarh, Rajasthan Fertilizer Factory and Irrigation Wing of BBMB. The following amounts were outstanding as on 31.03.2022 against the various common pool consumers and others.

(-) Advance
(+) Recoverable Amount

Sr. No.	Sale of Power to	₹ in Lakhs
1.	M/S National Fertilizer Limited., Naya Nangal	
	- Energy	
	- Sale of Water	6.33
2.	Rajasthan Fertilizer Factory through RUVNL	3473.64
3.	Jammu and Kashmir	22.52
4.	Irrigation Wing Nangal	1.05
5.	Beas Sutlej Link Project	18.52
6.	Beas Project, Talwara	3.98
7.	Union Territory Chandigarh (3.5% Schedule allocation)	7433.62
8.	Union Territory Chandigarh (Special Assistant)10 Lakhs/day	0.00
9.	Union Territory Chandigarh (1 Lakhs/day))	0.00
10	Himachal Pradesh State Electricity Board (old Supply)	24.50
	TOTAL	**10984.16**

4.1.7 Other Outstanding Dues

A. Pooled Transmission Losses

Sr. No.	Particulars	₹ in Lakhs
1	P.S.P.C.L.	-2.89
2.	HVPNL	0.01
3.	Uttar Pradesh Power Corporation Limited	0.01
4.	Union Territory, Chandigarh	0.01
	TOTAL	**-2.86**

B. Wheeling Charges (Samyapur)

Sr. No.	Particulars	₹in Lakhs
1.	Uttar Pradesh Power Corporation Limited	-2.72
2.	Delhi Transco Ltd. (DESU)	8.04
3.	Jammu & Kashmir.	32.64
	TOTAL	**37.96**

C. Wheeling Charges (Bairasiul)

Sr. No.	Particulars	₹ in Lakhs
1.	Delhi Transco Ltd. (DESU)	62.47
2.	Haryana Vidyut Prasaran Nigam Ltd. (HSEB).	332.64
	TOTAL	**395.11**

D. CENTRAL ELECTRICITY DUTY

Sr. No.	Particulars	₹ in Lakhs
1.	Union Territory, Chandigarh	59.33
2.	Beas Sutlej Link Project	3.01
	TOTAL	**62.34**

E. MAINTENANCE CHARGES OF CONTROL EQUIPMENT AT 132 KV DEHAR-SHIMLA LINE

Sr. No.	Particulars	₹ in Lakhs
1.	Himachal Pradesh State Electricity Board Limited.	4.43
	TOTAL	**4.43**
GRAND TOTAL		**₹ 11481.14 Lakhs**

4.1.8 Energy Allocation/Sale

Revenue is being collected by selling the power to Common Pool Consumers whereas energy to State Power Utilities is allocated as per their shares in each project. The detail of allocation to State Power Utilities as well as to Common Pool Consumers is as follows:-

(Figures in MU)

Project	PSPCL	HVPNL	RRVPNL Including RFF	HPSEBL Including Old HP	UT Chd	NFL	Irrigation Wing	Total
Bhakra Complex	2075.39	1542.19	920.44	339.40	545.09	24.16	20.05	5466.72
Dehar Power House	1248.67	904.26	602.64	173.26	84.37	0.00	11.37	3024.57
Pong Power House	225.96	163.64	614.83	31.32	15.24	0.00	8.51	1059.50
Grand Total	**3550.02**	**2610.09**	**2137.91**	**543.98**	**644.70**	**24.16**	**39.93**	**9550.79**

Note: **i)** Figures are based on scheduled energy as mentioned in REAs issued by NRPC.

ii) Figures for the month of September, 2021 and March, 2022 are based on provisional REAs as final REAs have not been issued by NRPC yet.

iii) Total energy sent out from BBMB Power Houses is 9685.86 MUs and energy scheduled/energy booked to the Partner States/ Beneficiaries is9550.79 MUs. The difference in actual energy sent out and energy scheduled to the Partner States/Beneficiaries has been accounted for under Deviation Settlement Mechanism (DSM) since generating stations of BBMB have come under the ambit of ABT w.e.f. June-2016.

4.2 IRRIGATION WING

4.2.1 Revenue Receipts and Expenditure

The compiled monthly accounts in respect of revenue and capital expenditure are sent to the respective Accountant Generals for adjustment in the State Accounts. The copies of monthly receipts/ expenditure are also sent to the Government of India, State Government and Chief Engineers of Partner States to apprise them of the flow of expenditure and to arrange for finances of the Board. Monthly Classified Accounts of cheques drawn and remittances made are sent to the Controller of Accounts, Government of India, Ministry of Power.

A Revenue Receipts

Revenue receipts realized during the year were Rs. 955.35 Lakhs. As per prevailing practice, the revenue receipts relating to the Irrigation Wing are paid to the Partner State Governments.

B Revenue Expenditure

The Gross revenue expenditure is apportioned between Irrigation and Power in the manner mentioned in paragraph 4.2.2 below. Partner State-wise position of funds released vis-à-vis expenditure incurred is given below:-

(-)Advance
(+) Recoverable Amount **(₹ in Lakhs)**

Particulars	Punjab	Haryana	Rajasthan	Total
Bhakra Project				
Opening balance as on 01.04.2021	**-952.17**	**4322.59**	**-768.17**	**2602.25**
Amount released during the year	10236.12	5400.00	2247.57	17883.69
Total amount available	11188.29	1077.41	3015.74	15281.44
Expenditure during The year	8632.84	5513.77	2530.10	16676.71
Closing balance as on 31.03.2022	**-2555.45**	**4436.36**	**-485.64**	**1395.27**
Beas Project				
Opening balance as on 01.04.2021	**-1781.57**	**-4262.72**	**-2505.44**	**-8549.73**
Amount released during the year	4741.54	3500.00	9314.25	17555.79
Total amount available	6523.11	7762.72	11819.69	26105.52
Expenditure during the year.	4045.27	2696.85	7921.29	14663.41
Closing balance as on 31.03.2022	**-2477.84**	**-5065.87**	**-3898.40**	**-11442.11**
Total balance available Bhakra & Beas as on 31.03.2022	**-5033.29**	**-629.51**	**-4384.04**	**-10046.84**

4.2.2 Sharing of Revenue Receipts & Expenditure

A. Bhakra

Gross receipt/expenditure is apportioned between Irrigation and Power in the ratio of 50:50.

The net irrigation receipt/expenditure is further apportioned between the Partner State Governments in the following ratios:

Rajasthan	15.22%	Unit No. I
	19.06%	Unit No.II & III
Punjab	60%	after deducting
Haryana	40%	Rajasthan's share

B. Beas Project Unit-I (Beas Satluj Link)

Gross Revenue receipt/expenditure on Beas Project Unit-I, Beas Satluj Link Project is apportioned between Irrigation and Power in the ratio of 6:94. The net Irrigation receipt/expenditure is shared between the partner State Governments in the following ratios:-

Rajasthan	15%
Haryana	34%
Punjab	51%

C. Beas Project Unit-II (Pong Dam)

Gross receipt/expenditure on Irrigation side is apportioned between Irrigation and Power in the ratio of 76.5:23.5. Net revenue receipts/expenditure is apportioned between Partner States in the ratios given below:

Rajasthan	58.5%
Punjab	24.9%
Haryana	16.6%

4.2.3 Capital Expenditure of Projects

A. Bhakra Project

The capital expenditure of the Board is met out of the sale proceeds of surplus stores/machinery as no loan is sanctioned by the Partner State Governments/Government of India under Capital Head of Account. Participating state-wise position is given below:-

4700 - Capital outlay on Major Irrigation

(-)Advance

(+) Recoverable Amount **(₹ in Lakhs)**

	Punjab	Haryana	Rajasthan	Total
Opening balance as on 01.04.2021	-891.29	-594.20	-266.36	-1751.85
Expenditure during the year	-62.43	-41.62	-18.68	-122.73
Total amount payable by the State Govts. to BBMB	-953.72	-635.82	-285.04	-1874.58

4801 – Power Project- Hydel Generation Left Power Plant

(-)Advance

(+) Recoverable Amount **(₹ in Lakhs)**

Opening balance as on 01.04.2021	- 31.84	- 21.22	- 9.52	- 62.58
Expenditure during the year	--	--	--	--
Total amount payable by the State Govts. to BBMB	- 31.84	- 21.22	- 9.52	- 62.58

4801 – Power Project- Hydel Generation Right Power Plant

(-)Advance

(+) Recoverable Amount **(₹ in Lakhs)**

Opening balance as on 01.04.2021	66.29	44.24	14.68	125.21
Expenditure during the year.	--	--	--	--
Total amount payable by the State Govts.	66.29	44.24	14.68	125.21
Grand Total (LPP+RPP) payable by the State Govts. to BBMB	**34.45**	**23.02**	**5.16**	**62.63**

B. Beas Project

The capital expenditure of Beas Project was previously met out of the central assistance given to the participating State Governments by Government of India. The funds for executing the residual liabilities of the project are now to be provided by the Partner State Governments out of their Plan Outlay or their own resources. State-wise position of the balance expenditure is given as under:-

4700 and 4801 – Capital expenditure of Beas Project

(-)Advance
(+) Recoverable Amount **(₹ in Lakhs)**

	Punjab	Haryana	Rajasthan	Total
Opening balance as on 01.04.2021	**340.70**	**258.23**	**442.28**	**1041.21**
Amount received from the State Govts. during the year.	--	--	--	--
Expenditure during the year.	0.01	0.01	0.03	0.05
Total amount payable by the State Govts. to BBMB (Irrigation &Power)	**340.71**	**258.24**	**442.31**	**1041.26**

4.3 Position of Outstanding dues from Partner State Governments: (AS ON 31.03.2022)

(-)Advance
(+) Recoverable Amount **(₹ in Lakhs)**

Particulars	Punjab	Haryana	Rajasthan	Total
O&M Charges	-5033.29	-629.51	-4384.04	-10046.84
BCB (Residual Works)	340.71	258.24	442.31	1041.26
Total	**-4692.58**	**-371.27**	**-3941.73**	**-9005.58**

4.4 CONTRIBUTORY & GENERAL PROVIDENT FUND (AS ON 31.03.2022)

Adhoc/Regular/Work-charged employees of Bhakra Beas Management Board are entitled to subscribe to Board's General Provident Fund/Pension Scheme or Contributory Provident Fund scheme managed by BBMB Contributory and General Provident Fund Trust. Half of the Trustees represent the Management and other half represents Employees. The position of Balances of Bhakra Beas Management Board Employees Contributory and General Provident Fund under different prescribed schemes is given below:-

(₹ in Lakhs)

Sr. No.	Name of Securities/Instruments	Amount
1	Central Govt. Securities	5736.30
2	Govt. of India Special Deposit Scheme A/c	6678.99
3	Adhar Housing Finance ltd	450.00
4	Aditya Birla Finance	400.00
5	Andhra Pradesh State Dev. Loan A/c	2079.90
6	Bajaj Finance Ltd. Bonds	300.00
7	Bihar State Development Loan A/c	780.00
8	Capital First Ltd.	700.00
9	Chhattisgarh State Power DC Ltd.	1,073.50
10	Credila Financial Service Pvt Ltd.	100.00
11	Cholamandlam Investment & Finance Ltd.	300.00
12	Dewan Housing Finance Ltd.	503.15
13	Export Import Bank Bond	140.00
14	Edelweiss finvest Pvt. Ltd.	600.00
15	Food Corporation of India Bonds	700.00
16	Fullertone India Credit Co. Ltd.	200.00
17	Gujrat State Development Loan A/c	308.00
18	Haryana State development Loan	500.00
19	HP State Electricity Board Bond	350.00
20	India Bulls Financial Services Ltd	310.00
21	Indian Railway Finance Corp Bond	300.00
22	Industrial Development Finance Corp. Bond	200.00
23	ICICI Securities Primary Dealership Ltd.	200.00
24	IL&FS Financial Service Ltd	700.00
25	IL&FS Transportation network Ltd	1,550.00
26	J&K State Development Loan A/c	1090.20
27	Jaipur Vidyut Vitran Nigam Ltd. (JVVNL)	738.00
28	JM Financial Product Ltd.	500.00
29	JM Financial Credit Solutions Ltd.	440.00
30	Karnataka SDL	900.00
31	L&T Infrastructure Finance Co. Ltd Bond	880.00
32	L&T Housing Finance Ltd	200.00
33	Mahuva Bharatpur Expressways ltd.	250.00
34	North Eastern Electric Power Corporation (NEEPCO Ltd)	200.00
35	Patel KNR Heavy Infra ltd	1,000.00
36	PNB Housing Finance Ltd Bond	530.00
37	PNB Metlife India Insurance Co. Ltd.	400.00
38	Power Finance Corp. Ltd. Bond	1250.00

39	Federal Bank Limited	100.00
40	Punjab State Development Loan A/c	1,800.00
41	HDFC Credila Financial Services Ltd.	300.00
42	Ajmer Vidut Vitran Nigam Ltd.	400.00
43	Telangana State Development Account	586.23
44	Assam State Development Loan	495.10
45	Rajasthan Rajya Vidut Prasaran Nigam Ltd.	400.00
46	Rajasthan State Development Loan A/c	1712.27
47	Reliance Capital Ltd. Bond	900.00
48	Rural Electrification Corp. Ltd. Bond	978.76
49	Sintex industries ltd	600.00
50	Steel Authority India Ltd	200.00
51	Tamil Nadu Uday Bond	2,240.00
52	Tata Cleantech Capital Limited	400.00
53	Tata Capital Financial Services Ltd	1450.00
54	Tourism Finance Corporation Ltd.	132.00
55	Tamilnadu State Development Loan	200.00
56	UP State Development Loan A/c	4409.18
57	UP Power Corporation Ltd	800.00
58	West Bengal State Development Loan A/c	2895.90
59	Sikkam State Development Loan A/c	450.00
60	Mizoram State Development Loan A/c	72.73
61	ONGC Petro Additions Ltd.	800.00
62	Gujrat State investment Ltd.	800.00
63	Tamil Nadu Generation & Distribution Co.	500.00
	Total	**57160.21**
64	HDFC FDR	119.00
65	SBI FDR	119.00
	Grand Total	**57398.21**
Mutual Fund		
1	SBI Blue Chip Fund Growth	480.00
2	IL&FS Infrastructure Debt Fund Series-3-A	200.00
3	ICICI Prudentail Value discovery fund Growth	100.00
4	Kotak ETF Fund	50.00
5	Axis Blue Chip Fund	603.00
6	Kotak Flexicap Fund	350.00
7	HDFC Top-100 Fund	50.00
8	HSBC Mutual Fund	200.00
9	UTI Master Share MF	119.00
	Total Mutual Fund	**2152.00**
	Total Investment up to 31/3/2022	**59550.21**

4.5 Audit

The Internal Audit of the various Divisions/Offices of Bhakra Beas Management Board is conducted by the Financial Adviser and Chief Accounts Officer. The statutory audit is conducted by the Accountant General, Audit, Punjab.

4.6 Personal Ledger Account (PLA)

Under the provisions of Section 79(5) of the Punjab Reorganization Act, 1966, the Partner State Governments and State Electricity Boards are required to provide necessary funds to BBMB to meet all the expenses required for the discharge of its functions, including operation and maintenance charges for works of Irrigation Wing (dams, canals and other civil structures) and for works of Power Wing (power plants, transmission network, etc.), respectively. Since BBMB does not have any working capital to meet the operation and maintenance charges, it was decided in the meeting held by the Secretary, Irrigation & Power, Government of India, New Delhi on 14.2.1967 to provide these funds to Personal Ledger Account (PLA) to be opened in the books of Government of India to which the participating States would contribute appropriate amounts as per their share after making provision in their respective budgets. As on 31.03.2022 balance in Personal Ledger Account was₹ 21786.90Lakhs only.

4.7 O&M Cost of BBMB System

The cost booked to notional generation and notional transmission of BBMB during the year was ₹ 545.01 Crore and ₹ 239.36 Crore respectively. The O&M cost for notional generation works out to 56.27 p/kWh and notional transmission cost to 24.71 p/kWh. After accounting for receipts from common pool consumers, the cost of energy delivered to the partner States (including notional transmission) against their share works out to be 58.37 p/kWh.

अध्याय-5

Chapter-5

परिचालन कार्य-निष्पादन
Operational Performance

5.1 Power Wing

The power generation at BBMB power stations and its transmission to various partners/ beneficiaries is under the Power Wing of the BBMB. The integrated operation of the system requires real time monitoring of the power system so as to have effective control of the frequency, voltage and loading on the system and to optimally utilize the generation resources. These functions are performed by the Power Regulation Directorate, Chandigarh through a state of the art Load Dispatch Centre at Chandigarh.

5.1.1 Energy Generation

The total energy generation of BBMB generating stations during 2021-22 was 9807.638 MU (including of 11.894 MU deemed generation at Ganguwal & Kotla Powerhouses) which is 5.47 % more than the Annual Generation Target of 9299 MU fixed by the CEA for the year 2021-22. The annual energy generation at each BBMB Power House for the year 2021-22 is indicated in ***Fig.1***. The annual target and actual energy generation during the year 2012-13 to 2021-22 are depicted in ***Fig.2***.

5.1.2 Peak Generation

BBMB strives to meet peaking demands of partner states. Typical daily generation curves of BBMB Power Houses for monsoon, winter, mild winter & hot season periods are depicted in ***Fig.3***.

5.1.3 Availability of Power Houses

The annual availability factor of Bhakra Left Bank and Bhakra Right Bank Power Houses was 99.96% and 99.99% respectively. At Pong Power House, the availability was 88.21%. The availability at Dehar Power Houses was 99.88%.The availability factors of Ganguwal and Kotla Power Houses were 98.97% and 98.61% respectively. The plant availability factors of BBMB Power Houses are depicted in ***Fig.4***. Overall availability of BBMB Power Houses was 98.30%.

5.1.4 Energy transmitted

Energy transmitted from BBMB Powerhouses (to the various partners/beneficiaries) was 9685.86 MUs. and energy booked to the partners/beneficiaries is 9550.79 MUs (these figures does not include deemed generation at Ganguwal & Kotla Power houses) as indicated in ***Fig.5***. The difference in actual energy sent out and energy booked to the partner state/ beneficiaries have been accounted for under Deviation Settlement Mechanism (DSM) since generating stations of BBMB have come under the ambit of ABT w.e.f. June 2016. Rs. 29,21,87,760/- is the net receivable under Deviation Settlement Mechanism (DSM) for the year 2021-22. The auxiliary consumption in BBMB Powerhouses has been 26.9639 MU (0.2784%) and transformation losses have been 82.9207 MUs (0.8454%).

5.1.5 Availability of Transmission

The availability of Transmission System of BBMB during 2021-22 was 99.78%.

5.1.6 Diversion of Water from Nangal Hydel Channel (NHC) to Anandpur Sahib Hydel Channel (ASHC)

As decided in the 184th meeting of the Board held on 23.12.2003, whenever any machine(s) at Ganguwal and/or Kotla Power House (s) is/are on shutdown, the excess water after meeting the irrigation requirements of Punjab & Haryana through Nangal Hydel Channel (NHC) shall be diverted to Anandpur Sahib Hydel Channel (ASHC). Further, the loss of generation at Ganguwal/ Kotla Power houses due to diversion shall be fully compensated by PSPCL (erstwhile PSEB) and the balance increase in generation at Anandpur Sahib Hydel Project after accounting for the loss of generation shall be equally shared between BBMB &PSPCL (erstwhile PSEB). The total credit of generation at Ganguwal & Kotla Power Houses due to diversion of water shall be treated as deemed generation of Ganguwal/ Kotla Power Houses. Further the adjustment of deemed generation amongst the partner states is done as per the decision taken in 136th Power Sub – Committee meeting of BBMB held on 23.04.2019.

In pursuance of the above, the deemed generation at Ganguwal/Kotla Power house during 2021-22 is as under:-

(All Figs. in MU)

Period	Loss of Generation at Ganguwal & Kotla	Excess Generation at ASHP	Deemed Generation	Gain to BBMB
4/21 to 3/22	0	23.772	11.894	11.894

5.1. 7 System Load Dispatch Center (SLDC)

The System Load Dispatch Centre (SLDC) of Bhakra Beas Management Board is assigned with the responsibility of Round the Clock Monitoring, Operation and Control Of BBMB Transmission and Generation Assets. BBMB SLDC is equipped with Sate of Art Supervisory Control & Data Acquisition and Energy Management System (SCADA/EMS) and a dedicated Optical Fiber based Communication System which helps the SLDC Engineers in discharging their responsibilities efficiently, by taking informed decisions duly assisted and guided by the latest technologies.

BBMB has also established its backup SLDC by sharing the infrastructure with PSTCL, thereby providing a unique and cost effective solution to ensure continuity of services in case of any disaster. By sharing the backup of SLDC with PSTCL, BBMB saved about Rs. 5 Crores in the project cost for itself as well as for PSTCL. BBMB has also equipped its 10 important Generating Stations and Sub-Stations with the State of Art RTUs.

In addition, all BBMB Power Houses and Sub-Stations have been provided with dedicated SCADA remote consoles. These remote consoles are connected to BBMB SLDC through a dedicated communication link. With the help of these remote consoles the Sub-station/Power houses officers/staff can monitor the status of various power system devices installed in their own Sub-station as well as other Sub-stations of BBMB. In addition to this the reports pertaining to each Power House and Sub-station can be generated by their Control Room Engineers/Staff.

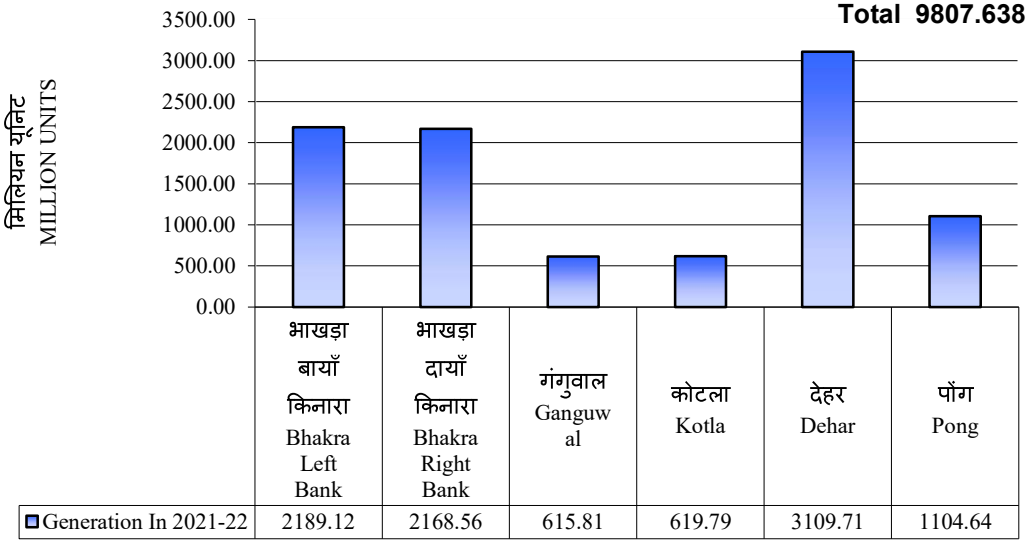
Through their concerted efforts, the Engineers at BBMB SLDC have pioneered various innovative techniques in Power System Monitoring, Operation and Control and continue to march forward towards their goal for implementation of Smart Grid in BBMB.

चित्र-1
Figure - 1

बीबीएमबी के विद्धयुत-घरों में वार्षिक सर्कल ऊर्जा उत्पादन वर्ष 2021-22

Annual Gross Energy Generation At BBMB Power Houses 2021-22

योग 9807.638 एमयू
Total 9807.638 MU



	भाखड़ा बायाँ किनारा Bhakra Left Bank	भाखड़ा दायाँ किनारा Bhakra Right Bank	गंगुवाल Ganguwal	कोटला Kotla	देहर Dehar	पोंग Pong
Generation In 2021-22	2189.12	2168.56	615.81	619.79	3109.71	1104.64

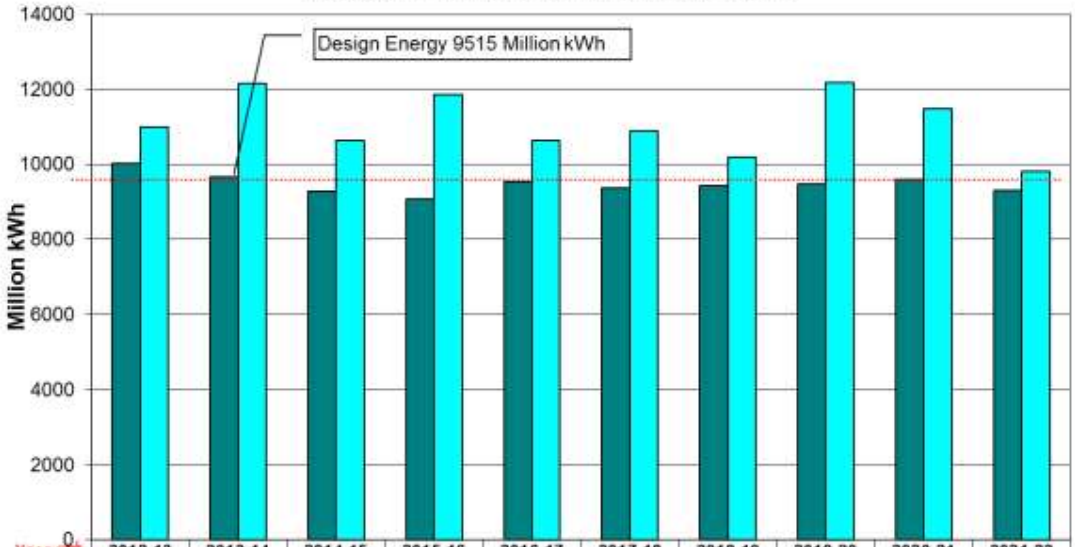
गंगुवाल एवं कोटला विद्युत घरों से कुल उत्पादन में डीम्ड उत्पादन के रूप में 11.894 मिलियन यूनिट शामिल हैं। (गंगुवाल=5.947 एमयू एवं कोटला = 5.947 एमयू)

The total generation figures at Ganguwal & Kotla Power House includes 11.894 MUs as Deemed Generation (Gwl = 5.947 MU & Ktl = 5.947 MU)

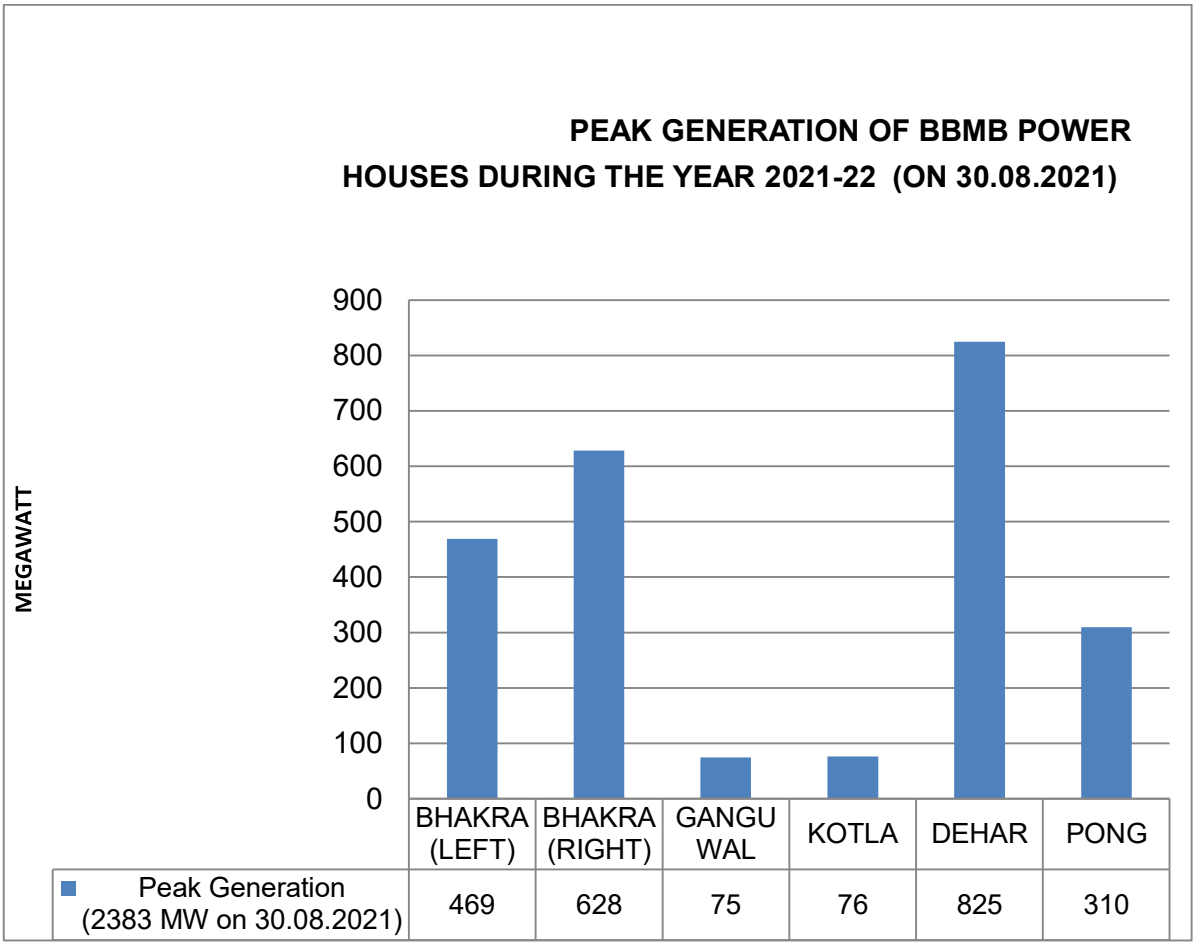
Figure - 2

वर्ष 2012-13 से 2021-2022 के दौरान वार्षिक उर्जा के संबंध में

TARGET/ACHIEVEMENTS IN RESPECT OF ENERGY GENERATION DURING THE YEAR 2012-2013 TO 2021-2022



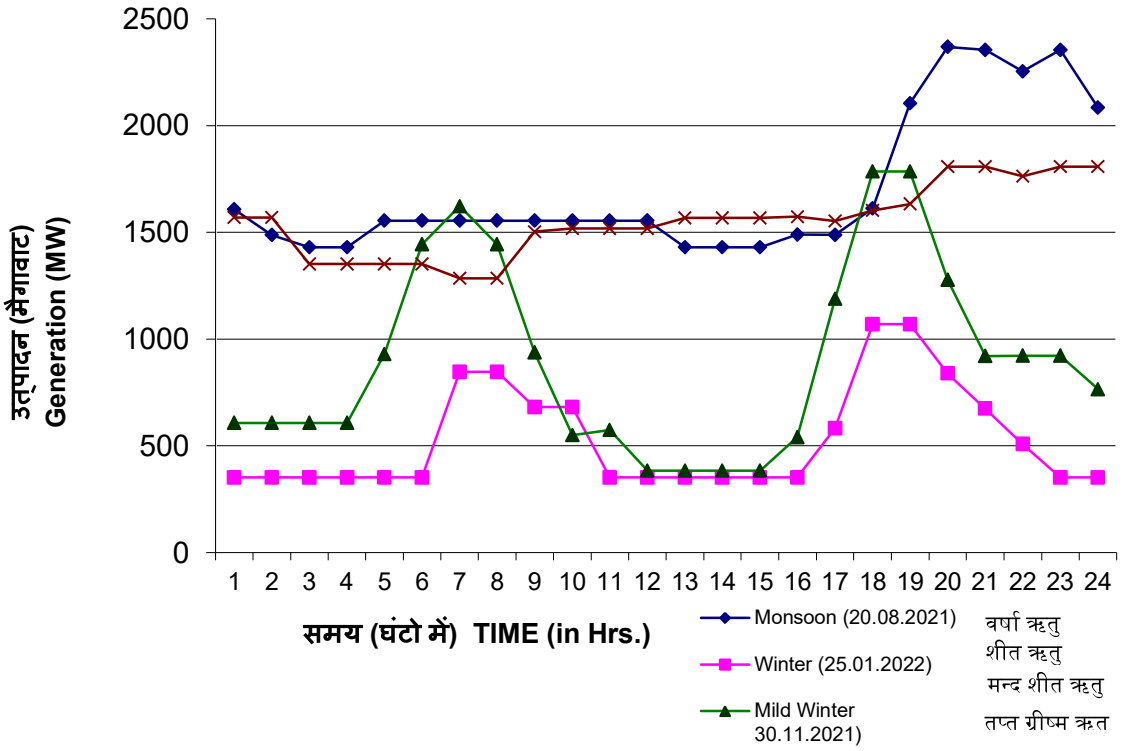
Year/वर्ष	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
Target	10023	9665	9275	9076	9536	9360	9425	9470	9600	9299
Actual	11000	12154	10633	11853	10634	10881	10190.26	12175.651	11482.05	9807.638


PEAK GENERATION OF BBMB POWER HOUSES DURING THE YEAR 2021-22 (ON 30.08.2021)
MEGAWATT
900
800
700
600
500
400
300
200
100
0
BHAKRA (LEFT)
BHAKRA (RIGHT)
GANGU WAL
KOTLA
DEHAR
PONG
Peak Generation (2383 MW on 30.08.2021)
469
628
75
76
825
310

चित्र-3-ए

वर्ष 2021-22 के दौरान बीबीएमबी के प्रतीकात्मक दैनिक उत्पादन वक्र Fig. 3-A

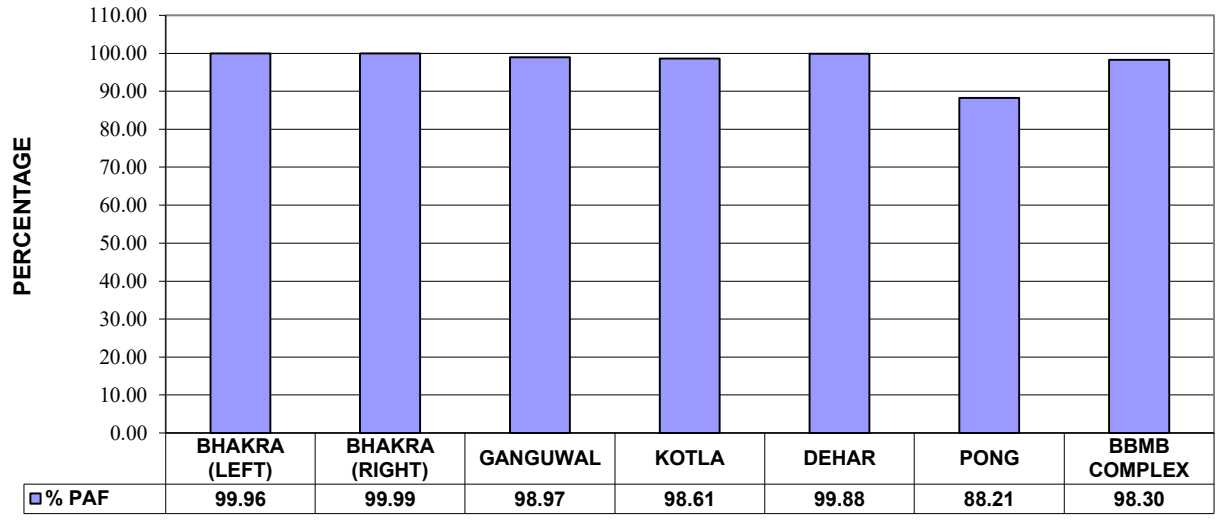
TYPICAL DAILY GENERATION CURVES OF BBMB DURING 2021-22



चित्र-4
Fig- 4

वर्ष 2021-22 के दौरान बीबीएमबी के विद्धयुत-घरों का संयंत्र उपलब्धता गुणक (आर.एम. एण्डयू अवधि सहित)

PLANT AVAILABILITY FACTOR OF BBMB POWER HOUSES DURING THE YEAR 2021-22

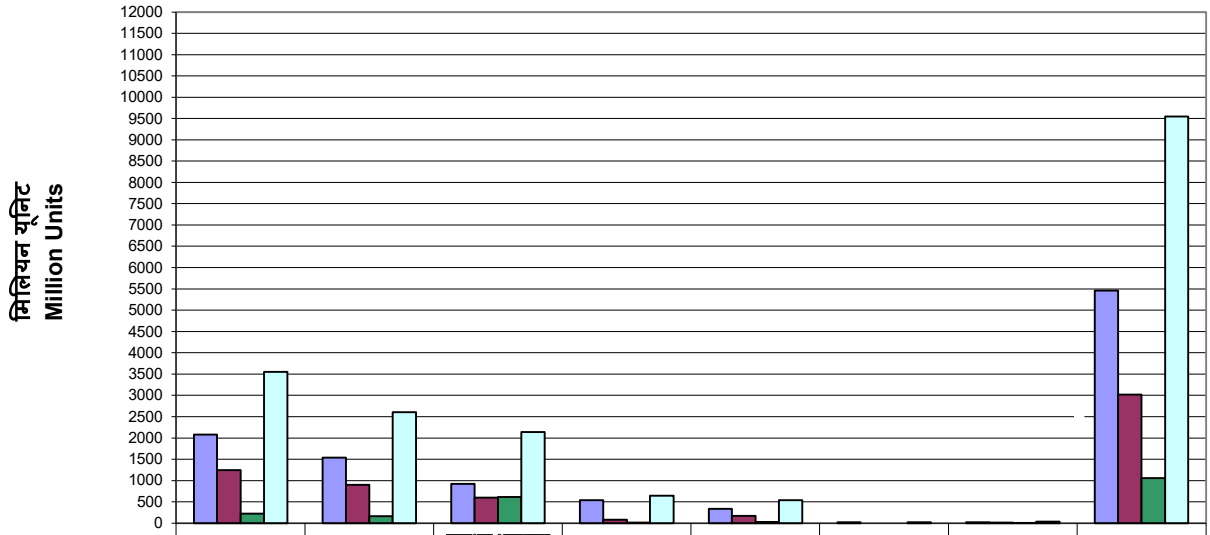


	BHAKRA (LEFT)	BHAKRA (RIGHT)	GANGUWAL	KOTLA	DEHAR	PONG	BBMB COMPLEX
% PAF	99.96	99.99	98.97	98.61	99.88	88.21	98.30

$$\text{Plant Availability Factor (PAF) \%age} = \frac{\text{Total hrs in a year - (Forced outage hrs+Planned outage hrs excluding RM\&U Period + RM\&U Period)}}{\text{Total hrs in a year - RM\&U Period in hrs}} \times 100$$

चित्र-5
Fig - 5

वर्ष 2021-22 के दौरान बीबीएमबी के विद्धयुत-घरों से भागीदार/लाभनुभोगियों को परेषित ऊर्जा
ENERGY SCHEDULED TO PARTNER STATES/BENEFICIARIES FROM BBMB POWER HOUSES DURING THE YEAR 2021-22



	पंजाब PUNJAB	हरियाणा HARYANA	राजस्थान आरएफएफ सहित Rajasthan incl. RFF	यू.टी. चंडीगढ़ UT CHD	एच.पी. ओल्ड सहित एच.पी. HP incl. Old HP	एन.एफ.एल NFL	सिंचाई विभाग Irri. wing	कुल Total
भ्खड़ा कॉम्प्लेक्स Bhakra Complex	2075.39	1542.19	920.44	545.09	339.4	24.16	20.05	5466.72
देहर विद्धयुत घर Dehar Power House	1248.67	904.26	602.64	84.37	173.26	0	11.37	3024.57
पोंग विद्धयुत घर Pong Power House	225.96	163.64	614.83	15.24	31.32	0	8.51	1059.50
योग TOTAL	3550.02	2610.09	2137.91	644.70	543.98	24.16	39.93	9550.79

5.2 Irrigation Wing

5.2.1 Position of Reservoirs

Control and Operation of reservoirs and regulation of water to various partner States/beneficiaries is under Irrigation Wing of the BBMB.

Bhakra Reservoir

a) Filling of Bhakra Reservoir started on 31st May-2021 when the Reservoir Level was El. 1504.24 ft (458.49 m).

b) Total Inflows including diversion through BSL System from 01-04-2021 to 31-03-2022 were 12.544 MAF / 15.345 BCM.

c) Diversion through BSL system from 01-04-2021 to 31-03-2022 was 3.383 MAF / 4.139 BCM.

d) Maximum level of El. 1650.19 ft (502.98m) was attained on 07th October-2021.

Pong Reservoir

a) Maximum reservoir level of EL. 1354.59 ft. was attained on 03.10.2021.

b) Minimum reservoir level of EL. 1275.55 ft. was attained on 09.07.2021.

c) Peak Inflow during the period 2,90,963 Cs on 12.07.2021

d) Maximum rise in a day during the period was 11.62 ft. on dt. 13.07.2021.

e) Maximum rate of depletion in 24 Hrs. during the period was -0.01 ft. on dt. 12.09.2021.

f) Spillway Operation during the period was Nil.

g) Total inflow was 7411 MCM (6008390 Ac. ft.)

h) Total outflow was 6508 MCM (5275742 Ac. ft.).

5.2.2 Regulation of Water Supplies and Water Account

For preparation of water account, the year is divided into two periods i.e. the filling period from 21st May to 20th Sept. and the depletion period from 21st Sept. to 20th May of next year. The water accounts are prepared separately for the filling period and depletion period. The excess/shortages of one period are not carried over to the next period. The distribution/shares and deliveries to the partner States alongwith excess/ shortage received by such State out of Satluj as well as Ravi-Beas waters for the period 21.5.2021 to 20.05.2022 and the water releases for Delhi Jal Board have been depicted in the **Fig 6 to 13**. The figures indicated in these charts have been taken from the water accounts circulated to the partner States from time to time.

The releases from Bhakra and Pong reservoirs are decided by the Technical Committee (comprising Whole Time Members of BBMB, Technical Members/Directors of State Electricity Boards/State Transmission Utilities and Chief Engineers of Irrigation Departments of the partner States and Members from CWC under the chairmanship of

Chairman, BBMB) in the monthly meetings by taking into account the requirements of Irrigation and Power, reservoir levels and the inflows.

The share distribution for the various partner States and the water required to be delivered at various Inter-State Contact Points both out of Satluj and Ravi-Beas waters out of approved releases from Reservoirs are intimated through Canal Wire/Wireless Messages to the concerned officers of the partner States on 10-daily basis.

The water supplied to the partner States during the filling/depletion period is given in Figures detailed as under:-

1. Water supplied to Punjab out of Satluj and Ravi -Beas waters. - **Fig. 6 & 7**
2. Water supplied to Haryana out of Satluj and Ravi - Beas waters. - **Fig. 8 & 9**
3. Water supplied to Rajasthan out of Satluj and Ravi - Beas waters. - **Fig. 10 to 12**
4. Supply of Water to Delhi Jal Board - **Fig. 13**

Total water supplied to the States from 21.05.2021 to 20.05.2022 has been as under:-

(All figures in million acre ft)

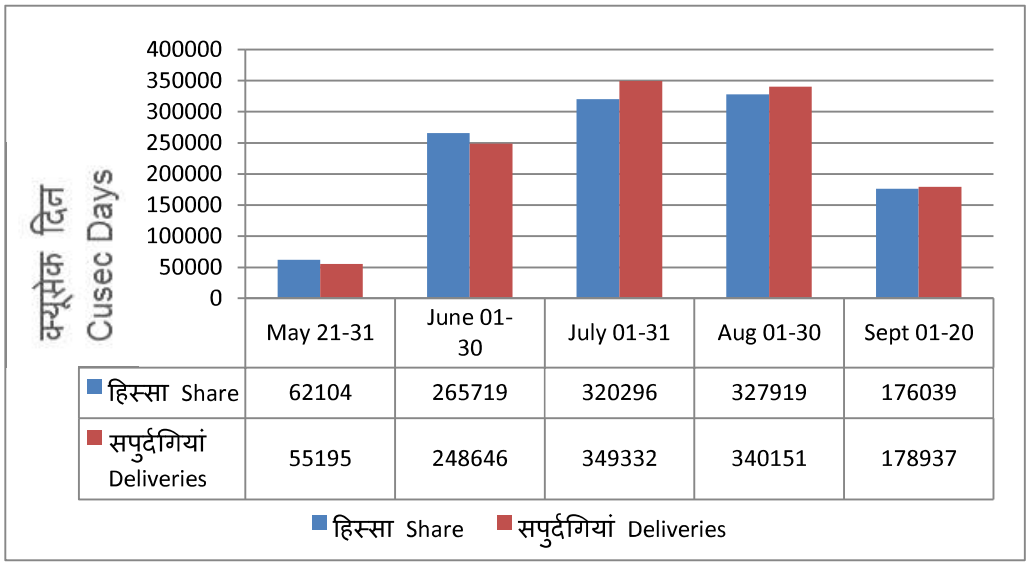
State	**Satluj**	**Ravi-Beas**	**Total**
Punjab	4.583	5.849	10.432
Haryana	4.007	1.437	5.444
Rajasthan	0.989	5.862	6.851
Delhi Jal Board	-	0.294	0.294
Total	**9.579**	**13.442**	**23.021**

चित्र 6 Fig. 6

दिनांक 21.05.2021 से 20.05.2022 तक की अवधि के लिए सतलुज जल से पंजाब को सप्लाई किए गए जल की स्थिति को दर्शाने वाली विवरणिका

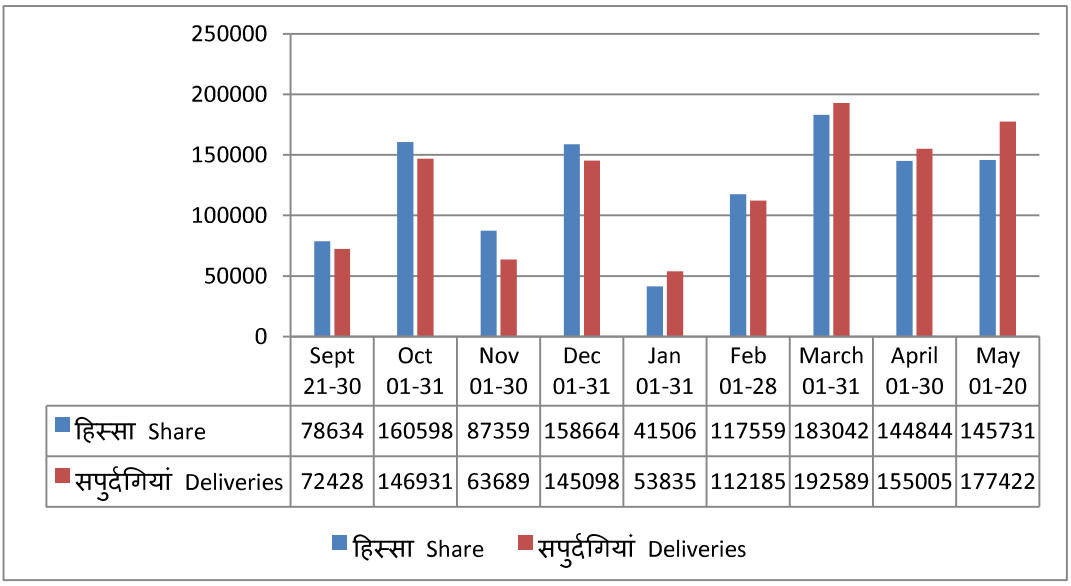
Statement showing position of water supplies to Punjab out of Satluj water for the period from 21.05.2021 to 20.05.2022

भराई अवधि (21.05.2021 से 20.09.2021)
Filling Period (21.05.2021 to 20.09.2021)



	May 21-31	June 01-30	July 01-31	Aug 01-30	Sept 01-20
हिस्सा Share	62104	265719	320296	327919	176039
सपुर्दगियां Deliveries	55195	248646	349332	340151	178937

रिक्तीकरण अवधि (21.09.2021 से 20.05.2022)
Depletion period (21.09.2021 to 20.05.2022)



	Sept 21-30	Oct 01-31	Nov 01-30	Dec 01-31	Jan 01-31	Feb 01-28	March 01-31	April 01-30	May 01-20
हिस्सा Share	78634	160598	87359	158664	41506	117559	183042	144844	145731
सपुर्दगियां Deliveries	72428	146931	63689	145098	53835	112185	192589	155005	177422

Note (1) All figures are in cusec days.
(2) The deliveries have been made as per requirements decided in Technical Committee Meeting.

नोट:-

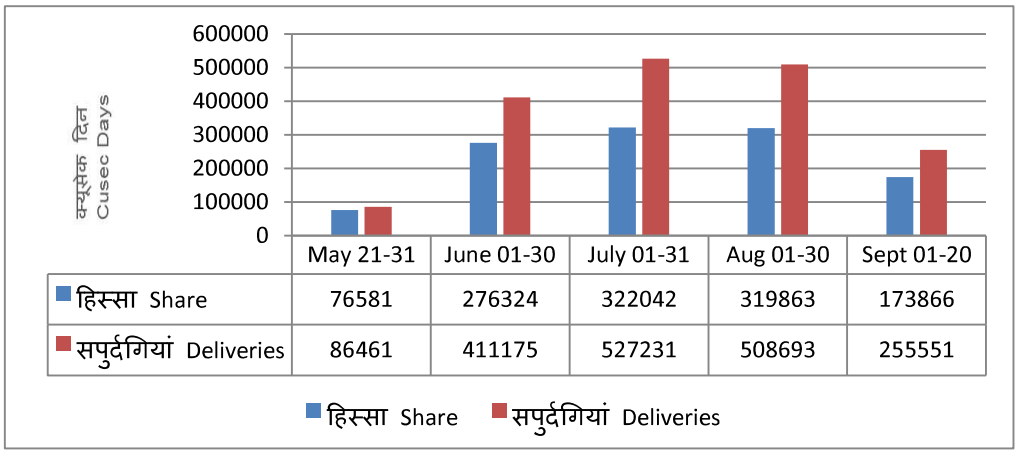
1. सभी आंकडे क्यूसिक दिनों में।
2. सभी सुपुर्दगियां आवश्यकता अनुसार तकनीकी समिति की बैठक में लिए गए निर्णय अनुसार।

चित्र 7 Fig. 7

दिनांक 21.5.2021 से 20.05.2022 तक की अवधि के लिए रावी ब्यास से पंजाब को सप्लाई किए गए जल की स्थिति को दर्शाने वाली विवरणिका

Statement showing position of water supplies to Punjab out of Ravi-Beas waters for the period from 21.5.2021 to 20.05.2022

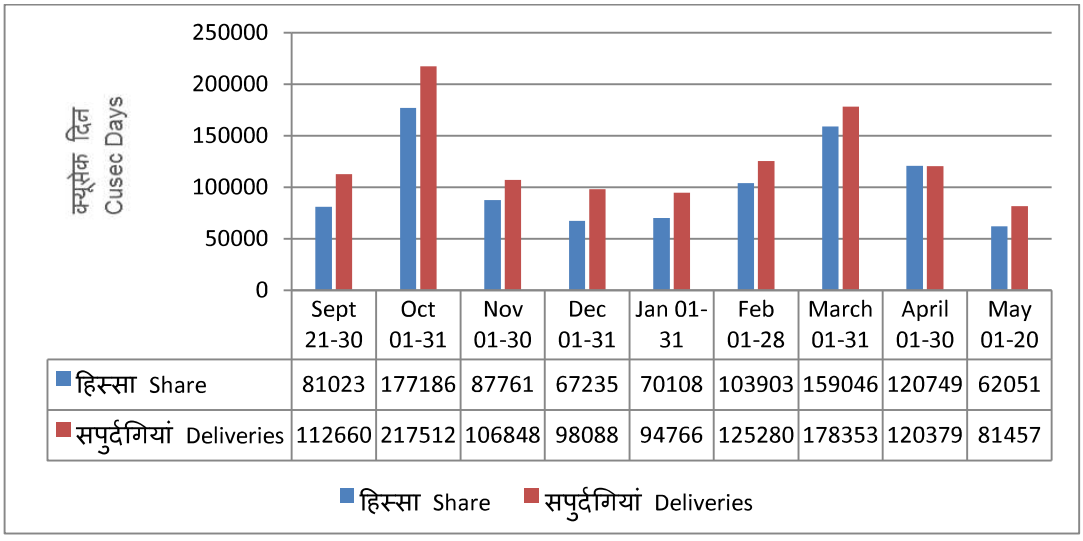
भराई अवधि (21.05.2020 से 20.09.2020)
Filling Period (21.05.2020 to 20.09.2020)



	May 21-31	June 01-30	July 01-31	Aug 01-30	Sept 01-20
हिस्सा Share	76581	276324	322042	319863	173866
सपुर्दगियां Deliveries	86461	411175	527231	508693	255551

हिस्सा Share सपुर्दगियां Deliveries

रिक्तीकरणअवधि(21.09.2021 से 20.05.2022)
Depletion period (21.09.2021 to 20.05.2022)



	Sept 21-30	Oct 01-31	Nov 01-30	Dec 01-31	Jan 01-31	Feb 01-28	March 01-31	April 01-30	May 01-20
हिस्सा Share	81023	177186	87761	67235	70108	103903	159046	120749	62051
सपुर्दगियां Deliveries	112660	217512	106848	98088	94766	125280	178353	120379	81457

हिस्सा Share सपुर्दगियां Deliveries

Note:- (1) All figures are in cusec days.
(2)The deliveries have been made as per requirements decided in Technical Committee Meeting
(3) The deliveries to Punjab also include some supplies made d/s Ropar which have already been booked to Punjab at Ropar.

नोट:-

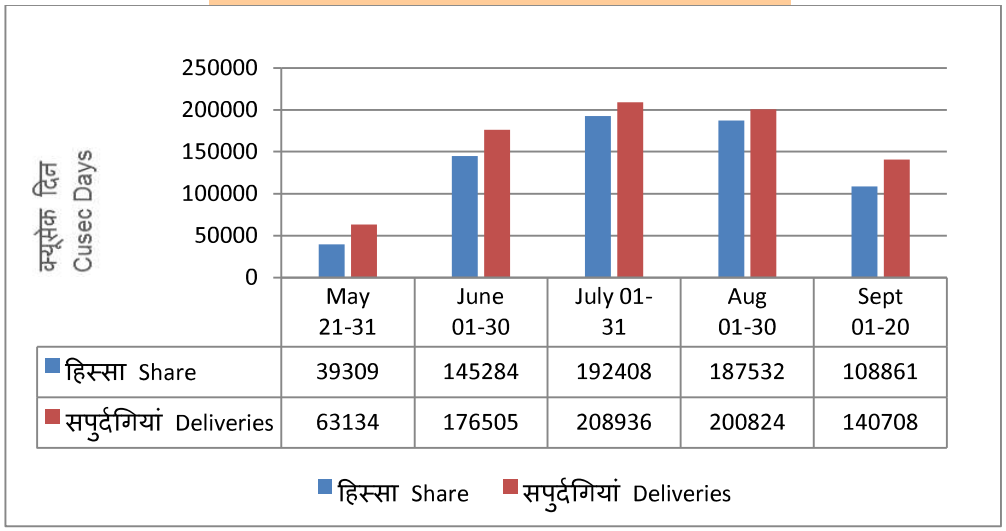
1. सभीआंकडेक्यूसिकदिनोंमें।
2. पंजाब को की गई सपुर्दगियों में रोपड़ के डाउनस्ट्रीम की गई कुछ आपूर्तियां भी शामिल हैं जो पंजाब को रोपड़ पर पहले ही बुक की जा चुकी है।

चित्र 8 Fig. 8

दिनांक 21.5.2021 से 20.05.2022 तक की अवधि के लिए सतलुज जल से हरियाणा को सप्लाई किए गए जल की स्थिति को दर्शाने वाली विवरणिका

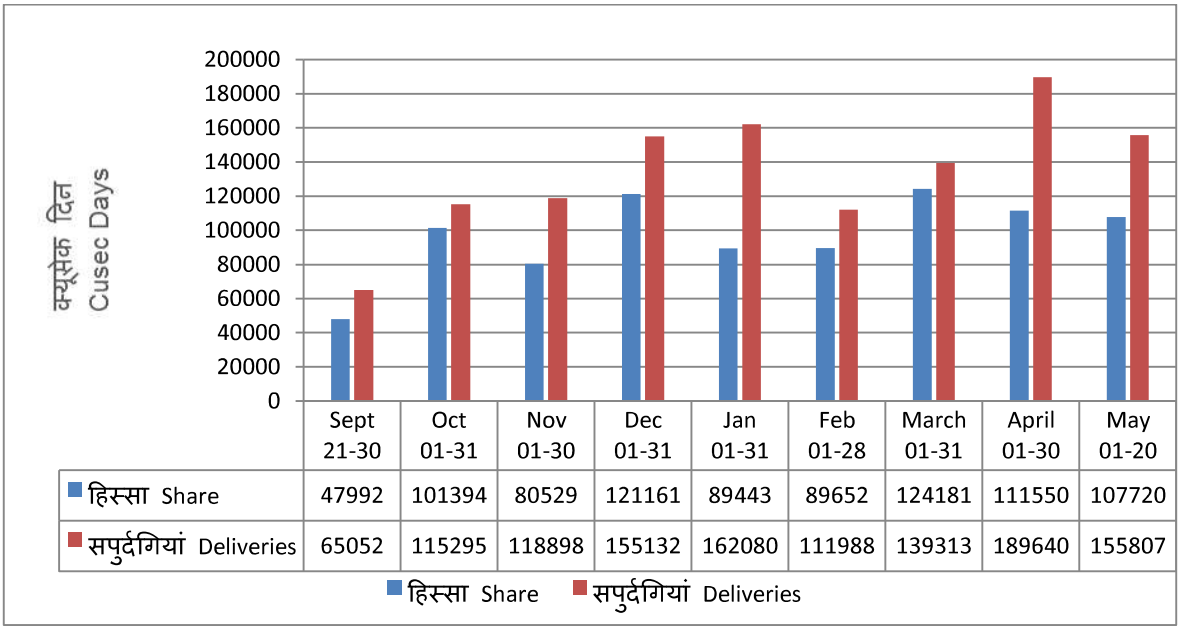
Statement showing position of water supplies to Haryana out of Satluj waters for the period from 21.5.2021 to 20.05.2022

भराई अवधि (21.05.2021 से 20.09.2021)
Filling Period (21.05.2021 to 20.09.2021)



	May 21-31	June 01-30	July 01-31	Aug 01-30	Sept 01-20
हिस्सा Share	39309	145284	192408	187532	108861
सपुर्दगियां Deliveries	63134	176505	208936	200824	140708

रिक्तीकरण अवधि(21.09.2021 से 20.05.2022)
Depletion period (21.09.2021 to 20.05.2022)



	Sept 21-30	Oct 01-31	Nov 01-30	Dec 01-31	Jan 01-31	Feb 01-28	March 01-31	April 01-30	May 01-20
हिस्सा Share	47992	101394	80529	121161	89443	89652	124181	111550	107720
सपुर्दगियां Deliveries	65052	115295	118898	155132	162080	111988	139313	189640	155807

Note(1) All figures are in cusec days.

(2) The deliveries have been made as per requirements decided in Technical Committee Meeting.

नोट:-

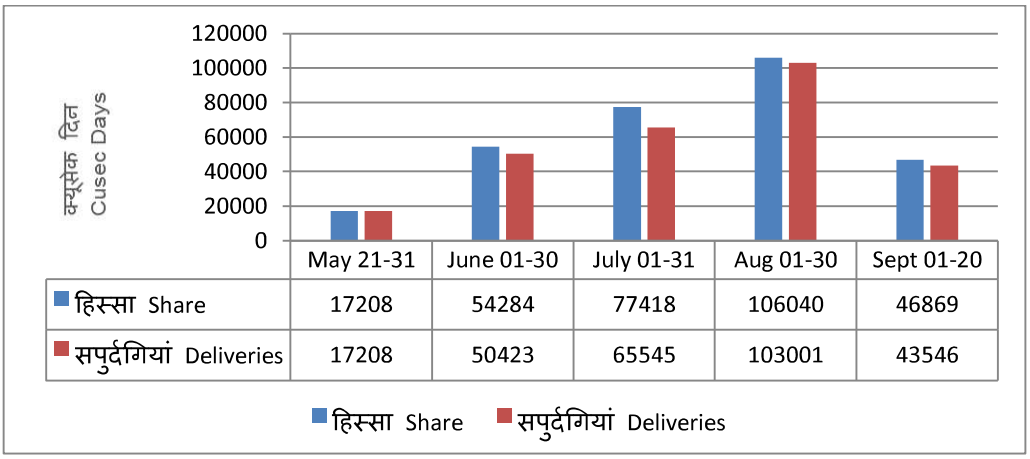
1. सभी आंकडे क्यूसिक दिनों में।
2. सभी सुपुर्दगियां आवश्यकता अनुसार तकनीकी समिति की बैठक में लिए गए निर्णय अनुसार।

चित्र 9 Fig. 9

दिनांक 21.5.2021 से 20.05.2022 तक की अवधि के लिए रावी-ब्यास जल से हरियाणा को सप्लाई किए गए जल की स्थिति को दर्शाने वाली विवरणिका

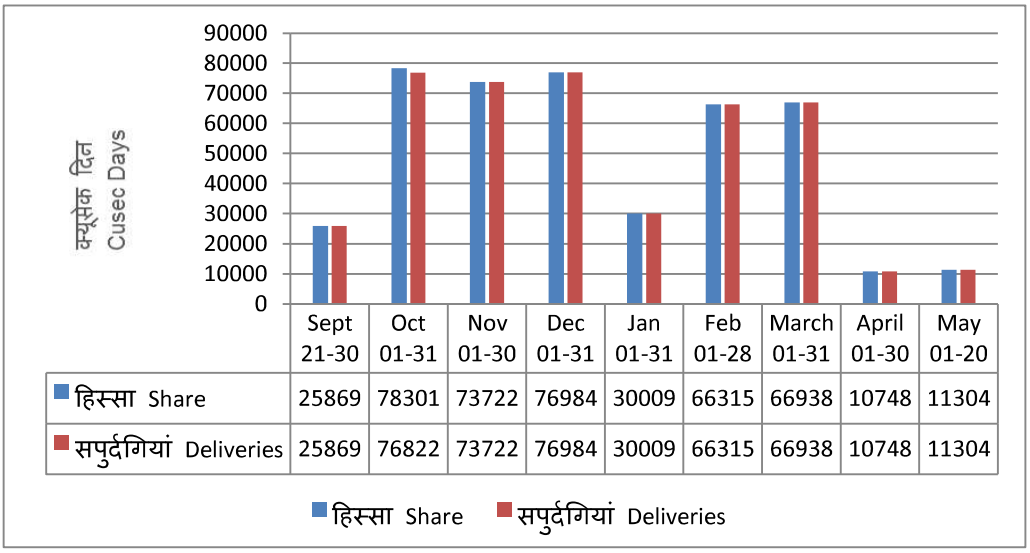
Statement showing position of water supplies to Haryana out of Ravi-Beas water for the period from 21.5.2021 to 20.05.2022.

भराई अवधि (21.05.2021 से 20.09.2021)
Filling Period (21.05.2021 to 20.09.2021)



	May 21-31	June 01-30	July 01-31	Aug 01-30	Sept 01-20
हिस्सा Share	17208	54284	77418	106040	46869
सपुर्दगियां Deliveries	17208	50423	65545	103001	43546

रिक्तीकरण अवधि(21.09.2021 से 20.05.2022)
Depletion period (21.09.2021 to 20.05.2022)



	Sept 21-30	Oct 01-31	Nov 01-30	Dec 01-31	Jan 01-31	Feb 01-28	March 01-31	April 01-30	May 01-20
हिस्सा Share	25869	78301	73722	76984	30009	66315	66938	10748	11304
सपुर्दगियां Deliveries	25869	76822	73722	76984	30009	66315	66938	10748	11304

Note(1) All figures are in cusec days.

(2) The deliveries have been made as per requirements decided in Technical Committee Meeting.

नोट:-

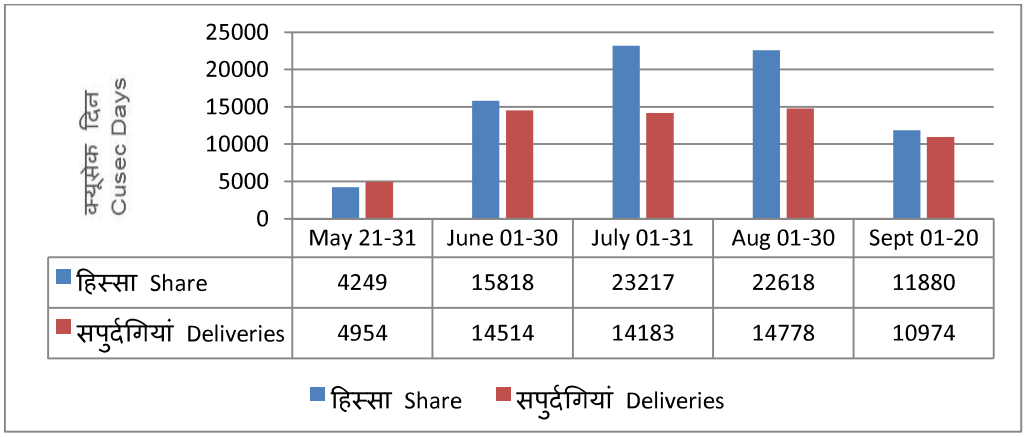
1. सभी आंकडे क्यूसिक दिनों में।
2. सभी सुपुर्दगियां आवश्यकता अनुसार तकनीकी समिति की बैठक में लिए गए निर्णय अनुसार।

चित्र 10 Fig. 10

दिनांक 21.5.2021 से 20.05.2022 तक की अवधि के लिए सतलुज जल की हरियाणा के रास्ते राजस्थान को हुई सप्लाई की स्थिति को दर्शाने वाली विवरणिका

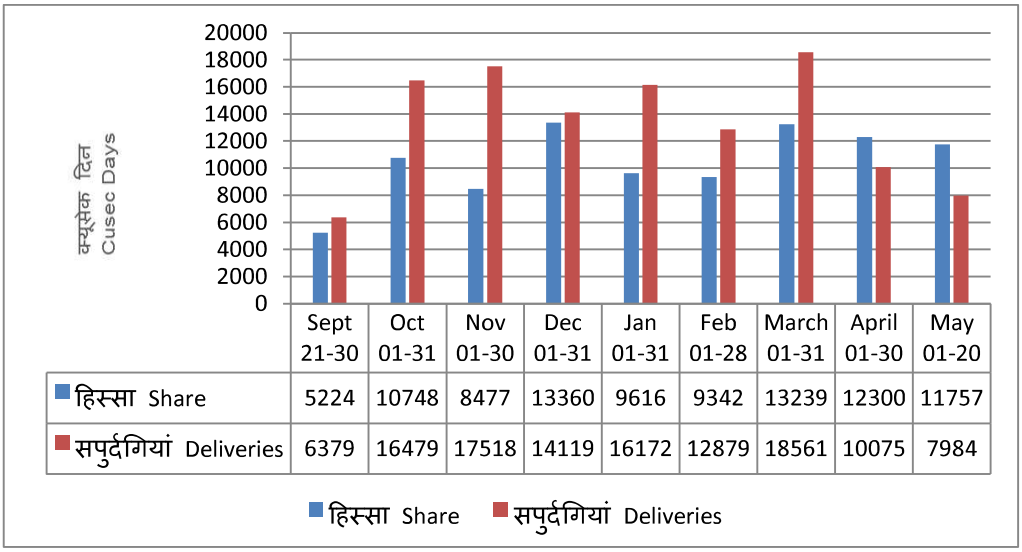
Statement showing position of water supplies to Rajasthan via Haryana out of Satluj water for the period from 21.5.2021to 20.05.2022

भराई अवधि (21.05.2021 से 20.09.2021)
Filling Period (21.05.2021 to 20.09.2021)



	May 21-31	June 01-30	July 01-31	Aug 01-30	Sept 01-20
हिस्सा Share	4249	15818	23217	22618	11880
सपुर्दगियां Deliveries	4954	14514	14183	14778	10974

रिक्तीकरण अवधि (21.09.2021 से 20.05.2022)
Depletion period (21.09.2021 to 20.05.2022)



	Sept 21-30	Oct 01-31	Nov 01-30	Dec 01-31	Jan 01-31	Feb 01-28	March 01-31	April 01-30	May 01-20
हिस्सा Share	5224	10748	8477	13360	9616	9342	13239	12300	11757
सपुर्दगियां Deliveries	6379	16479	17518	14119	16172	12879	18561	10075	7984

Note(1) All figures are in cusec days.

(2) The deliveries have been made as per requirements decided in Technical Committee Meeting.

नोट:-

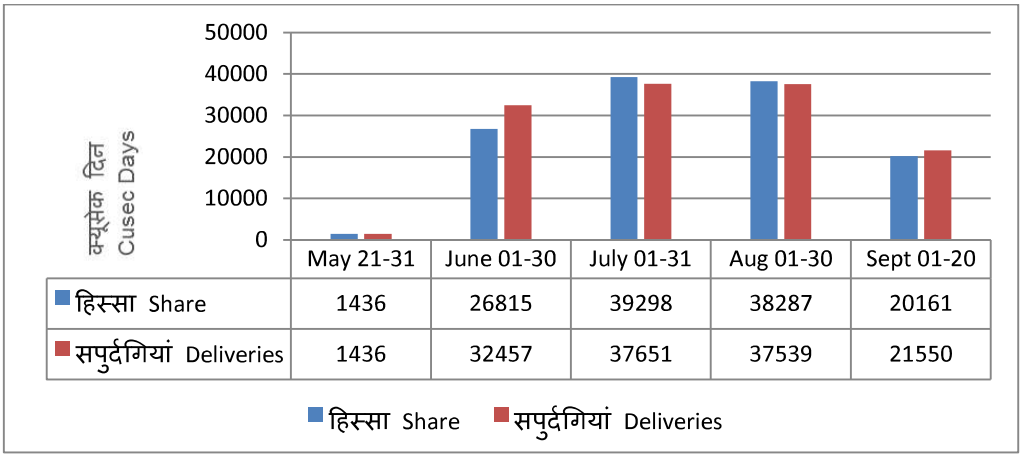
1. सभी आंकडे क्यूसिक दिनों में।
2. सभी सुपुर्दगियां आवश्यकता अनुसार तकनीकी समिति की बैठक में लिए गए निर्णय अनुसार।

चित्र 11 Fig. 11

दिनांक 21.5.2021 से 20.05.2022 तक की अवधि के लिए सतलुज जल की पंजाब के रास्ते राजस्थान को हुई सप्लाई की स्थिति को दर्शाने वाली विवरणिका

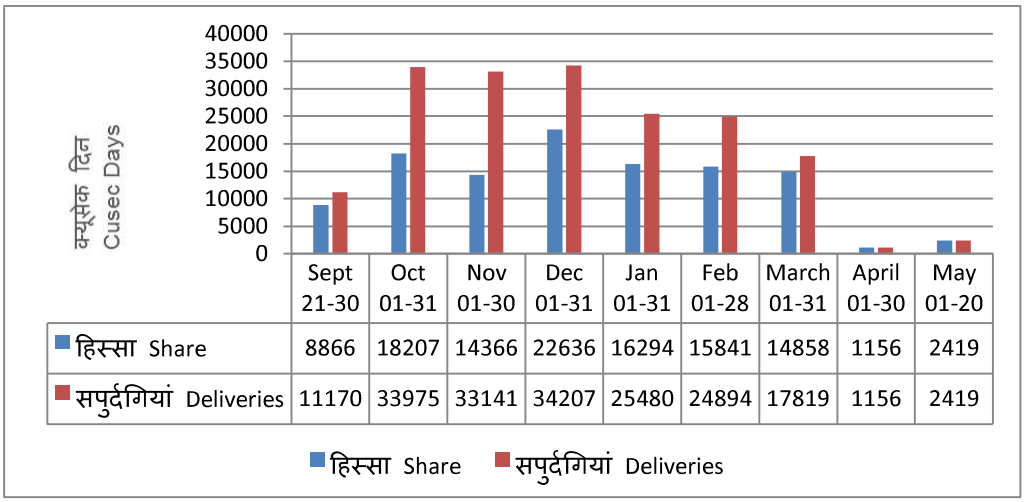
Statement showing position of water supplies to Rajasthan via Punjab out of Satluj water for the period from 21.5.2021to 20.05.2022

भराई अवधि (21.05.2021 से 20.09.2021)
Filling Period (21.05.2021 to 20.09.2021)



	May 21-31	June 01-30	July 01-31	Aug 01-30	Sept 01-20
हिस्सा Share	1436	26815	39298	38287	20161
सपुर्दगियां Deliveries	1436	32457	37651	37539	21550

रिक्तीकरण अवधि(21.09.2021 से 20.05.2022)
Depletion period (21.09.2021 to 20.05.2022)



	Sept 21-30	Oct 01-31	Nov 01-30	Dec 01-31	Jan 01-31	Feb 01-28	March 01-31	April 01-30	May 01-20
हिस्सा Share	8866	18207	14366	22636	16294	15841	14858	1156	2419
सपुर्दगियां Deliveries	11170	33975	33141	34207	25480	24894	17819	1156	2419

Note(1) All figures are in cusec days.

(2) The deliveries have been made as per requirements decided in Technical Committee Meeting.

नोट:-

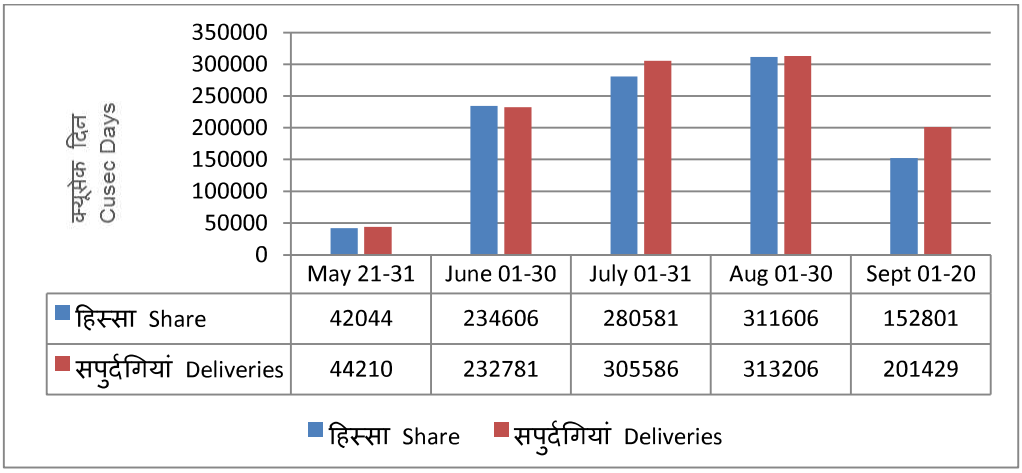
1. सभी आंकडे क्यूसिक दिनों में।
2. सभी सुपुर्दगियां आवश्यकता अनुसार तकनीकी समिति की बैठक में लिए गए निर्णय अनुसार।

चित्र 12 Fig. 12

दिनांक 21.5.2021 से 20.05.2022 तक की अवधि के लिए रावी-ब्यास जल से राजस्थान को हुई जल आपूर्ति की स्थिति को दर्शाने वाली विवरणिका

Statement showing position of water supplies to Rajasthan out of Ravi-Beas water for the period from 21.5.2021to 20.05.2022

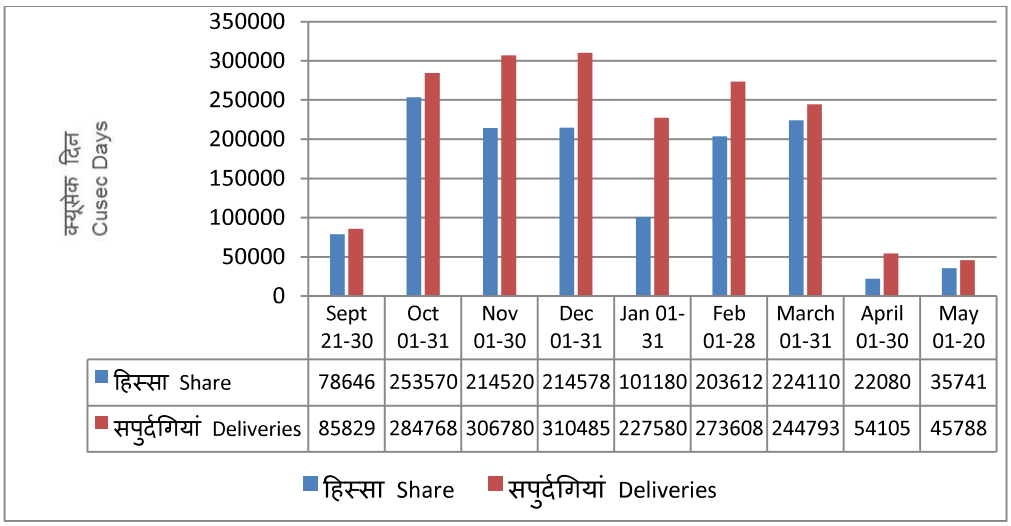
भराई अवधि(21.05.2021 से 20.09.2021)
Filling Period (21.05.2021 to 20.09.2021)



	May 21-31	June 01-30	July 01-31	Aug 01-30	Sept 01-20
हिस्सा Share	42044	234606	280581	311606	152801
सपुर्दगियां Deliveries	44210	232781	305586	313206	201429

हिस्सा Share सपुर्दगियां Deliveries

रिक्तीकरण अवधि(21.09.2021 से 20.05.2022)
Depletion period (21.09.2021 to 20.05.2022)



	Sept 21-30	Oct 01-31	Nov 01-30	Dec 01-31	Jan 01-31	Feb 01-28	March 01-31	April 01-30	May 01-20
हिस्सा Share	78646	253570	214520	214578	101180	203612	224110	22080	35741
सपुर्दगियां Deliveries	85829	284768	306780	310485	227580	273608	244793	54105	45788

हिस्सा Share सपुर्दगियां Deliveries

Note: All figures are in cusec days.

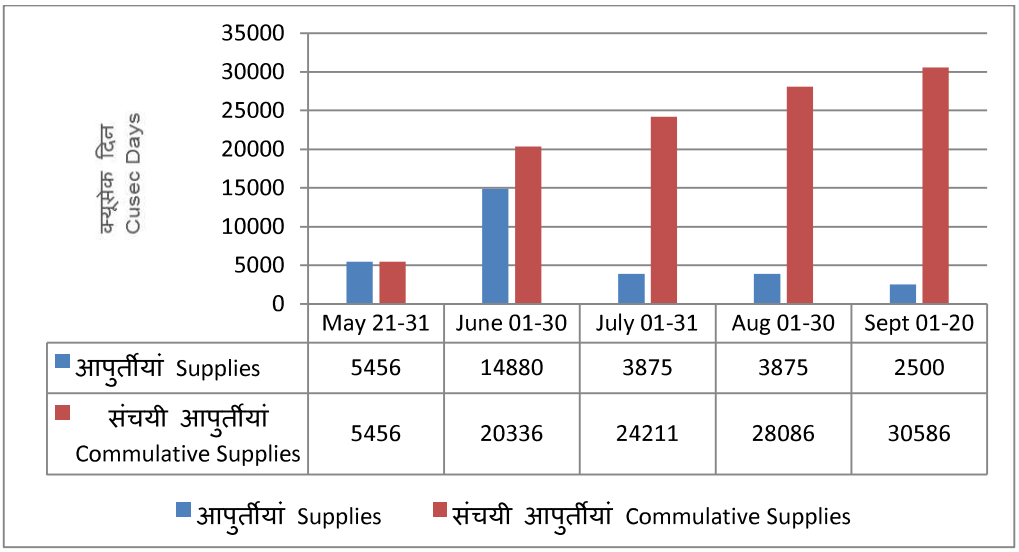
1. नोट:सभी आंकडे क्यूसिक दिनों में।
2. सभी सुपुर्दगियां आवश्यकता अनुसार तकनीकी समिति की बैठक में लिए गए निर्णय अनुसार।

चित्र 13 Fig. 13

दिनांक 21.5.2021 से 20.05.2022 तक की अवधि के लिए दिल्ली जल बोर्ड को की गई जल आपूर्ति की स्थिति दर्शाने वाली विवरणिका

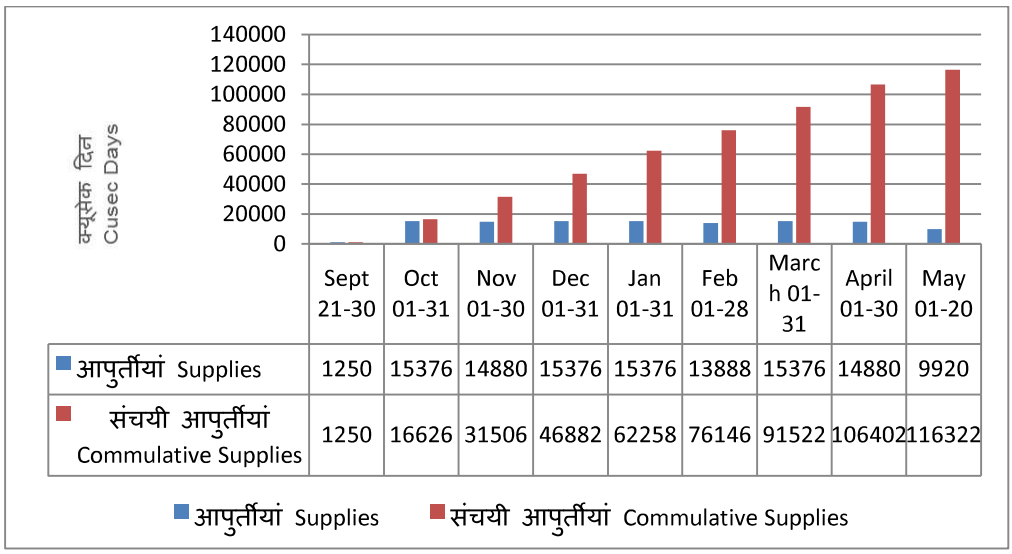
Statement showing position of water supplies made to Delhi Jal Board for the period from 21.5.2021 to 20.05.2022

भराई अवधि(21.05.2021 से 20.09.2021)
Filling Period (21.05.2021 to 20.09.2021)



	May 21-31	June 01-30	July 01-31	Aug 01-30	Sept 01-20
आपुर्तीयां Supplies	5456	14880	3875	3875	2500
संचयी आपुर्तीयां Commulative Supplies	5456	20336	24211	28086	30586

रिक्तीकरण अवधि(21.09.2021 से 20.05.2022)
Depletion period (21.09.2021 to 20.05.2022)



	Sept 21-30	Oct 01-31	Nov 01-30	Dec 01-31	Jan 01-31	Feb 01-28	March 01-31	April 01-30	May 01-20
आपुर्तीयां Supplies	1250	15376	14880	15376	15376	13888	15376	14880	9920
संचयी आपुर्तीयां Commulative Supplies	1250	16626	31506	46882	62258	76146	91522	106402	116322

नोट(1)

Note: All figures are in cusec days.

1. नोट:सभी आंकडे क्यूसिक दिनों में।
2. सभी सुपुर्दगियां आवश्यकता अनुसार तकनीकी समिति की बैठक में लिए गए निर्णय अनुसार।

अध्याय-6

Chapter-6

परिचालन एवं अनुरक्षण
Operation & Maintenance

6.1 Power Wing

In addition to routine maintenance activities, following works of significance were carried out on various Power Houses/Transmission System of BBMB during the year 2021-22:-

6.1.1 Bhakra Power Houses

A. Maintenance of Units

Unit No.	Period of Maintenance		Remarks
	From	To	
1	15.12.2021	-	The PH Unit No. 1 taken in hand for its RM&U work from 108 MW to 126 MW is in progress.
3	01.04.2021	09.12.2021	The PH Unit No.3 Commissioned on 09-12-2021 after its RM&U from 108MW to 126MW.
4	04.05.2021 01.12.2021 07.12.2021	18.05.2021 04.01.2022 08.12.2021	Annual Maintenance. Annual Maintenance. The repeat NDT of Generation shaft by M/s CPRI, Bangalore successfully got conducted
5	10.04.2021	01.05.2021	Annual Maintenance
6	06.12.2021	08.01.2022	Annual Maintenance
7	01.04.2021	20.11.2021	Capital Maintenance
8	29.01.2022	17.02.2022	Annual Maintenance
9	08.05.2021 21.02.2022	27.05.2021 19.03.2022	Annual Maintenance
10	26.03.2021 30.03.2021 14.01.2022	15.04.2021 26.04.2022 17.02.2022	Annual Maintenance Annual Maintenance Capital Maintenance of Penstock Head Gate by Irrigation Wing and its PSHG Hoist System by Power Wing

B. Major Works

- **Renovation, Modernization & Uprating (RM&U) of Bhakra Left bank Power House**

1. RM&U of old Power Houses not only gives new lease of life to the machines but is also a significant step towards meeting the aspirations of the nation by adding low cost green peaking power to the system.
2. BBMB has undertaken an ambitious R, M&U of its existing hydro generating units. Through RM&U, BBMB has already added 329 MW of incremental

capacity. Presently, R, M&U of 5 No. machines of Bhakra Left Bank Power House is under progress. All the five machines will be uprated from 108 MW to 126 MW each. Four Units (PH Unit No. 2, 3, 4 and 5) have been uprated from 108 to 126 MW. The contract stands awarded to the consortium led by M/s Sumitomo Corporation, Japan. Total cost of R, M&U works is 489.77 crore approx. (Inclusive of cost of equipment to be procured by BBMB i.e. Generator Transformers, Numerical protection schemes and exclusive of IDC, Bank/Finance/ Legal charges etc.).

3. The First Unit (Unit No.2) was commissioned on 18th July, 2013 after successful R, M&U. the Second Unit (Unit No.5) which was commissioned on 2nd October, 2013 after successful R, M&U. The third Unit (Unit No.4) was was commissioned on 05.08.2015 after successful R, M&U.
4. Regarding localized cavitation observed on the runner blades of Power House Unit No. 2, the modification of runner blade profile through solid piece welding was carried out at the site on 10th June, 2016 as per meeting held by the Management with the Consortium on 13th January, 2016 and 02nd March, 2016.The modification carried out on the runner of Unit No.2 remained successful and also approved by Board of BBMB on dated 19.11.2018.
5. Similarly, the work of modification of Runner blades profile through solid piece welding on Unit No. 4 has been commenced by M/s Hitachi by taking the Unit on shutdown on 4th April, 2019 and completed the work on 18th May, 2019. Unit No. 5 was planned to be taken on shut down for modification of Runner Blade Profile in the month of March-April, 2020,but due to COVID-19 situation, Japanese Nationals were not allowed to visit India as per GOI guidelines. The Japanese specialised team has recently visited India in the end of March, 2022 and undertaken the work of modification of runner profile of Unit No.5 and is under progress. The runners for Unit No. 3, 1& spare runner have been modified at the works of M/s Hitachi Japan.
6. Based on the report of CPRI, Bangalore, of Generator shaft of Unit 5, spare new Generator Shaft along with the new spider, rim and other related parts have been replaced with existing components of Unit No. 5 of Bhakra Left Bank Power House. The work for the replacement of shaft, spider, rim and other related parts along with various activities had been started on 21.10.2016 and put on commercial run on dated 15.06.2018.
7. Power House Unit No. 3 has been taken on shutdown for RM&U works on 1st April, 2019 and 72% work on this Unit was completed till all India lockdown was imposed on 23rd March, 2020 due to COVID-19 pandemic. The work was resumed with less manpower by M/s Andritz Hydro on 4.6.2020 and assembly of rotor inside pit was completed on dated 14.09.2020.However, due to non-arrival of Japanese Engineers, the coupling of generator shaft with turbine shaft could not be done and commissioning of PH Unit No. 3 got delayed. The Japanese Nationals arrived at site on 26.3.21. But, due to the rapid increase of COVID-19 cases in India and worsening of situation, the Japanese Nationals were demobilized to Japan on 30.4.21. Further, the Japanese nationals took up work at site via VC and commissioning of the

Turbine part of the unit was completed. The Unit was taken on trial run (1st run) on 30.09.2021. The synchronization of the unit was planned by mid-October-2021 but due to delay in clearance from CEA Inspector as per guidelines from NRLDC, synchronization got delayed which was finally successfully completed on 8th November, 2021.The commissioning of the unit successfully completed on 26.11.2021 and the unit has been handed over to BBMB after completing 14 days full load trial run for commercial operation on 09.12.2021. The Unit is running successfully at an uprated output of 126MW. TOC of the Unit was issued by BBMB on 16.3.2022.

8. In the meantime, the build-up of stator for 5th unit (PH Unit-1) was allowed by SE/BPHC Nangal to M/s Andritz Hydro on 24.11.2020 including transfer of material from Neilla Store to site. Accordingly, the work of stator build up was completed on 13.09.2021. This Unit was finally taken on shut down and handed over to Consortium for carrying out RM&U works on 15.12.2021 but due to leakage in penstock gate, the dismantling of the unit by consortium was started after repair of gate by BBMB on 10.01.2022. Dismantling activity of turbine is under progress but pit open got delayed due to detection of cracks in spider. Repairing of Rotor spider cracks started on 3.3.2022 and completed on 10.3.2022. Rotor lifting completed on 14.3.22.After dismantling Stator segments in 3 parts, transported from site to store on 23.3.22. Pit opening successfully completed and handed over to M/s Hitachi on 24.3.22. Rotor pole dismantling completed on 28.3.22. The R, M&U works are under progress.
9. In view of above, R, M&U works of Bhakra Left Bank Power House are likely to be completed in 2022-2023.

- The Annual Maintenance of 6 No. TWS pumps installed at 1156' has been completed 13.05.2021 to 29.06.2021by taking one by one each pump separately on PTW in this period.

CIVIL Maintenance Works:

1. For surveillance of Bhakra Left Bank Power House and Bhakra Right Bank Power House CCTV cameras have been installed.
2. The day to day maintenance of Residential& Non-residential Buildings, offices and Power House Building was carried out as per complaints received in the complaint register.

6.1.2 Ganguwal and Kotla Power Houses

A. Maintenance of Units

Unit No.	Period of Maintenance		Remarks
	From	To	
Ganguwal			
1	03.04.2021 12.11.2021	12.04.2021 16.11.2021	Annual Maintenance Quarterly maintenance
2	24.03.2021 16.11.2021	03.04.2021 20.11.2021	Annual Maintenance Quarterly maintenance
3	12.04.2021 08.11.2021	23.04.2021 12.11.2021	Annual Maintenance Quarterly maintenance
Kotla			
1	04.04.2021 12.11.2021	12.04.2021 15.11.2021	Annual Maintenance Overhauling of SF-6 breaker and Quarterly maintenance
2	17.04.2021 15.11.2021	22.04.2021 20.11.2021	Annual Maintenance Quarterly maintenance
3.	24.03.2021 08.11.2021	03.04.2021 12.11.2021	Annual Maintenance Quarterly maintenance

B. Major Works

1. Replaced old 12.5/16 MVA, 132 /33 KV T/F T-1 with new 16 MVA, 132/33KV T/F T-1 and charged successfully on 20/01/2022 at Ganguwal PH.
2. Compressor of Unit no. 2 at Ganguwal Power House repaired successfully on 04/02/2022.
3. Overhauling of 132 KV SF6 Breaker of Unit No. 1 & 132 kV Kotla-Ropar Ckt no. 1 Breaker B-8 at Kotla Power House was carried out from 12/11/2021 to 15/11/2021 &07/12/2021 to 20/12/2021 respectively at Kotla PH.
4. Repaired 3 no. Draft tube Gates of Unit no. 1 at Kotla PH successfully.
5. Replaced 4 No. existing Electrostatic C&R panel with Numerical C&R Panel of Gwl-Kotla tie ckt no. 1 & 2 w.e.f. 03/01/2022 to 06/01/2022 & 11/01/2022 to 14/01/2022 respectively at both ends.
6. Preventive Maintenance of Unit no. 2 &3 at Kotla and Ganguwal Power Houses respectively carried out During less inflow in NHC w.e.f. 09/01/2022 to 08/02/2022.

6.1.3 Pong Power House

A. Maintenance of Units

Unit No.	Period of Maintenance		Remarks
	From	To	
1	04.05.2021 02.11.2021	02.06.2021 09.11.2021	Annual Maintenance along with attending stator earth fault of machine. Half Yearly Maintenance
2	12.05.2021 10.11.2021	26.05.2021 17.11.2021	Annual Maintenance Half Yearly Maintenance
3	01.04.2021 18.11.2021	08.05.2021 25.11.2021	Annual Maintenance along with replacement of protection panel of machine. Half Yearly Maintenance.
5	26.11.2021	03.12.2021	Half Yearly Maintenance.
6	06.12.2021	13.12.2021	Half Yearly Maintenance.

B. Major Works

1. The Erection, Testing and Commissioning work of ELECTROSTATIC LIQUID CLEANER machines (E.L.C.) for Unit No. 1 to 6 of Pong Power House was successfully carried out from 27.11.2021 to 07.12.2021 by Service Engineer of M/S MINIMAC System Private Limited, Pune against P.O. No. 741/ PHD/ Pong 339 Dated 11.02.2021.

2. **Rectification Work of Stator Earth Fault of Unit No. 5:**

   On dated 26.02.2022 at 16.55 hours, Unit No 5 tripped with the operation of generator earth fault relay. On investigation, it was observed that a heavy flash found on yellow phase neutral, blue phase main and red phase main parallel path bus section near stator core joint. The faulty parallel path bus section was replaced/repaired with old and used buses. All the parallel path buses, stator winding and core and rotor poles was Cleaned against excessive carbon dust. On further investigation, 05 Nos. stator coils found faulty and the same were replaced with new ones. For the purpose 3 Nos. rotor poles removed. After carrying out the H.V. Testing and other necessary repair work the Unit was successfully brought back on bar at 15.35 hours on dated 12.04.2022. The whole work was carried out departmentally.

3. **Rectification Work of Generator Braking fault of Unit No 5:**

   While starting of Unit-5 at 06.00 Hrs. on dated 26.02.2021, the operation staff reported that some smelling was observed from machine. On checking, it is found that 01 No. brake track liner segment out of total 6 Nos. segments has came out by shearing its dowels and hold on studs detached from its position on rotor hub and stuck with rotor core assembly. All brake jack assemblies found badly damaged including limit switches. Scratching/grooving in remaining five nos. brake segments have also observed. Also it is observed

that 7 Nos. brake jacks out of total 8 Nos. found stucked, all brake pads found laying in the pit after detaching from their position and excessive dust accumulation found in the rotor pit & on the stator winding/ components. In order to revive the machine, the material was purchased against High Level Purchase Committee from Yamuna Nagar and repair of brake track segment and fabrication of dowels of braking system carried out through spot purchase committee from Ludhiana. After carrying out necessary repair/replacement work, the Unit was successfully brought back on bar at 12.05 hours on dated 01.07.2021. The whole work was successfully carried out departmentally.

4. **Rectification Work of Stator Earth Fault of Unit No 1:**

   The rectification work of stator earth fault of Unit No 1 of Pong Power House Talwara was successfully carried out w.e.f. 06.01.2022 to 27.01.2022. During the fault, 05 Nos. stator coils and 1 No. rotor field coil were replaced with new ones.

5. Replaced existing 07 Nos. 245 KV Isolator without earth switch with new one (GR Power Make).
6. Replaced 02 Nos. 220V DC, 600AH, DC Lead Acid Battery set with new one (AAJCO make) Lead Acid Battery set on 02.11.2021.
7. Replaced C&R panel in the control room of Unit No. I & III on 02.06.2021 & 13.05.2021 respectively along with control desk of all units & synchronizing relay with new one on 20.01.2022.
8. Replaced 4 MVA, 66/11KV, (Power Wing) Transformer with new (Technical Associates Limited make) transformer at Switchyard on 16.02.2022.
9. General/routine maintenance carried out of all electrical equipments during half yearly/annual shut down.

6.1.4 Dehar Power House

A. Maintenance of Units

Unit No.	Period of Maintenance		Remarks
	From	To	
1	03.05.2021	20.05.2021	Annual Maintenance
3	14.12.2020	11.07.2021	Capital Maintenance
	05.03.2022	23.03.2022	Annual Maintenance
4	30.04.2021	08.11.2021	Capital Maintenance
6	08.11.2021	26.11.2021	Annual Maintenance.

B. Major Works

1. R & M work of existing Generator alongwith Stator Frame with new one of latest design of Unit No. 3 has been completed on dated 15.07.2021.
2. Six nos. 245KV Current Transformer of Dehar Unit No.1 at Dehar Switchyard Slapper has been replaced with new one.

3. Two nos. Bus-I Y Phase and B Phase of 400 KV Current Transformer of Dehar Unit No. 4 at Dehar Switchyard Slapper has been replaced with new one.
4. Six nos. Bus-II 400KV Current Transformer of 400KV Dehar Panchkula line at Dehar Switchyard Slapper has been replaced with new three nos.
5. Six nos. Bus-I 400KV Current Transformer of 400KV Dehar Panchkula line at Dehar Switchyard Slapper has been replaced with new three nos.
6. Three nos. 245KV Current Transformer of 220KV Dehar Ganguwal Ckt. 2 replaced with new one at Dehar Switchyard Slapper.
7. Defective 400KV Bus-I Red Phase Current Transformer of Dehar Unit No. 5 has been replaced with new one at Dehar Switchyard Slapper.
8. Twono.400KV Yellow Phase & Blue Phase Bus-I Current Transformer of Dehar Unit No. 6 has been replaced with new one at Dehar Switchyard Slapper.
9. Three Phase 220KV Current Transformer of 220KV Breaker A-4 Bus-Coupler replaced with new ones at Dehar Switchyard Slapper.
10. Three nos. Bus-II 400KV Current Transformer of Dehar Unit No.4 has been replaced with new ones at Dehar Switchyard, Slapper.
11. Six nos. 245KV Current Transformer of Dehar Unit No. 2 has been replaced with new ones at Dehar Switchyard Slapper.
12. Three nos. 245KV Current Transformer of 220KV Dehar Ganguwal Ckt.-I has been replaced with new ones at Dehar Switchyard Slapper.
13. Three nos. Bus-II, 400KV Current Transformer of Dehar Unit No. 5 has been replaced with new ones at Dehar Switchyard Slapper.
14. Semi pantograph type Bus-II isolator 414 of Unit no. 4 replaced with new pantograph type isolator at Dehar Switchyard Slapper.
15. 400KV R Phase defective Bus-I Current Transformer of Unit No. 6 has been replaced with new ones at Dehar Switchyard, Slapper.
16. One no. Semi pantograph type Bus-I isolator no. 404 of Unit no. 3 replaced with new pantograph type isolator at Dehar Switchyard Slapper.
17. Six nos. 245KV Current Transformer of 40/36/4 MVA Transformer T7 has been replaced with new one at Dehar Switchyard Slapper.
18. Replacement of 400 watt HPMY lighting System with new era LED lighting system on Generator Hall at DPH Slapper.
19. Replacement of Micro Mho., FZR Distance protection & CDD backup over current relay and earth fault protection scheme provided on 400KV Bus Bar protection with numerical protection scheme at DPH, Slapper.
20. Study and third party protection audit of 400/220/132 KV Sub Station and Generating Station along with their respective switchyard of BBMB DPH, Slapper.
21. Replacement of 4 No. L&T make air circuit breaker (ACBs) on L&T DnCA Board for Unit No. 1 to 4 at DPH, Slapper.
22. Replacement of 6 No. 180AH lead Acid batteries for 310 KA & 500 KVA Diesel Generator sets installed at DPH, Slapper.
23. Replacement of 1 No. 60 MVA 11KV/220/√3 KV Generator Transformer at blue phase for Unit No. 1 installed at DPH, Slapper.
24. Replacement of 1 no.60MVA, 11KV/220/√3KV Generator Transformer at blue phase for Unit No. 2 installed at DPH, Slapper.

6.1.5 Transmission System

General performance of BBMB sub-stations and transmission lines remained satisfactory. The details of the major works carried out are as under:-

i) Power Transformers

1. Damaged blue phase LV bushing of 100 MVA, 220/33kV transformer T-4 replaced at 220 kV S/Stn., BBMB, Delhi.
2. Existing 66/33 kV, 16 MVA Transformer T-2 replaced with 66/33 kV, 16/20 MVA, Transformer (Toshiba make) at 66 kV S/Stn., BBMB, Chandigarh.
3. 1 No. 66/33 kV, 16/20 MVA Toshiba make New Transformer Replaced & Commissioned at 220 kV S/Stn., BBMB, Dhulkote.
4. 220/132 kV 100MVA T/F (IMP MAKE) recommissioned after its repair at 220 kV S/Stn., BBMB, Jalandhar.

ii) Circuit Breakers

1. 10 Nos. 36 kV VCB's of various feeders replaced with new VCB's at 220 kV S/Stn., BBMB, Hisar.
2. 1 No. existing old 245 kV Circuit Breaker HBB make replaced with new Spring charge Circuit Breaker CGL make of 220/132 kV, 100 MVA Transformer T-2 at 220 kV S/Stn., BBMB, Charkhi Dadri.
3. 39 Nos. 11 kV VCB's of various feeders replaced with new VCB's at 220 kV S/Stn., BBMB, Jamalpur.
4. 19 Nos. VCB panels of 66/11 kV 10/12.5 MVA Transformer T-4 and 66/11 kV 12.5 MVA Transformer replaced with new 19 Nos. 11 kV VCB panels (BHEL make) at 66 kV, S/Stn., BBMB, Chandigarh.

iii) Current Transformers (CTs)

1. 24 Nos. 36 kV CT's of various feeders replaced with new CT's at 220 kV S/Stn., BBMB, Hisar.
2. 3 Nos. 245 kV CT's replaced on 220 kV Bus Coupler-1 at 220 kV S/Stn., BBMB, Ballabgarh.
3. 3 Nos. 245 kV CT's replaced on 220 kV Bus Coupler-2 at 220 kV S/Stn., BBMB, Ballabgarh.
4. 3 Nos. 72.5 kV CT's replaced on (Red, Blue & Yellow Phase) 66 kV Bus Coupler at 220 kV S/Stn., BBMB, Ballabgarh.
5. 3 Nos. 72.5 kV CT's replaced with new CT's at 220 kV S/Stn., BBMB, Delhi.
6. 3 Nos. 36 kV CT's replaced with new CT's at 220 kV S/Stn., BBMB, Delhi.
7. Blue Phase CT of X-2 breaker installed at 400 kV Bus was replaced with old and used CT (tested and commissioned due to oil leakage) at 400 kV S/Stn., Bhiwani.
8. 420 kV Y-Phase CT (BHEL make) of X-6 breaker replaced with new CT (Alstom make) at 400 kV S/Stn., BBMB, Panipat.
9. 1 no. Blue Phase CT (Nagpur Transformers Ltd. Make) of 220 kV Thermal-3 replaced with new CT (CG power and Industrial solutions Ltd. Make) at 400 kV S/Stn., BBMB, Panipat.

10. 01 No. 245 kV damaged Blue phase CT (BHEL make) of 220/66kV transformer T-2 replaced with new 245 kV CT (SCT make) at 220 kV S/Stn., BBMB, Sangrur.
11. 02 Nos. 66 kV Blue phase CTs at 220/66 kV 100 MVA transformers T-1 & T-2 replaced with new CT at 220 kV S/Stn., BBMB, Jamalpur.

iv) CVT/PTs

1. 1 No. CVT replaced with 1 No. PT on 33 kV Bus No. 2 at 220 kV S/Stn., BBMB, Hisar.
2. 6 Nos. 245 kV CVT's replaced with new PTs alongwith coupling Capacitor at 220 kV S/Stn., BBMB, Delhi.
3. Testing and commissioning of 2 no. New PTs on Red Ph and Blue Ph-of 132 kV, Ghulal Ckt.-2 was carried out at 220 kV S/Stn., BBMB, Jamalpur.
4. Testing and commissioning of new 220 kV CVTs of 220 kV Hisar-Jindal line was carried out for replacement of old 220 kV CVTs at 220 kV S/Stn., BBMB, Hisar.
5. 1 No. 220kV CVT (WSI make) of 220 kV DKT-PNP Ckt.-2 on Y-Phase replaced with 1 No. 220 kV PT (CGL make) at 220 kV S/Stn., BBMB, Dhulkot.
6. 245 kV CVT replaced with new PT against damaged and 01 No. New Coupling Capacitor Providing for carrier communication at 220 kV Jamalpur- Jalandhar Ckt. No.-1 at 220 kV S/Stn., BBMB, Jamalpur.

v) Lightning Arrestors (LAs)

1. 1 No. LA replaced on Red Phase of 33 kV Hisar-Jindal Metal feeder at 220 kV S/Stn., BBMB, Hisar.
2. 1 No. LA replaced on Red Phase of 132 kV Hisar-Rajgarh ckt. at 220 kV S/Stn., BBMB, Hisar.
3. 1 No. LA replaced on blue phase of 220 kV Rohtak Road-Narela Ckt-II at 220 kV S/Stn., BBMB Delhi.
4. 5 Nos. damaged 198 kV LAs replaced with new LAs at 220 kV S/Stn, Jalandhar, Sangrur and Jamalpur.
5. 2 Nos. damaged 120 kV LAs replaced with new LAs at 220 kV S/Stn, Jalandhar and Jamalpur.

vi) Isolators

1. 245 kV Line Isolator replaced on 220 kV Samaypur-Pali Circuit-1 at 220 kV S/Stn., BBMB, Samaypur.
2. 245 kV Line Isolator, Bus-1 Isolator, Bus-2 Isolator and MK replaced on 220 kV Samaypur-Badshapur Circuit-II at 220 kV S/Stn., BBMB, Samaypur.
3. 245 kV Line Isolator, Bus-1 Isolator, Bus-2 Isolator and MK replaced on 220 kV Samaypur-Badshapur Circuit-I at 220 kV S/Stn., BBMB, Samaypur.
4. 72.5 kV Line Isolator replaced on 66 kV Faridabad-Ballabgarh Circuit-1 at 220 kV S/Stn., BBMB, Ballabgarh.

5. 72.5 kV Bus-2 Isolator replaced on 66 kV Faridabad-Ballabgarh Circuit-2 at 220 kV S/Stn., BBMB, Ballabgarh.
6. 1 No. existing old 145 kV triple pole Isolator without earth switch (Andhra Mechanical Ltd. Make) replaced with Isolator received from HVPNL installed on 132 kV side of 220/132 kV, 100 MVA Transformer T-2 at 220 kV S/Stn., BBMB, Charkhi Dadri.
7. 6 Nos. 420 kV isolators replaced with new isolators at 400 kV S/Stn., BBMB, Panipat.
8. 10 Nos. three phase 245 kV isolators and 6 nos. 245 kV single phase isolators replaced with new isolators at 400 kV S/Stn., BBMB, Panipat.
9. 8 Nos. 245 kV isolators and 4 nos. 36 kV isolators replaced with new isolators at 220 kV S/Stn., BBMB Kurukshetra.
10. 2 Nos. 220 kV isolators replaced with new isolators at 220 kV S/Stn., BBMB, Narela.
11. 10 Nos. 245 kV Line/Bus Isolator replaced with new 245 kV Line/Bus Isolator at 220 kV S/Stn., BBMB, Jamalpur.

vii) Protection & Testing

1. Micom P-441 relay of Ballabhgarh Ckt-2 at 220kV S/Stn., BBMB, Samaypur was replaced, tested & commissioned.
2. Testing and commissioning of New LBB protection relay Micom P-442 (Schneider make) in place of Defective LBB Relay of 220/132 kV 100 MVA, T-F-3 was carried out at 220 kV S/Stn., BBMB, Jalandhar.
3. Defective CU Relay of Bus-Bar replaced with CU relay arranged from Panipat S/Stn at 220kV S/Stn., BBMB, Ballabhgarh.
4. Defective Micom P-442 on Palwal Ckt-I replaced with old and used Micom P-442 at 220 kV S/Stn., BBMB, Samaypur.
5. Micom P-442 M1 relay of Ballabhgarh-Samaypur Ckt-1 replaced with repaired REL-650 relay, tested & commissioned at 220 kV S/Stn., BBMB, Ballabhgarh.
6. Micom P-442 relay of Ballabhgarh-Samaypur Ckt-1 replaced with repaired Micom P-442 LBB Protection relay at 220 kV S/Stn., BBMB, Samaypur.

viii) Overhauling of Beakers

1. 2 Nos. 66 kV (CGL make) and 6 Nos. 220 kV (Alstom make) SF-6 breaker overhauled at 220 kV S/Stn., BBMB, Dhulkote

ix) Deposit Works

1. Work for shifting of tower no. 264-265 of 220 kV Panipat- Charkhi Dadri transmission line due to construction of 6 lanning National Highway No. 152-D has been completed (Deposit work of NHAI).
2. The shifting of Tower No. 8, 9 & 10 of 400 kV Dehar-Rajpura line due to minning area of M/S ACC has been 80% completed as deposit work of M/S ACC Barmana. The stringing/ sagging of last portion is likely to be completed soon.

x) Civil Works

1. The work for major repair of residential buildings at 220 kV S/Stn., BBMB, Delhi has been carried out.
2. Repair, renewal and replacement of the existing buildings / boundary wall etc. at various S/Stn., under Panipat circle carried out. .
3. Renovation of Front damaged boundary wall carried out at 220 kV S/Stn., BBMB, Jamalpur.
4. The work of providing floor tiles in 8 Nos. officer's Residence carried out at 220 kV S/Stn., BBMB, Jamalpur.
5. The work of replacement and renovation of old and damaged sun shades of A, B & C type quarters carried out at 220 kV S/Stn., BBMB, Jamalpur.
6. Renovation of Badminton court at 220 kV S/Stn., BBMB, Jamalpur.
7. The work for installation and commissioning of 20 KLD capacity Sewerage treatment plant (STP) carried out at 220 kV S/Stn., BBMB, Jagadhari.

xi) Miscellaneous Works

1. 2 Nos. 33kV Panels replaced on 33 kV capacitor Bank-1 & 2 under automation work at 220 kV S/Stn., BBMB, Hisar.
2. 5 Nos. 220 kV, 4 Nos. 66 kV and 1 No. 33 kV Panels of various feeders replaced under automation work of 220 kV S/Stn., BBMB, Ballabgarh.
3. 8 Nos. 220 kV Panels of various feeders replaced under automation work of 220 kV S/Stn., BBMB, Samaypur.
4. 220 kV DG Set replaced with New DG Set at 400 kV S/Stn., BBMB, Bhiwani.
5. One No. C&R Panel of 220 kV Charkhi Dadri-Bhiwani circuit-4 replaced under automation work.
6. Conventional type disc insulators replaced with new polymer disc insulators of 220 kV yard at 400 kV S/Stn., BBMB, Panipat.
7. Old 6000 LPH transformer oil filtration set replaced with new transformer oil filtration set at 400 kV S/Stn., BBMB, Panipat.
8. Replacement, testing & commissioning of 10 nos. 11 kV New C&R Panel (Excel make) carried out at 220 kV S/Stn., BBMB, Sangrur.
9. New Chloride make 48 V 200 AH 35/45A Battery Charger has been installed/ commissioned at station Bhakra (R).
10. Aajco make Battery sets of 48 V, 250 AH and 48 V, 200 AH have been commissioned at Chandigarh and Barnala S/Stn. respectively.
11. 1 No. Mehru make coupling capacitor commissioned on 220 kV Narela Ckt-2 line at Rohtak road Delhi at 220 kV S/Stn., BBMB, Delhi.
12. Old 7.5 ton AC unit installed in control room replaced with new 3 Nos. AC units (Blue star make) at 220 kV S/Stn., BBMB, Jagadhari.
13. Under Jamalpur circle, 41 Nos. CCTV cameras installed and commissioned at 220 kV S/Stn., BBMB, Jagadhari, Jalandhar, Sangrur and Jamalpur.

xii) Substation Automation System and Remote Operation

BBMB has already taken a significant step in the field of Automation for Substations in its Transmission System. After successful commissioning of Substation Automation System (SAS) at 220 kV Grid S/Stn., BBMB, Barnala letter of award has been issued for carrying out Substation Automation System at four no. Substations i.e. 220 kV BBMB S/Stn., Hisar, Charkhi Dadri, Ballabgarh and Samaypur along with their remote operation from 400 kV Grid Substation, BBMB, Bhiwani and SLDC BBMB, Chandigarh. The project is likely to be completed by September, 2022.

xiii) Roof Top Solar Plant

BBMB, pioneer in Hydroelectric Genration added another feather in its cap by commissioning of 3375.90 kWp Grid Connected Rooftop Solar Power Plants on 71 nos. of non-residential buildings at its various project sites and substaions out of which 536.97 kWp has been commissioned during financial year 2021-22. The proposals for setting up 18 MWp Ground Mounted Solar Plants at four different locations of Nangal and Talwara and 15 MWp Floating Solar Power Plant at Nangal Reservoir are at very advance stage of finalization and order likely to be placed during financial year 2022-23.

6.2 Irrigation Wing

6.2.1 Bhakra Nangal Project

A Bhakra Dam

1. Observation of data from various instruments / devices, installed inside & outside of the body of Bhakra Dam, sent to O/o Design Directorate, BBMB, Nangal Township for processing and analyzing the same.
2. The geodetic survey work of Bhakra Dam was carried out during the year by taking précising to work observation, traverse observation and allied precise double leveling with on the points fixed on both upstream and downstream side of the dam.
3. The lawn spreading maintenance of plantation remained in progress both on left sides and right sides abutment Bhakra Dam during the year under horticulture sub division.
4. Restoration Damaged Retaining Wall near 6 km Bhakra Nangal Road has been completed.
5. Construction of Brest wall in Boulder Masonry at various locations from Gwalthai to Rose Garden has been completed.
6. Providing & fixing 'W' beam crash barrier at various sites along Bhakra Road from 07 km to Shri Naina Devi Barrier has been completed.
7. Clearance at various site of Bhakra Dam has been completed.

B Nangal Dam & Nangal Hydel Channel (NHC)

Inspection of Nangal Dam, NHC and its allied works were carried out from time to time and following repair and maintenance works are carried out during the

period from April 2020 to March 2021 is as under :-

1. Providing R.C.C footpath on both sides of Nangal Dam Division bridge on existing footpath work has been completed.
2. Restoration of Drain (Drainage system) in between RD 27000 to 32726 R/Side of NHC work in progress.
3. Construction and renovation of Bridge upstream of Sirsa Aqueduct (Phase-I, Study and design etc.) work in progress.
4. Construction and Renovation of Bridge upstream Sirsa Aqueduct (Phase 1, Study and Design) 90 % work completed.
5. Filling cement bags with sand, work in progress.
6. Spraying herbicides by 45 HP Tractor is in progress.
7. Jungle clearance of NHC (both side) has been completed.
8. The work of restoration of drainage system of right side bank of NHC from RD-150250 to RD-158200 of NHC in Ghanauli Section 50 % work completed.
9. Plantation of Trees in vacant area in Nangal Township to increase the Green Cover has been completed.
10. Repairing of Honey combed concrete lining slab with side slope with 12.50 mm thick cement sand plaster 1:3 from RD-65000 to RD 71000 on both side of Nangal Hydel Channel during the partial closure in April-2022 is completed.

C. Gates and Gearing

Routine repair & maintenance works i.e. greasing of ropes with servo coat / grease, greasing of winches, greasing of trunion pin at Ganguwal & Kotla spillway and all the maintenance works on Mechanical appliances at Nangal.

1. The repair, maintenance and painting of RHR gate No.20, 21 & 24 has been completed.
2. The repair, maintenance and painting of bay No.3 each at Ganguwal and Kotla Spillway has been completed.
3. The repair and maintenance of gate No. 1 to 4 of Lohand escape has been completed.
4. The repair and maintenance of gate No. 5 of Lohand escape, work in progress.
5. Changing of hook of RHR BHG (upper) has been completed.
6. The repair and maintenance of gate No.1 CHR, work in progress.
7. Painting of Super Structure of RHR and CHR of Nangal Dam, work has been completed.
8. The repair and maintenance of gate No.18 RHR work in progress.

D. RM & SR Division (Inspection/Repair by Pneumatic Caisson method)

Inspection/repair by pneumatic caisson Method.

The Inspection of Spillway apron floor with the help of divers in left bay was conducted in May 2021 and Right bay in Oct. 2021.

Spillway:-

S.No.	Description	Status
1.	Underneath of beam and deck	O.K.
2.	Spillway D/S Balcony	O.K.
3.	Spillway bridge piers	O.K.
4.	Spillway training walls above water level	O.K.
5.	Spillway outlet Eye Brow	O.K.

E. Bhakra Mechanical Division, Nangal

Bhakra Mechanical Division, Nangal is mainly responsible for operation, maintenance/repair works of permanent installations including radial gates, river outlet gates, trash racks, spillway radial gates etc., maintenance & overhauling of all the Mechanical equipment including heavy earthmoving machinery, transport vehicles at Bhakra Nangal Project and Railway network which have been provided for carriage of workmen & material from Nangal to Bhakra Dam and other such works.

Besides General Capital Maintenance & periodical repair and painting of all Mechanical Installation i.e. Penstock High Head Gates, River Outlet Gates, Penstock Steel Liners, Elevators, Dehumidifying plant, Hoist Gantry Crane etc.

The following additional works were carried out during the period 01.04.2021 to 31.03.2022 in Bhakra Mechanical Division, BBMB, Nangal Township:-

1. As Protection measure to Hill Slopes around Bhakra Dam area of 2375 sq. ft. Gunnitting has been carried out above tunnel portal Right side of Bhakra Dam.
2. The dehumidifying Plant remained under operation w.e.f. 11.06.2021.
3. Patch work of all the 4 No. Radial Gates was carried out.
4. Pre-Monsoon and Post Monsoon Inspection and Mtc. of Mechanical Installation were carried out.
5. Capital Maintenance of River Out let Gate No. 4, 7 & 12 was carried out.
6. Capital Maintenance of Penstock Head Gate No. 10 was carried out.
7. Wet testing of River Outlet gate No. 12 & 13 was carried out at RL-1527.43 on dated 17-04-2021.
8. Painting of Stair and Pipe line inside Bhakra Dam was carried out.
9. Inspection of Penstock Liner No 10 was carried out.
10. Total 15 No. Sleepers have been replaced on Nangal Bhakra Railway Track.
11. Special repair of 2 No. Railway Boggie was carried out.

F. Nangal Workshop Division

Nangal Workshop is unit of many small shops and was primarily set up for the construction of mighty Bhakra Dam in the year 1947, subsequently it contributed a lot for Bhakra Dam and BSL Project and now its capacity is being utilized for various

maintenance activities of all the project of BBMB. However its little capacity is being utilized for under taking the various structure jobs of different electricity board and Govt. organizations.

Nangal Workshop has executed the following Major Jobs during 2021-22 (01.04.2021 to 31.03.2022).

1 The work of 30 Nos. MS Pantoons & 11 Nos. MS Pipe of Sr. Executive Engineer, Electrical & Workshop Division, Sundernagar has been completed & sent to concerned Division.

2 The work of 48 Nos. Guide Vanes, NVR Gate valve set Dowel 120 Nos. of RE Dehar Power House has been completed and sent to concerned Division.

3 The work of Bottom Rubber Seal of Regulating gates 34 Mtr. Of Executive Engineer, Hydel Channel & Baggi Gate Division Sunder Nagar (HP) has been completed & sent to concerned Division.

4 The work of Musical Knot Rubber Seal of Sr. Executive Engineer, AHCO & M Division PSPCL Ganguwal has been completed and sent to concerned Division.

5 The work of 272 Nos. Tree Guard of Executive Engineer, BC & Township Division Nangal Township has been completed & sent to concerned Division.

6 The work & repair of 112 Nos. chairs, repair of 17 Nos. tables & Mfg. of 10 Nos. Chairs, Mfg. of 04 Nos. Tables, and also painting works of 64 Nos. table, 100 Nos. Tree Guard, 26 Nos. Oxygen Cylinder, 01 No. Ladder, 2 Nos. Jhulas, 04 Nos. Hospital Bed & 30 Nos. Steel Almirah of various Divisions of BBMB, Bhakra Dam has been completed & sent to concerned Division.

7 The Manufacture of the 1.630 MT ferrous material and 1.002 M.T. non-ferrous materials during the year of 2021-22.

G. Planning & Design Cell, Workshop Division, Nangal

The office of Sr. Design Engineer (equivalent to the rank of Executive Engineer), P&D Cell of Workshop Division which is established exclusively for the planning of erection of various jobs received by Nangal Workshop .

H. Proc. C/Stores & Disposal Division, Nangal

The function of this division is to procure the material for all the Divisions of Irrigation Wing of BBMB, Nangal through normal purchase procedure. No special/major work has been executed by this Division during the period from 01/04/2021 to 31/03/2022.

I. B.C & TOWNSHIP DIVISION

The Building Construction and Town Ship Division, BBMB Nangal is public utility Division and is responsible for the maintence and repair of Residential, non-residential buildings ,Roads, parks, orchards and arrangements of Drinking Water Supply and sewerage system at Nangal Township including up-keep of BBMB Rest Houses at Nangal Township. New construction and renovation of existing building is also being undertaken by this Division. Rent of shop, plots and residential/non-

residential buildings are also realised by this division.

The following works have been completed by BC & Township Division during 31.03.2022:-

1. Providing facilities for players such as interlocking Kabaddi mats. Gym, chairs and land scraping of katcha portion in indoor stadium at Nangal Township.
2. Providing Gym facility at various locations at Nangal Township.
3. Renovation of remaining 100 No. bungalows at Nangal Township (Part-I, RVR, LVR, CAW, WA and NA bungalows (2nd phase).
4. Providing stone pitching on the slope portion in Satluj Sadan at Nangal Township.
5. Replacement of main CI pipe line of various bungalows at Nangal.
6. Regarding of roof tiles in various work charge quarters at Nangal (2nd phase),
7. Regarding of roof tiles in various Regular staff quarters at Nangal (IIIrd Phase).
8. Renovation of conversion of 2 No. W/C quarter in to 1 No. Sr. W/men (class – IV) type quarter at Nangal Township (2nd Phase)
9. Providing & installation of one no. effluent treatment plant (ETP) of 50 KLD based on MBR including operation and maintenance for five year in BBMB Hospital, Nangal Township.
10. Renovation of additional Temporary office (old Bhakra Dam Division & Bhakra Electrical Division office) at Nangal Township.

J. Civil Mtc. Division, BBMB, Chandigarh

The following repair and maintenance works are carried out during the period for April 2020-2021 which are as under:-

1. P&F Kota stone flooring in backyard of E-type houses in BBMB Colony sector 35-B, Chandigarh.
2. Water proofing in BBMB, Board office Building on plot No. 6-B, 6-C & Annexe building Sector 19-B, Chandigarh.
3. Providing and fixing of Paver block 60mm thick in the left area adjoining to Rest House building in BBMB Rest House, Chandigarh.

K. Personnel Office, BBMB, Nangal Township

The following works were attended by the Personnel Office of Bhakra Dam administration, BBMB, Nangal Township during the year 2021-22.

1. Industrial Relations.
2. Enforcement of Labour Laws in Bhakra Dam administration.
3. Manpower planning viz-a-viz recruitment, promotion and placement of industrial employees including Apprentices under the Apprenticeship Act, 1962.

4. Wage administration.
5. Representing the BBMB before the various courts of District and Sessions Judges and Presiding Officers, Industrial Tribunal-cum Labour Courts, before the Conciliation Officers under the Industrial Dispute Act 1947, Payment of Gratuity Act 1972 before the Centralizing Authority and Appellant Authority, Payment of Minimum Wages Act, 1948 and before the Authorities under the various others Labour Enactments, to assist Legal Adviser, BBMB, Chandigarh. Advocates on the panel of BBMB in case before the Hon'ble High Courts & Supreme Court of India.
6. Service matters concerning Industrial staff.
7. Compilation of BBMB News Bulletin.
8. The Personnel office arranged Apprenticeship Training for 185 Nos. Apprenticee during 2021-22 in designated Trades under Apprenticeship Act, 1961 and also engage 00 Nos. Graduate Apprentice and 00 Nos. technicians Apprenticed.
9. Monthly reports regarding Court Cases are sent to the Board's Secretariat regularly.

6.2.2 Beas Project

6.2.2.1 Beas Project Unit-I (BSL)

CE/BSL is entrusted with the work management of Pandoh Dam and its Water Conductor System comprising of Pandoh Baggi Tunnel, Baggi Control Works, Sundernagar Hydel channel, Balancing Reservoir, Sundernagar Slapper Tunnel, Surge Shaft, Pen stock Townships at Pandoh & Sundernagar and Hospitals at Pandoh, Sundernagar & Slapper alongwith 2 Nos. schools at Sundernagar and 1 No. at Pandoh and Administrative control of Slapper School.

A. Monitoring of the behaviour of Pandoh Dam, various components of BSL Project and Dehar Power Plant, with the help of data observed on various instruments /devices was done and it was found that structure behaviour of these works has functioned quite satisfactory during the period under report.

B. Problem of Excessive Sulphate Contents in Seepage Water of galleries / Tunnels of Pandoh Dam

The problem of sulphate contents in seepage water is being monitored regularly. The flow of high sulphate content in the affected seepage hole of D & G Galleries of Pandoh Dam is in stabilized condition. The Ultrasonic Pulse Velocity tests conducted by the CS & MRS, New Delhi during March-2021 showed that no significant deterioration of concrete quality has taken place with the time over the monitoring period. The overall quality of concrete is good.

C. Siltation of Pandoh Reservoir

Silt survey of Pandoh Dam for sedimentation studies was conducted in the year 2018. The latest silt survey shows that the live storage capacity of Pandoh Reservoir i.e. between normal reservoir level (El.2900 ft.) and maximum reservoir level (El.2941ft.) is 1272 Hect.m (10313.39Ac.ft.) which has been reduced by 31.46% of its original live storage capacity.

D. Repair of Pandoh Spillway

After the flood season of 2020 the repairs of Pandoh Spillway were carried out and an area of 1432.31 sqm. was repaired as per practice in vogue.

E. Protection Works Downstream of Pandoh Spillway

No damage has occurred to wire crates provided along Samla complex from RD-600 to 4200. All the protection works are in good condition.

F. Emergency Gates of Baggi Control Works

During the annual maintenance of right and left bays of Baggi Control Works stilling basin, the leakage of all the emergency gates was normal. General maintenance of mechanical works, stop logs etc. has been done as per normal procedure & schedule.

G. Silt ejector of Sunder Nagar Hydel Channel

The silt ejector at RD 1364.59 m (4477 ft.) of Hydel Channel was operated during the monsoon period from July, 2021 to September, 2021 with discharges varying from 7.078 to 14.158 cumecs (250 to 500 cusecs). The total quantity of silt ejected was 2.898 Hect.m (23.548 Ac.ft.). Running of silt ejector during rainy season remained satisfactory.

H. Silt observation in the Balancing Reservoir

During the period July, 2021 to September, 2021, the three dredgers have removed 88.82 Hect.m of silt from balancing reservoir. As per silt survey carried out in 2021, the balance silt deposit at the end of period was of the order of 109.81 Hect.m.

I. Penstock Headers & Branches

Routine maintenance regarding Penstock Headers, Branches and dresser couplings has been carried out. Nothing abnormal was noticed.

J. PANDOH COMPLEX

1. Damaged Report of Spillway chute & flip bucket

On the closure of Spillway Gates after the flood season 2021 in the month of September the arrangement for diverting the leakage from all the 5 No. Radial Gates was made.

After making the surface approachable the area of inside the Gate No. 3 from sill plate to stop logs was inspected. This year only 3800 sq.ft. (353.16 sqm.) area under normal abrasion i.e. upto ½" depth the procedure as per practice in

vogue was adopted i.e. with epoxy mortar used over the surface painted with epoxy paint to act as bounding coat.

This Spillway after repair is ready for operation now.

2. Sulphate problem in D&G galleries of Pandoh Dam

The flow of high sulphate content in the affected seepage holes of Drainage & Grouting D & G) galleries of Pandoh Dam is in stabilized condition. The report of ultrasonic pulse velocity test as conducted by Central Soil & Material Research Station (CSMRS) from 4/1992 to 4/1995, 11/1995 to 6/1996, 1/1998, 3/1999, 3/2000, 4/2004 and tests carried out during May-2006, 4/2010 & 6/2013 conclude that no significant deterioration of concrete quality has taken place with the passage of time.

The over all quality of concrete is good. However at certain locations where So_4 content is high & also the pulse velocity was low two No. concrete cores 75mm were taken out as per the advice of the technical committee of experts, BBMB (I.W.) in its 7^{th}. Meeting held at Chandigarh on 29.07.1999.

These cores were sent to Central Soil & Material Research Station (CSMRS) New Delhi for analyzing the same and the results were found quite favorable. CSMRS has also been conducting water quality test in various D & G Galleries since 1991.

CSMRS has also carried out chemical analysis test for three consecutive years from 2000 to 2002.

The final report regarding the investigation also reveals that no much change in PH & sulphate has been noticed over the year, rather the concentration of sulphate in most of the holes has decreased. These coarse were sent to CSMRS New Delhi for analyzing the same and the results were found quite favorable CSRMS has also been conducting water quality test in various D & G Galleries since 1991.

Since the quality of concrete has proved to be the good as revealed from testing the compressive strength of 2 No. cores and also from the compressive strength of concrete cylinders placed under sulphated water which is tested after an interval of two years, as such the situation does not warrant any worry.

However the committee of technical experts in their 8^{th} meeting held at Chandigarh on 25-09-2003 has advised that the monitoring of sulphate contents in the seepage water be continued and the pulse velocity testes may be carried out after an interval of two years which is being complied with.

The last Ultra Sonic Tests were conducted in 03/2021. Reports in this regard are still awaited and the next test is due in the year 2023.

3. Inspection of Permanent Plug

To carryout the inspection dewatering of the diversion tunnel downstream of permanent plug was carried out firstly by digging a cunnet upto the filter level of

the river bed so that the accumulated water in the tunnel may flow by gravity direct to the river bed. There after further dewatering was done by providing electric pump 5 H.P. capacities. The bulbs were also provided up to the end of the plug to enlighten the tunnel.

After dewatering the tunnel inspection was carried out alongwith Superintending Engineer, BSL Circle No. I, BBMB, Sundernagar, Addl. Superintending Engineer, Pandoh Dam Division, BBMB, Pandoh on 05.04.2018. No abnormality was observed in the tunnel, the plug was found intact and also there was no leakage from the plug.

Depth checking of all the drainage holes provided in 120 Nos. rings upto the plug was also done. All the holes were functioning well. The work was started on 20.03.2018 and has since been completed on 05.04.2018.

But during the inspection a lot of brown slush in diversion tunnel has been found as for as the safety of the diversion tunnel structure is concerned the removal of the brown slush is very essential. The decision was taken by the officers to clear the slush frrom diversion tunnel. In this regard the tender process is in progress to clear the slush. The next inspection of the permanent plug of diversion tunnel is due in March-2021. But due to non-clearance slush from diversion tunnel, it is pending.

After the inspection of the plug the exit portal of the diversion tunnel the gate of the diversion tunnel locked and after that the gate also blocked with Katcha Hollow Block masonary. Double safety of the same.

4. Pandoh Dam

The U/S and D/S slope of Pandoh Dam alongwith its protection works remainted intact. No wet patches, sloughing, depressions etc. were observed on D/S slope of Pandoh Dam during rainy season. The left & right abutment drains, haul road and drains on Dam surface remainted intact.

5. Protection work around Relief well No. 4 & 5

Some of the stone filled wire crates near relief Well No. 5 had been damaged during the flood season of 2021 and the same had been repaired. All other protection works at Relief Well No. 4 & 5 are in good condition.

6. Benches Along Left & right abutment

Benches left and right abutment of Pandoh Dam remained stable.

7. Channelization work downstream river of Beas:-

The Channelization work D/S River of Beas has been completed.

8. Flushing Operation:-

The Flushing Operations was not done during the flood season of 2021 because the quantity of water was not enough.

9. Painting of Gauges at Various Discharge Sites :-

Painting of Gauges at various discharge sites have been completed.

10. Five Nos. Radial Gates of Pandoh Spillway :-

All the 5 Nos. Radial Gates at Pandoh Spillway are functioning well.

11. Samla Adit Gate :-

A routine checking of samla Adit is regularly done as per scheduled. All the components parts of the gate were throughly cleaned, painted and gressed to avoid any rusting/ damaged no leakage was noticed.

12. Drum Type Log Boom:

The repair work of Log Boom is under process and re-instatllation will be done probably upto 15. 06.2022, as some modification in the Log Boom is being done in this year.

13. EOT Cranes of 10 Ton Capacity :-

The work for procurement of 1 No. EOT Crane 101 on capacity in replacement of one No. Old EOT Crane (EOT Crane No. 2) has been completed. The EOT Crane has been installaed at site, both the EOT NO. 1 & EOT NO. 2 are working satisfactory.

14. VERTEX FORMATION:

No vertex formation found negligible during the year.

15. ELECTRIC INSTALLATION:

All the permanent electric installations installed at various Location of Pandoh Dam remained intact during the period under report as such no abnormality observed.

16. Trash Racks:-

The cleaning and painting works of Trash Rack is completed and re-installation will be done probably in first week of May, 2022.

K.BAGGI AND SUNDERNAGAR HYDEL CHANNEL

1. BAGGI CONTROL WORKS

Stilling Basin

Likewise every year, the annual inspection and repair of Stilling Basin of Baggi Control Works L/side and R/side bay was done from October 2021 to April, 2022. During this year, it has been observed that from repaired patches of year 2020-21 there have been minor damages of these patches i.e. in front of Gate No. 2 of glacis portion of stiling basin damages have been approx. size 2 to 3 sqm areas and of depth upto 75 to 100 mm in the glacis portion. These damages have been repaired with poly Ironite cermic cementitious material (PICC). The stilling basin repair was completed in April 2021 and both bays made operational. This year minor damaged in the glacis floor of left bay during 2020 -2021 ramained intact and no further damage occurred. Repair of damaged on glasis floor of stilling basin will be assessed after the monsoon season of

the year 2021-22.

Emergency and Regulating gates:

During this year periodical maintenance of gate No. 2 was done by removing it from its bonnet box and checked for the condition of its surface coating, seals, Nut and bolts and screws of gates. Top and side seals have been changed and some rusted spots on the surface of gate structure have been repaired with application of ceramic putty in patches. After the repair of this gate has been lowered in bonnet box and working satisfactorily.

Maintenance of all 4 No. regulating gates was taken up between October, 2021 to March, 2022 and during the maintenance of the gates, the steel liner in both bays was also checked. All 04 No. regulating gates were inspected in position one by one. The Bottom rubber seals and side bronze seals of regulating gates found in good condition and some missing/ loose fasteners of bottom seal was replaced & fixed. Coat of epoxy paint applied on all 4 Nos. regulating Gate and steel liner of conduit box No.1 to 4.

2. Functioning Of Mechanical Installation

The general performance of dewatering system of drainage gallery, both the gentry and EOT Cranes, Stop logs and other Elect. and Mech. Installation at Baggi Control Works have been found satisfactory during the period under report. However the following needs special attention.

3. Baggi By Pass Emergency Gate

The water leakage from Baggi Bye Pass Emergency Gates was observed regularly and found as NIL. Leakage from Tail Race stop log remaing under control. However the seepage of tunnel, measured varying from 1.50 LPM to 10.50 LPM during the year 2021-22.

4. Baggi By Pass Tail Race Stop Logs

Performance of Baggi Bye Pass Tail Race Logs was satisfactory. Water leakage observed during the year was normal.

5. Electric Power Supply Arrangement

Electric power supply of BCW, Baggi complex, Silt Ejector & Rest Camp was maintained properly. All electric equipments like transformers, panels, circuit, breaker and generators worked satisfactorily during the year.

7. Dewatering From Drainage Gallery

All the pumps installed for disposal of leakage water from BCW drainage gallery worked smoothly. Maintenance of these pumps was carried out from time to time. Leakage water of drainage gallery, bye pass tunnel & bye pass tail race was disposed of in the Hydel Channel with the help of these pumps.

8. Hydel Channel and Its Associated Components

The Sundernagar Hydel Channel starts from Rd-0 at BCW Baggi and ends at RD 11800, TCM Sundernagar. There exist 16 aqueducts and one supre- passage, which are inspected regularly by the field staff. The functioning of hydel channel has been good and smooth during the year 2021-22 and ther has been no damage

observed of inner lining and outer embankment slope of the channel. All X-drainage works structure are in good condition and function well. All seepage points are being observed regularly. The leakage in the barrel of the Nagwain aqueduct at RD 9724.34 M. SNHC observed during October, 2020 to September, 2021 remain @ ± 28 to ± 32 Ltr./min constantly and nosignificant change has been observed during the period. The Leakage point of Nagwain Aqueduct is aslo being observed daily and data of observed seepage /leakage of all seepage points is being regularly sent to Director Design BBMB Nangal.

- **Sundernagar Hydel Channel Internal Activity**

1 Epoxy treatment has been done.

2 All the side slopes drain, parallel drain, toe drain and outfall are properly repaired.

3 All the aqueduct barrels maintained properly.

4 All machine working properly excluding dozer.

9. Tail Control Structure

(i) **Intake wells :-**Both side intake wells of Ropa Tail Control (RTC) gates has been checked and found free from silt.

(ii) **Pilot valves :-**Both side Pilot valves has been checked and functioning properly.

(iii) **Hoist Assembly:-** Gear oil of main gears and warm gears has been changed and other mechanical parts has been cleaned and greased properly.

(iv) **Gates:-**Ropes, gears, pinions and other relating components of the gates were checked properly and found ok.

(v) **Gallery:-**Gallery was checked properly and Sluice valves provided in the gallery found ok.

(vi) **Painting work:-**Painting works of Ropa Tail Control (RTC) gates is done.

(vii) **Lighting System:-**The old existing T-5 Lamps lighting arrangements around RTC Gates complex and the street light around NH and BR area has been replaced with energy efficient LED lights and the same are working properly and Electric operation of RTC Gates in control room has been checked and found OK.

10. D.G. Set

Old existing 110 KVA D.G. Set of BCW Baggi has been replaced with new 125 KVA. These set for replacement of old D.G. set of Tail Control has also been replaced with 40 KVA new DG Set. Both the D.G. set i.e. at Baggi Control Works and Tail Control are working properly.

L. Elect. & Workshop Division BBMB, Sundernagar

1. **Hem Sub Division, BBMB, Sundernagar:-**This sub division is responsible for carrying out the major repairs/overhauling of HEM Machinery i.e. Crane,

Trailors, Poclains, Crawler dozers, Wheel dozers, Motor Graders Front and Loaders, Tugs and Dredging equipments etc. Providing cranes and trailors for shifting of heavy earth moving machinery/equipment and other misc, jobs as per requirement all machinery jobs pertaining to mechanical items.

2. **Autoshop & Transport Sub Division BBMB Sundernagar:-**This sub division is entrusted of running repairs major /overhauling etc. of the heavy/light transport vehicles i.e. Cars, Tavera, Bolero, Buses, Trucks, Tippers, Fire Tenders, Tata Mobile 207/28, Ambulance vans etc. and providing lubrication services to all HEM machinery. Transportation of staff and labour to different sites of the project i.e. Baggi, Kansa, Tail Control, B.R. area, College going students to Chatrokhari and staff of D.P.H. Slapper on job order basis of Power Wing. All the light vehicles like Ambulance, Cars, Jeeps, Tavera, Bolero etc. required for the inspection of works by the Project Officers and VIP's are under the control of this Sub Division.

3. **Commercial Sub Division, BBMB Sundernagar:-**This Sub Division is entrusted with the un-interupted electric supply to residential and N.R. Building of Sundernagar complex and field sites. It is responsible for the following works.

i) Maintenance repair of H.T. & L.T. transmission lines in BSL Colony S/Nagar etc. Mtc. of H.T. lines from Sundernagar to Baggi, Ropa, Pung and Harabagh area.

(ii) Maintenance and repair of transformers sub-station control pannels and switch gears.

iii) Maintenance repair of elect. Wiring in R & NR building at Sundernagar Complex.

iv) Maintenance & replacement of elect. Wiring, street light and proper lighting arrangements for watch and ward of Govt. property at Sundernagar Complex.

v) Running and repair of public addressing system, air conditioner, air coolers and water gysers.

vi) Billing of all R & NR building and collection of such charges on account of electric consumption.

M. Balancing Reservoir complex Sundernagar

1. **Balancing Reservoir Complex:-**All the components of various works such as Suketi Diversion, drainage works and SST intake Structure have functioned normally/satisfactory. General repair of these works carried out regularly to keep these components for proper working conditions.

2. **Palace Nallah and drift Nallah:-**Muck/gravel material deposited in the above Nallahs during monsoon of 2021 has been got cleared by deploying Poclain Shoval and Tipper etc.

3. **Inspection and Mtc. of syphon Escape:-**The syphon escape did not

function during the period under report, as the water level in BR remained below EL2764'. However nothing abnormal has been observed and the syphon escape is being maintained properly.

4. **Suketi Diversion Channel:-** The damages in Suketi Diversion Channel caused due to heavy rain in the year 2017 was assessed and estimate got sanctioned under Action Plan 2018-19, work is completed. Damages in Suketi Diversion Channel caused due to heavy rain in the year 2018 got snationed under Action paln 2019-20. But work could not be executed due non participation of contractor. Now, damages occurred from 2018 to till date has been clubbed under protection work for repair of damages of Suketi Diversion Channel during rainy season from RD-0 to RD-7800 (in various phases) amounting to Rs. 56.54 lacs got approved under Action Plan 2022-23 and work shall be completed before onset of monsoon 2022.

5. **Harabag Complex:-**All the components/instruments in the Adit maintained properly. The discharge from weep holes in the Adit running normal. Greasing and oiling to the chain and other instruments and painting etc. done as per maintenance schedule.

6. **Pung Intake structure:-**The floating trash barrier has been placed at section 10-A. 10 A of Balancing Reservoir to curb the ingress of trash at Pung Intake Structure. The floating trash which accumulated near the Pung Intake Structure have been removed as and when required during the year as a routine work for free flow supply of water to Dehar Power House. Also a floating trash barrier has been placed at Section 10A-10A of B.R. for reducing ingress of trash at SST Intake Structure during monsoon. All the gates in 6 No. bays of the SST Intake Structure has been removed, cleaned and placed back in a record time.

N. Slapper Complex

1. Mechanical Works

Penstock Section By-Pass:- Routine Maintenance / checking of Penstock Headers 1 to 3 & its Branches 1 to 6 have done as per schedule.

Emergency Gate And Regulating Gate Of Bye Pass Chute:- Routine maintenance & checking of emergency gate and regulating gate was carried out as per schedule.

Stop logs And 30 Ton Semi-Goliath Grane:- Routine maintenance of Penstock & Bye-Pass Tunnel, Stop logs and 30 ton Semi Goliath Crane was carried out as per schedule.

2. Civil Works

Surge Shaft Complex:-All the benches behind Surge Shaft have been cleaned from muck & bushes. All the drains along with road leading to surge shaft from main gate BBMB Colony have been cleaned and repaired wherever needed.

Dehar Power House Area:-All the benches behind Dehar Power House have been cleared from bushes. Washing of drainage holes at Dehar Power House have also been done as per maintenance schedule. All the drains/ Nallah behind Dehar Power House have also been cleared.

Plantation:-300 Nos. plants have been distributed as per target achieved at various villages near BBMB Colony Slapper.

3. **Electrical Works**

Commercial Sub Division is entrusted with repair & maintenance of Electrical Works at Slapper Complex and receiving of electric supply from HPSEB and distributing the same to various works & BBMB Colony during the year work executed successfully.

Apart from the above routine maintenance of internal wiring of residential & non-residential buildings, maintenance of street lights, Transformers, HT/LT lines and control panels of Semi Goliath crane EOT crane & Regulating/ emergencies gates and maintenance of electrical works at Harabagh Complex was done during the year.

6.2.2.2 Beas Project Unit-II (PONG Dam)

1. Processing of observed data from various instruments/devices installed inside and outside body of Pong Dam indicates that the structural behavior of Pong Dam has been quite normal during the period 2021-22.
2. **Crustal Deformation along the Periphery of Pong Reservoir:**

Observations of bench marks elevation fixed along the periphery on right side of reservoir up to 15 km length was taken during October/November 2021 and the report in this regard stands submitted to Directorate Design, BBMB Nangal.

3. **Sedimentation of Pong Reservoir:**

The inspection of monuments, burjies and jungle clearance was done during the month January 2022. The work of sedimentation survey in Pong reservoir was carried out from January 2022.

4. Pipeline damaged due to Manhole Cover failure in Power House was rectified/repaired/replaced.
5. Compressed Air was supplied for various jobs against job order supplied by various Sub-Divisions for their respective Works at Beas Dam, BBMB, Talwara.
6. Water supply pipeline was replaced from time to time both at Sansarpur Terrace Workshop as well as Beas Dam to ensure uninterrupted (24 hours water supply).
7. Major overhauling of engine of CB-49 American Crane was completed.

6.2.3 Dam Safety Activities(2021-22)

- The pre-monsoon and post monsoon inspection of various unit of Bhakra Beas Complex was carried out by field engineers and nothing abnormal was

observed.

- The implementation status of recommendation of 5th Dam Safety Committee was also reviewed and monthly status report has been submitted to the quarter concerned regularly.
- The recommendations/observations made by Dam SafetyReview Panel (DSRP) under DRIP are being monitored regularly for implementation on quarterly basis by Dam Safety Directorate, BBMB, Nangal and report is being submitted to all concerned. The participation of BBMB in DRIP-II is under consideration with CWC and World Bank.
- The Annual Health Status of all Dams under BBMB for the year 2021 was satisfactory and the Annual Health Status Report has been submitted to all concerned.
- The recommendation/observation made by Dam Safety Committee (DSC) is being monitored regularly on quarterly basis by Dam Safety Directorate, BBMB, Nangal and report is being submitted to all concerned.
- The Annual meeting of National Committee on Dam Safety (NCDS) could not be organized by CWC due to COVID-19 prevailing conditions.

6.2.4 BBMB Hospitals

BBMB hospitals are providing outdoor as well as indoor medical facilities to the employees of BBMB as well as to the general public of the area. Sufficient diagnostic aids like X-Ray, pathological investigations, ECG, physiotherapy, ultrasound and other facilities like blood transfusion are being provided. Revised National T.B. Control Programme (RNTCP), Immunization Programme, etc. are also being run. In Eye Department, I.O.L. operations are being performed. Public health care and family welfare facilities are also being provided in the hospitals.

6.2.5 Visitors

During the year 2021-22 about 882 visitors visited Pong Dam. However keeping into consideration the security aspect of the Dam, limited permits are being issued to the visitors after properly scrutinizing the relevant documents (I.D. Proofs etc.).

6.3 National Hydrology Project

Bhakra Beas Management Board (BBMB) has already set up Earth Receiving Station (ERS) at Chandigarh for Inflow Flood Forecasting (i.e. short term 3 days and medium term 7 to 10 days) for optimum utilization of Bhakra and Pong Reservoirs and Canal Network. BBMB was the 'first mover' in the country under the World Bank funded Hydrology Phase-II project.

Under this project, 87 no. Real Time Data Acquisition stations comprising Automatic Rain Gauge Stations, Automatic Full Climate Stations, Snow Water Equivalent, Water Level Recorders etc. beside 10 No. Automatic Stage Recorder at “Contact Points” of Partner states have been installed in the catchment of River Sutlej and Beas by using state-of- the-art technology. In addition to this 6 No. Meteorological

stations have also been co-opted with IMD. The schematic arrangement of Real Time Decision Support System involves real time transmission of Hydro meteorological data through INSAT-3D at 1 hour interval to Earth Receiving Station at Chandigarh.

Real Time Data is processed using Rainfall Runoff Model, Hydro Dynamic Model, Flood Model and Water Allocation through MIKE software. The outcome/ scenario generation is further shared on NHP Dashboard.

MOWR, Govt. of India in association with World Bank has initiated, National Hydrology Project (NHP) in India to carry forward the work and objectives of Hydrology Project Phase-II of2012 under the NHP. To this effect, BBMB has been allocated Rs. 24.98 Crore for strengthening and expansion of existing Data Acquisition system (DAS), development of alternate models and technology enhancement along with capacity building in the organization to achieve better results.

Under NHP, the entire RTDAS Network is being upgraded by way of an ongoing work of installation of 21 no. Hydromet stationsand a new tender for installation/repair of 85 no. hydromet stations.

The Annual Work Plan 2022-23under NHP has already been approved by MoWR, Govt. of India.

6.4 Information Technology

Issues handled are as under:-

1. Implementation of e-Office in BBMB.

e-Office, a Mission Mode Project under the National e-Governance Programme (NeGP) of GoI has been implementation at Boards Office & Chief Engineers Offices. Training to all the users was provided along with hands on training on the use of the system. e-Office Implementation has now been extended to all the divisions/offices of BBMB. Initial training has been provided to all the divisions/offices of BBMB.

2. MIS for Legal Cases

Web based software for managing all the legal cases for various divisions of BBMB (instituted in any court of India) has been developed and implemented. Data updation is being dealt by the users of respective divisions / offices.

3. BBMB's Website has been awarded STQC Certificate by STQC Directorate, Ministry of Electronics and Information Technology, GoI.

The BBMB website was developed complying to Guidelines for Indian Government Websites(GIGW). These guidelines inter-alia, ensures that, the websites are accessible to citizens/persons with disability. The website of BBMB available at URL https://bbmb.gov.in is STQC Certified by STQC Directorate, Ministry of Electronics and Information Technology, GoI.

4. Implementedprocurement from GeM

The procurement activities of all divisions has been implemented from GeM. The training sessions for the same were got conducted at four locations in BBMB. Regular training of users on the latest features available on GeM are being conducted.

5. e-Reverse Auction

The e-Reverse Auction (e-RA) has been implemented for all tenders with threshold value of Ten Lakh. Item wise e-RA for individual item(s) having value lass than Rs. Ten Lakh may be carried out by suitable grouping of item(s) if deemed appropriate. The threshold value individual item(s) group for carrying out e-RA shall have estimated values of minimum Rs. Four Lakh and these groups(s) must be the part of specifications of NIT.

6. e-Tendering/e-Procurement

BBMB on-boarded GePNIC portal of National Informatics Centre (NIC) for e-Tendering/ e-Procurement activities. All the tenders by various offices of BBMB above a threshold value of Rs. Two Lakh are invited through e-Procurement/e-Tendering system.

अध्याय-7

Chapter-7

जल-विद्युत अध्ययन

Water-Power Study

Actual Water Power Data for the operation of Bhakra Reservoir for the period 01.04.2021 to 31.03.2022

Month	Period	Inflows (Cs.)					Gains/losses between Nangal and Ropar (Cs.)	Delhi Jal Board (Cs.)	WJC Contri-bution (Cs.)	Releases from Bhakra Reservoir (Cs.)	Closing Reservoir Level	Average Power from Bhakra Power House		Average Power from Ganguwal &Kotla Power House		Total Power available from Bhakra Complex		Generation from Dehar Power Plant
		Sutlej	BSL			Total Col. (3+6)												
			Dehar Power House	Bye Pass Chute	Total Col. (4+5)						Ft.	MW	LU	MW	LU	MW	LU	LU
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Starting Reservoir Level Ending 31-03-2021=1535.97 feet																		
	01-10	4923	2157	0	2157	7080	-300	496	0	11558	1529	310	75	97	23	407	98	44
April,2021	11-20	3924	2037	0	2037	5961	-300	496	0	6772	1528	178	43	70	17	248	59	41
	21-30	5932	4445	0	4445	10377	-300	496	0	11806	1524	301	72	114	27	415	100	86
	01-10	8875	4074	0	4074	12949	-600	496	0	16744	1517	417	100	149	36	566	136	81
May	11-20	9206	4544	0	4544	13750	-600	496	0	16541	1513	412	99	151	36	563	135	90
	21-31	9163	4872	0	4872	14035	-600	496	0	18238	1504	444	107	150	36	593	142	92
	01-10	12715	6356	0	6356	19071	-600	496	0	16370	1511	399	96	148	35	546	131	117
June	11-20	22597	8493	0	8493	31090	-600	496	0	22927	1525	571	137	150	36	722	173	149
	21-30	18326	8141	0	8141	26467	-600	496	0	26047	1526	649	156	150	36	800	192	143
	01-10	28027	8466	0	8466	36493	1000	125	0	29832	1538	750	180	148	35	898	215	149
July	11-20	35074	8449	0	8449	43524	1000	125	1342	28621	1562	753	181	150	36	903	217	149
	21-31	38308	8454	0	8454	46762	1000	125	1266	18537	1592	555	133	149	36	704	169	150
	01-10	33976	8473	0	8473	42449	1000	125	2272	17962	1609	580	139	150	36	730	175	150
August	11-20	24844	8453	0	8453	33296	1000	125	2355	21097	1618	699	168	148	36	848	203	151
	21-31	26754	8477	0	8477	35231	1000	125	2750	19658	1629	665	160	149	36	814	195	148
	01-10	19269	8449	0	8449	27718	0	125	1340	19694	1634	676	162	147	35	823	197	145
Sep,2021	11-20	21636	8457	0	8457	30092	0	125	2503	15578	1643	542	130	151	36	693	166	148
	21-30	18675	8180	0	8180	26855	0	125	2717	15071	1649	531	127	149	36	679	163	144
	01-10	12389	5982	0	5982	18371	0	496	0	16000	1650	545	131	151	36	696	167	109
Oct.	11-20	8625	4431	0	4431	13056	0	496	0	18653	1647	663	159	148	36	811	195	83
	21-31	7675	3263	0	3263	10939	0	496	0	14974	1644	544	131	149	36	693	166	63
	01-10	5818	2462	0	2462	8279	0	496	0	13984	1641	489	117	142	34	630	151	49
Nov.	11-20	5330	2231	0	2231	7560	0	496	0	13532	1637	470	113	101	24	571	137	44
	21-30	5807	1916	0	1916	7723	0	496	0	13645	1633	439	105	149	36	588	141	38
	01-10	5387	1959	0	1959	7346	100	496	0	16006	1628	525	126	149	36	674	162	41
Dec.	11-20	4710	1777	0	1777	6487	100	496	0	17407	1621	567	136	149	36	715	172	36
	21-31	4922	1564	0	1564	6486	100	496	0	14721	1615	471	113	149	36	619	149	32
	01-10	5726	1526	0	1526	7252	200	496	0	12655	1611	400	96	142	34	542	130	30
Jan,2022	11-20	4470	1679	0	1679	6149	200	496	0	9783	1609	325	78	104	25	429	103	32
	21-31	4884	1618	0	1618	6502	200	496	0	9034	1606	296	71	104	25	400	96	31
	01-10	4424	1656	0	1656	6080	400	496	0	10523	1603	342	82	113	27	454	109	32
Feb.	11-20	4571	1546	0	1546	6117	400	496	0	13196	1598	413	99	150	36	563	135	30
	21-28	5246	1884	0	1884	7130	400	496	0	15582	1592	488	117	150	36	638	153	36
	01-10	4812	2169	0	2169	6981	200	496	0	16684	1583	517	124	154	37	671	161	42
March	11-20	5851	3831	0	3831	9682	200	496	0	18609	1575	558	134	150	36	708	170	74
	21-31	6412	3855	0	3855	10267	200	496	0	15161	1570	438	105	150	36	588	141	75

Actual the Operation of Pong Reservoir for the period 01.04.2021 to 31.03.2022

Month	Period	Inflows at Pong	Gains or losses between Pong & Mandi Plain	Net Diversion Ravi to Beas	Releases form Pong Reservoir	Closing Reservoir Level	Generation from Pong	
		Cs.	Cs.	Cs.	Cs.	Ft.	MW	LU
1	2	3	4	5	6	7	8	9
Starting Reservoir Level Ending 31-03-2021 = 1299.04 feet								
April,2021	01-10	1038	0	1592	1099	1299	17	4
	11-20	1048	0	1465	406	1300	6	2
	21-30	2802	0	1207	728	1301	12	3
May	01-10	2535	-500	3164	3294	1301	52	13
	11-20	3083	-500	1828	3787	1300	60	14
	21-31	1983	-500	2408	5235	1297	82	20
June	01-10	3095	-500	2501	9537	1292	143	34
	11-20	7295	-500	2941	10396	1288	151	36
	21-30	2582	-500	6000	11627	1280	161	39
July	01-10	7057	1125	5803	9518	1278	128	31
	11-20	42275	1125	4541	6181	1311	91	22
	21-31	33474	1125	3411	8937	1326	149	36
August	01-10	27978	1125	3546	10009	1334	175	42
	11-20	15344	1125	3740	12535	1335	223	54
	21-31	29583	1125	3638	11123	1345	200	48
September	01-10	14317	1125	2956	11417	1346	212	51
	11-20	24235	1125	1971	8002	1353	146	35
	21-30	12725	1125	1483	9447	1354	180	43
October	01-10	9488	750	1246	10676	1353	204	49
	11-20	4154	750	1282	9095	1352	173	42
	21-31	4109	750	1380	6096	1351	116	28
November	01-10	3026	375	2674	6907	1349	130	31
	11-20	2450	375	3475	6606	1347	124	30
	21-30	1778	375	3152	3755	1346	70	17
December	01-10	1613	375	2704	4974	1344	92	22
	11-20	1803	375	3032	8108	1342	150	36
	21-31	1650	375	3309	6578	1339	120	29
January-2022	01-10	4441	375	3328	6557	1339	118	28
	11-20	3744	375	1298	2026	1339	37	9
	21-31	3469	375	553	1035	1340	18	4

February	01-10	4059	375	996	7344	1339	134	32
	11-20	3013	375	1133	11773	1334	211	51
	21-28	3040	375	1514	12681	1330	224	54
March	01-10	3502	375	1143	13463	1325	233	56
	11-20	3861	375	1088	12046	1321	206	50
	21-31	3933	375	3684	1712	1323	29	7

अध्याय-8

Chapter-8

पुरस्कार एवं सम्मान

Honours and Awards

8.1 The Awards won by BBMB during the year 2020-21 up to 31.03.2021

1. Power Sector Award

In IPPAI Power Awards 2021 BBMB has been awarded as Best Hydro Generator output >25 MW

2. Sports Awards

- Women's Table-Tennis team of BBMB won the D.V.C. Ltd. secured first position in Inter CPSU Table-Tennis competition organized by Kolkata. With this, he got first place in open singles competition in women's category and first and third place in open double match and third place in open double in men's section.
- Cricket team of BBMB secured 2nd position in Inter CPSU Cricket competition organized by REC Ltd. at Gurgaon.
- Men and Women Athletic Team of BBMB Both the teams secured first position in Inter CPSU Men and Women Athletic Competition organized by BBMB at Nangal Town. A total of 21 gold medals, 15 silver medals and 03 bronze medals were won for BBMB in both men's and women's section in this competition.
- In the 26th Inter-CPSU Badminton Tournament held on 27/03/2022, BBMB Men's team won Bronze Medal and in Open Competition BBMB won Silver Medal in Doubles.

  BBMB men's team bagged gold medal in the 21st Inter-CPSU Kabaddi Tournament held at Jakhari, Shimla.

3. Hindi Award

Department of Official Language, Ministry of Home Affairs, Government of India on 27.11.2021 for the offices of North Zone-I and North Zone-II organized a Raj bhasha Sammelan and prize distribution function at Kanpur (UP). During this prize distribution function, Chief Engineer/System Operation (for the year 2018-2019) & Chief Engineer/Transmission System Operation (for the year 2019-2020) of Bhakra Beas Management Board were awarded the FIRST PRIZE under 'B' Zone. Both the prizes were received by Er. B.S. Sabherwal, Chief Engineer/System Operation. In the same ceremony, Director/P&D (PP) under System Operation of Bhakra Beas Management Board was also awarded with SECOND PRIZE for the year 2019-20 under 'B' Zone. The prize was received by Er. Madan Singh, Director/P&D (PP). In this function Smt. Sheela Devi (Hindi Translator) and Smt. Bhagwati Bai (Hindi Translator) were also honored with APPRECIATION LETTERS by the Department of Official Language for their performance. Bhakra Beas Management Board Secretariat has been awarded SECOND PRIZE for the year 2019-20 by Town Official Language Committee (Tolic,Office-I), Chandigarh for sincere efforts to use of Official Language Hindi in their offices.

अध्याय-9

Chapter-9

पर्यावरण प्रबंधन

Environment Management

9.1 Environment Management

Environmental Appraisal of river valley projects was initiated in 1979 as an administrative requirement but was subsequently made mandatory by Govt. of India in January 1994 through a notification of Impact Assessment. New river valley projects including hydel power, major irrigation and their combination including flood control are required to obtain environmental clearance as per Gazette Notification No. S.O. 60 (E) dated January 27, 1994 (subsequently amended) covering both preventive and mitigative measures. The present Environmental Impact Assessment (EIA) /Environment Management Plan (EMP) for the river valley projects cover the following action plans:

- Catchment Area Treatment (CAT) Plan
- Afforestation Plan
- Survey of flora and fauna and action plan for restoration
- Rehabilitation and Resettlement Plan (R and R), if any
- Command Area Development Plan (CAD)

Regarding Bhakra and Beas Projects, there were provisions for R&R plans but there were no provisions for other plans, like CAT, CAD, Afforestation Plans, etc. as these were constructed prior to 1979. However, BBMB, on its own, has started studying and evaluating the post-construction status of environmental components and their impacts, if any, for short-term and long-term mitigative measures at all project stations.

9.2 Socio-Economoic Impacts of BBMB Projects

The beneficial impacts of Bhakra and Beas Projects have been much more compared to that envisaged at the planning stage. Bhakra and Beas Projects being multi-purpose projects, have two big storage reservoirs namely, 'Gobind Sagar' and 'Maharana Partap Sagar', which provide irrigation and drinking water to Punjab, Haryana, Rajasthan, Delhi and Chandigarh. These Reservoirs and their connected canal system have not only brought the **'Green Revolution'** but also the **'White and Industrial Revolutions'** in Northern Region.

BBMB Projects brought socio-economic upliftment of the region by way of enhanced employment opportunities, better energy and irrigation facilities, enhanced industrialization, ecological improvement in the downstream areas of the dams due to prevention of floods, etc. In addition, these Reservoirs attract not only tourists but also promote fishery.

The Pong Dam Lake (Maharana Partap Sagar) has been included in the list of 'Wetlands of International Importance' in August, 2002 under the Ramsar Convention on Wetland of 1971. More than one lac migratory birds of 220 species visit Maharana Partap Sagar every year. Nangal Lake has been included under National Wetland

Conservation Programme in January, 2008 by Ministry of Environment & Forests, Govt. of India.

BBMB organized a National workshop with the help of Central Board of Irrigation and Power, New Delhi in the month of August, 2005 at New Delhi on the subject **"Impacts of Bhakra-Nangal Projects".** Through this workshop, BBMB has brought forward the facts regarding positive impact of Bhakra-Nangal Project before the nation.

9.3 Environment Management Plan For BBMB

Following measures were taken regarding implementation of Environment Management Plan for BBMB:-

- A study of EIA for Beas Satluj Link Project of BBMB was got conducted in 1999 from NEERI, Nagpur for proper silt management from Sundernagar balancing reservoir & as per their recommendations, the silt is being removed during Monsoon only to avoid environmental degradation.
- Final report of the Expert Committee has been submitted to Hon'ble Himachal Pradesh High Court, Shimla with the conclusion that dredging will be carried out only during monsoon for management of silt at BSL Project. After the decision of Hon'ble H.P. High Court Shimla, matter was placed before the Board in its 211th meeting and as per approval of the Board, SLP has been filed in the Hon'ble Supreme Court of India. Hon'ble Supreme Court of India vide order dated 14.12.2012 has directed the H.P. Pollution Control Board not to take any coercive steps in terms of judgment of Hon'ble High Court. Thereafter the matter was listed for 21.1.2013. Hon'ble Supreme Court has granted leave in the matter and has also directed interim protection granted vide order dated 14.12.2012 to continue.
- 3 no. dredgers deployed to ensure flexible and reliable dredging capability during the monsoon season for dredging out maximum silt from the Balancing Reservoir.
- Measurement of flow discharge and total suspended solids at various sites in Kansa Khud and river Beas are being observed during monsoon. L-section and Cross-section along Suketi Khud are also being observed for pre-monsoon period and for post monsoon period every year to study the deposit of the silt, if any.
- Catchment Area Treatment Plan (CAT) for BSL project up-stream of Pandoh Dam to Larji Dam for river Beas and its tributaries was got prepared from Himalayan Forest Research Institute, Shimla.

- In Bhakra and Beas catchments a no. of new hydroelectric projects are coming up and CAT plans are to be framed by respective project proponents.
- Other mitigation measures like organized promotion of fish production, one time farm management of silt effected agriculture land, tarring of village roads etc.
- To prepare solid waste management plans for its safe & and scientific disposal around the project areas.
- BBMB is an ISO 14001:2008 certified organization for Environmental Management System for its hydro projects and generation units.
- R&R aspects of Bhakra and Pong dams are being met with.

9.4 Release Of 15% Minimum Flow From Pandoh Dam

HP Govt., vide notifications dated 16.7.2005 and 9.9.2005, had issued the directions regarding release of minimum flow to the extent of 15% immediately downstream of diversion structures of the existing and upcoming hydel projects in Himachal Pradesh. Pandoh Dam of BBMB being a diversion dam comes under the ambit of this notification. BBMB has been releasing 15% of minimum flow at Pandoh Dam since September, 2005 which is also compliant to NGT guidelines. However, BBMB has also taken up the issue of exemption regarding its applicability to BBMB projects being old projects with HP Govt. and the Ministry of Environment and Forests (MoEF) through Ministry of Power.

9.5 Plantation Programme

BBMB has been improving ecological environment by following regular 'Plantation Programme' undertaken every year on its vacant land, maintaining & improving gardens, terraces, fringe areas of the reservoirs, project colonies, offices, etc.

9.6 Rock Garden at Talwara

BBMB has developed a modern Rock Garden, first of its kind under the stewardship of Padam Shri Nek Chand, Founder of 'Chandigarh Rock Garden' on about 20 acres of vacant land at Talwara Township. The Rock Garden at Talwara has been developed from the waste and surplus material collected from Beas Dam Project. It has unique features, like an Engineering Section modeling Dam construction, an Environment Section and a Children Park. This modern Rock Garden was inaugurated by Chairman, BBMB on 16th August, 2005 in the presence of PadamShri Nek Chand. New development works including preparation of ground for land scapes, are being taken up every year in this prestigious garden.

9.7 Social Welfare Activities

BBMB is very much alive to its social responsibilities. At every project station, BBMB is liberally spending towards welfare activities for local people residing in the vicinity of the projects. During the year, BBMB hospitals provided specialized outdoor as well as indoor medical facilities, along with ambulance, to the people residing in villages in the vicinity of the projects. Public health care and family welfare facilities were also provided. Blood donation camps were organized. Moreover, free medical camps were held to provide ready medical help along with medicines, at the doorstep of the villagers. Moreover, it has been decided to make provision @2% of the annual Irrigation works budget for carrying out various social welfare activities by BBMB in consultation with respective local authorities/ Deputy Commissioners of the areas for people living in the vicinity of BBMB projects especially in rural areas.

Various Welfare activities organized in BBMB during the year 2021-22 are as below:-

1. Blood Donation Camps

In collaboration with PGI, BBMB organized two no. Blood Donation Camps (1st in June & 2nd in November 2021) wherein a total of 93 blood units were donated in the crucial need during COVID19 pandemic.

2. COVID-19 Vaccination

- To strengthen the world's largest vaccination drive, BBMB continued the ongoing massive Covid-19 Vaccination Drives at its various project stations.
- Under the 'Vaccination for All' initiative of the Government of India, BBMB pro-actively conducted *'Har Ghar Dastak'* campaign aiming to ensure maximum vaccination coverage by way of visiting door-to-door to ensure that those who cannot go out are vaccinated comfortably in their homes.
- A free medical checkup camp along with free distribution of medicines to the general public during the week long exhibition of BBMB project displays at the State level Nalwari Mela, Bilaspur (H.P.) in the month of March 2021.
- Library Books, Desks, Sports items, Swing etc. worth lacs rupees, beneficial for use of students of Government School in the periphery of Beas Dam were distributed under Welfare Activities.

3. Bhakra Dedication Day celebrated under Azadi ka Amrit Mahotsav

BBMB celebrated Bhakra Dedication Day on 22.10.2021 as a landmark date under the banner of Azadi ka Amrit Mahotsav on the directions of Ministry of Power wherein a day-long free medical checkup camp and Tree plantation drive, a painting competition & a half marathon were organized for the children & general public respectively followed by a patriotic theme based cultural function in the evening at DAV School Nangal.

4. BBMB organized State level Painting Competition

BBMB, as the Nodal Agency, organized State level Painting Competition on Energy Conservation-2021 under the aegis of Bureau of energy Efficiency (BEE) wherein 9758 no. of students (both Groups, A-5th to 7th & B-8th to 10th) participated from states of Punjab & Haryana and UT Chandigarh & they were provided mementos & LED bulbs.

अध्याय-10

Chapter-10

मानव संसाधन विकास

Human Resource Development

10.1 Human Resource Development

10.1.1 Training Policy of BBMB

A. BBMB framed its own training policy in the year 2003 in line with the Ministry of Power's "Training Policy for Power Sector-March 2002" and implemented it for imparting extensive and regular training to its personnel from the year 2003-04 onwards. To review the existing policy and prepare biennial perspective training plan, a Standing Core Group headed by FA&CAO was constituted in October, 2007 to guide the entire training functions in BBMB. Working Procedure for nomination of officers/ officials for various Training Courses/ Seminars/Symposia etc. was prepared and the same is applicable w.e.f. 09.06.2015 & is being amended from time to time as per requirement.

B. The motto of BBMB Training Policy is to "ensure Training for all once a year for each employee". Based on the policy, the target of minimum 3Mandays of training for officers/ officials has been required to be imparted. In-house training calendar which includes the training module for deputing the officers/ officials for training to other Project Stations is sought from HOD's on Financial Year basis. Approval for the same is conveyed to the respective offices along with the target of Mandays for their offices out of the total Mandays fixed for the whole BBMB. The ibid target includes In-house as well as Institutional Trainings/ Seminars/ Conferences/Workshops. The Institutional as well as In-house Training Calendar depicting different modules such as, Technical Training, Personality Development, IT & Computer skills, Health & Life Style Management, HR & Finance, Fire Safety with First Aid, Workers Training, Misc. Modules, etc. was also prepared for the year 2021-22 as per previous practice.

C. After reviewing its prevalent Training Policy, a need of focused and extensive training to all staff is felt as new staff is inducted from partner States to fill the gap made by retirements. Employees being from different States/ Departments and work cultures, it becomes imperative that they must be trained as per the requirements and working culture of BBMB under induction training programme. In addition, due to frequent transfers/repatriation of staff from and to their parent departments, it is essential to conduct training programmes on regular basis so as to keep all the newcomers abreast with BBMB work requirements and culture. Moreover, it is endeavored to include all categories of in-position employees in the training programmes to improve their Technical/ Managerial skills and to equip them with the latest know-how & innovative technologies. Orientation Programmes are also arranged at Project Stations from time to time for newly inducted Engineers of Irrigation Wing & Power Wing.

D. Various types of training being imparted by BBMB are as under:-

i. Institutional Trainings wherein personnel are nominated from BBMB to attend Training Programmes/ Seminars/ Conferences/ Workshops at various Institutes situated at different stations or by organizing Training Programmes for BBMB personnels through outside experts/faculties etc.

ii. In-house Training Programmes through BBMB's own experts/ faculties etc.

iii. Induction training to personnel joining BBMB either on fresh recruitment or from partner states.

iv. On-Job Site Training to Engineers from other Organizations, like HCS Probationers from Haryana Irrigation, NPTI, PSTCL etc.

v. Practical Training/Training visits to the students of Under-Graduate/ Post Graduate Courses of Engineering from different Universities/ Colleges of India.

vi. The teaching staff of BBMB Schools is nominated for attending Capacity Building Programmes conducted by CBSE to update them with the new Technology in the education system.

vii. Oritentation Programmes for Promotion in Science & Technology and carrier counseling are organized from time to time for the students of BBMB Schools at Project Stations.

viii. Various onsite Programmes are conducted for the Engineers of both Power & Irrigation Wing to enable them to obtain knowledge of latest techniques relating to their job profiles.

The above training programmes are being conducted for giving training to each category of officers/staff of BBMB i.e. Engineers, Ministerial staff, like Superintendents/Assistants, etc. (Non-technical class).

As Institutional Training is not cost effective for Worker class/Ministerial staff categories of employees, Management decided to have extensive In-house training programmes/Interactive Workshops/Seminars, etc. at all the Project Stations/Work places which are being organized at large scale on diverse topics such as Technical Management, Motivation, Health, Finance etc.

BBMB has created its own infrastructure for imparting training to its employees. A lecture hall at SLDC Complex, Chandigarh to arrange In-house Lectures/ Workshops/ Seminars has been established in the year 2003. A Training Centre named "Bhakra Beas Training Centre" has commenced working at Nangal since March, 2005. This Training Centre has a lecture hall with all the latest learning-aids, two different model-rooms for Irrigation and Power Wings and a discussion room to impart Institutional Training to Power Sector Engineers and Technicians of BBMB & other Power Utilities.

Training programme on “Distribution, Reforms, Upgrades & Management” (DRUM) has been started at this center since 2005-06 and training on “DRUM” is imparted in which Engineers from the Partner States/Utilities also participate. The DRUM training programme on self-sustaining “No-Profit No-Loss” basis remained continued in BBMB.

10.1.2 Achievements in respect of training during 2021-22

The achievement in respect of ‘Training Mandays covered’ in BBMB for training BBMB personnel during 2021-22 is as under:-

		Training Mandays				
		Executives		Non-Executives		
Year	Target of Mandays Fixed	Institutional Training	In-house Training	Institutional Training	In-house Training	TOTAL Achievement
2021-22	18000	1712	2886	709	13582	18889

10.2 Implementation of Reservation Policy For SC And ST.

BBMB discharge its function as laid down in Section 79(1) of the Punjab Re-organization Act,1966 for which staff for the operation and maintenance of BBMB works is provided by partner State Governments/SEBs on transfer basis. However, in the event of inability of partner States/SEBs to provide the requisite staff, BBMB resorts to direct recruitment and promotion in respect of Group ‘C’ and ‘D’ employees.

Thus the staff in BBMB is drawn from the partner States according to the allocated share of posts. Such employees are governed by the same terms and conditions as are applicable to them in their parent departments. The reservation for the members of SC/ST categories of employees is watched by the parent departments of State Government according to their policy/rules/regulations. BBMB’s own recruited employees are governed by BBMB Class III and Class IV Employees (Recruitment and Conditions of Service) Regulations, 1994 and BBMB Class I & II Officers (Recruitment and Conditions of Service) Regulations, 2015. As per the provision of Bhakra Beas Management Board Class-III and Class-IV employees (recruitment and conditions of Service) regulation 1994 and BBMB Class I & II Officers (Recruitment and Conditions of Service) Regulations, 2015, BBMB followed Punjab Government reservation Policy till April, 2017. Now as per Gazette Notification of Govt. of India, BBMB is following Central Government Reservation Policy since May, 2017. The amended clause 11 of ibid regulations specifies that “the members belonging to the Scheduled Castes, the Scheduled Tribes, Backward Classes, Ex-Serviceman, Physically handicapped persons and the dependents of deceased employees in the service, shall have the reservation in the service and all other concessions as prescribed by the Central Government from

time to time". Roster Registers are being maintained by various Administrations/HODs of BBMB.

The existing strength/percentage of Schedule Caste employees as on 01.01.2022 is as under:-

Group	Total existing BBMB own recruited employees	Scheduled caste	Percentage
A	28	9	32.14%
B	292	72	24.65%
C	1686	529	31.37%
D	1714	569	33.19%
Total	3720	1179	31.69%

10.3 Management-Employee Relationship

Meetings of the management with the representatives of the Staff/Unions were convened from time to time and the demands raised by the Unions and their grievances were settled amicably.

10.4 Integrity and Honesty: Imprint of Vigilance Organization

The Vigilance Administration in Bhakra Beas Management Board comprises of a Chief Vigilance Officer (CVO), NTPC, holding additional charge of CVO, BBMB and Six Vigilance Officers (VOs) viz-a-viz One No. Dy. CVO, One No. Dy.Director, Three Nos. ADs, One No. AO who have been posted under CVO to carry out the vigilance work. Any complaint(s) received is got investigated by the VO and based on finding/record appropriate action is recommended with the approval of CVO,BBMB.

The Vigilance Wing of BBMB is working on the theme "Respect All, Suspect All, Inspect All"

The Vigilance Organisation in BBMB is making earnest efforts to inculcate the following principles among all the employees of BBMB, as a measure of preventive vigilance:-

(i) To check and control the tendency to delay matters.
(ii) To record speaking orders in clear terms on the files giving merits of the orders.
(iii) To avoid decisions being influenced due to vested interest.
(iv) To be receptive to any suggestion by a colleague, superior or a subordinate which may result in savings to the exchequer.
(v) To be firm in conviction that integrity is to be safeguarded at any price.
(vi) Identification and focus on sensitive spots, regular and surprise checks/inspections of such spots.
(vii) Identification of officials suspected of corruption, and proper scrutiny of personnel who are posted in sensitive posts which involve public dealing,

establishment and purchase related work and ensure their rotation after every 03 years as per CVC guidelines.

(viii) To keep a watchful eye on all breeding grounds of corruption.

(ix) To expose without fear those involved in acts of self-gratification

(x) To take pride in humble living and acts of honesty.

(xi) To follow the rules, procedures, instruction, manuals, etc meticulously.

(xii) To avoid drawing illogical and dubious inferences so as to derive undue benefits whenever an ambiguity in rules is encountered.

(xiii) "Agreed list" & "list of doubtful integrity" are prepared and it is ensured that officers /officials of doubtful integrity are not posted on sensitive posts.

(xiv) Expedite the inquiries, their follow-up action to get decision from parent States/State Electricity Boards.

(xv) Implementation of disciplinary action without any delay.

(xvi) Various advisory are issued for system improvement in BBMB.

(xvii) Circulars for improving awareness as well as system improvement in working of BBMB are also taken up from time to time.

During the year 2021-22 (01/04/2021 to 31/03/2022), 40 no. complaints were received out of which 37 no. have been disposed of and 03 no. complaints are under investigation.

Besides above, ***Vigilance Awareness Week*** **–** *2021* was observed w.e.f. 26.10.2021 to 01.11.2021 in BBMB offices at Chandigarh as well as at BBMB Project Stations. Various activities as the part of Vigilance Awareness Week in Campaign mode were also conducted with theme **"Independent India@75: Self Reliance with Integrity";** at Chandigarh, Nangal, Talwara and Sundernagar, Panipat and Bhiwani. While celebrating the vigilance Awareness Week, Guidelines pertaining to COVID-19 were followed meticulously.

10.5 Implementation of the Official Language Policy of the Union in BBMB

Officials in the BBMB are normally posted on transfer basis from the partner states i.e. Punjab, Haryana, Rajasthan and Himachal Pradesh. Out of this, 60% staff is from the Punjab state/PSEB, whose mother tongue is Panjabi and they perform all the official work either in Panjabi or in English only. Under these circumstances, it had been very difficult to implement the official language policy of the Government of India in the board. There was a time when only 4-5 per cent work was done in the Board, however, Due to commitment of higher officers and under there expert guidance, use of Hindi in the official work of the Board started gradually.

The Department of Official Language issues an Annual Programme every year in order to promote the progressive use of the official language Hindi. All out efforts are made by the Board to achieve the targets fixed in the Annual Programme and the details of the progress achieved by the Board as compared to the targets are given hereunder:-

Compliance of Section 3(3) of the Official Language Act, 1963:

Details of the documents issued by the Board Secretariat and the Board as a whole, under Section 3(3) of the Official Language Act, 1963 during the year 2021-22 are given below:

	Documents issued under Section 3(3)	Documents issued in English only
Board Secretariat	88	Nil
Board as a whole	2792	Nil

Reply of the letters received in Hindi:

All the letters received in Hindi are invariably replied in Hindi by the Board secretariat and its sub-ordinate offices. Status of the reply in respect of the letters received in Hindi during the year 2021-22 is given below:

	Total Letters Received in Hindi	Reply in Hindi	Reply in English
Board Secretariat	**13698**	**10744**	Nil
Board as a whole	**395516**	**341631**	Nil

Note : Remaining letters filed.

Correspondence in Hindi:

Number of letters sent in Hindi by the Board Secretariat and it's subordinate offices since last few years, has registered a manifold increase due to the collective efforts of the staff and the officers of the Board for implementation of the official language, and the targets fixed in the Annual Programme has been achieved. 99.8% letter in the Board Secretariat and 96.9% in the Board as a whole had been sent in Hindi during the year 2021-22. The details are given below:

	Total letters	**Sent In Hindi**	**Sent in English**
Board Secretariat	**34570**	**34489**	**81**
Board as a whole	**538278**	**522084**	**16194**

Noting in Hindi:

Almost 95% noting are written in Hindi.

Dictation in Hindi:

85% dictation by the officers are given in Hindi.

Recruitment of Hindi Typists/Stenographers:

Cent percent Hindi/Bilingual Typists/Stenographers are recruited in the Board.

Purchase of Hindi books for the Library:

Details of the expenditure incurred on purchase of Hindi books for the Library of the Board Secretariat & subordinate offices during the year 2021-22 is given below:

Total Expenditure on Purchase of Books	Expenditure on Purchase of Hindi Books
Rs. 47870/-	**Rs. 42991/- (90%)**

Computers:

A total of 541 computers are available in the Board till date, bilingual (Hindi/English) facility is available on all the computers.

Website:

Board's website is fully bilingual, and information given in both the languages is regularly updated.

Official Language Implementation Committee:

Official Language Implementation Committees have been constituted in all the offices of the Board and quarterly meetings of these committees are regularly held. Details of the meetings of the Official Language Implementation Committee of the Board Secretariat during the year 2021-22 are as under:

Quarter	Date of the Meeting
April-June	25 June, 2021
July-September	13 October, 2021
October-December	02 December, 2021
January-March	20 April,2022

Hindi Workshop:

Following Hindi Workshops have been organized in Board Secretariat during the year 2021-22:

Quarter	Date of the Workshop
April-June	29 June, 2021
July-September	20 September, 2021
October-December	14 December, 2021
January-March	14 March,2022

Hindi Month/Fortnight:

Hindi Month/ Fortnight is organized in the Board Secretariat and all the subordinate offices during the month of September every year. During the year 2021-22 Hindi fortnight was celebrated in the Board Secretariat from 13 September, 2021 to 27 September, 2021. Several programmes were organized during the occasion.

Following Hindi Competitions were organized during the Hindi Month/ Fortnight:

1. Hindi Shabd-gyan Pratiyogita,
2. Hindi Tankan Pratiyogita on computer,
3. Hindi Nibandh avam Anuvad Pratiyogita,
4. Hindi Noting and Drafting Pratiyogita,
5. Hindi Kavya Path Pratiyogita

Officers and staff have participated in these competitions with great enthusiasm. Officers and staff secured First, Second and Third place were awarded cash prize of Rs. 3,000/-, Rs. 2,500/- and Rs. 2,000/- respectively. Besides, under the Incentive Scheme, 18 employees were also honored with cash award for doing maximum work in Hindi.

At the end of Hindi Month a prize distribution ceremony was held on 02 December, 2021.

Bilingual/Hindi Publications:

Following materials/books are published by the Board bilingually/in Hindi:

- Annual Administrative Report
- BBMB Samachar (House Journal)
- All the material published in News Papers
- BBMB Janta and Corporate Brochure
- "Jeevan Dhara" Patrika
- DOs and DON'Ts for better Vigilance compliance
- Board's Diary and Calendar
- Telephone Directory

Besides, following books have been published by the Board till date:

- Administrative Glossary
- Rajbhasha Sahayak Pustak
- Technical Glossary
- Bhakra Beas ki kahani

- Beas Satluj Link Project

Do Shabd:

Two English words and their Hindi synonyms are displayed daily on a white board in order to facilitate the employees in day to day official working in Hindi.

अध्याय-11

Chapter-11

परामर्शी सेवाएं

Consultancy Services

11.1 Consultancy Services

The Govt. of India, in the year 1999, has entrusted additional functions of providing & performing engineering and related technical consultancy services in field of Hydro Electric Projects & Irrigation Projects to BBMB.

11.2 Activities of Consultancy Directorate

1. Implementation of Integrated Management System

For effective implementation of Management System Certifications, BBMB has been divided into 7 centers viz. 6 CE(s) and Board Secretariat. In addition to the earlier acquired QMS:9001 & EMS:14001 with total of 14 Management System Certifications, BBMB in a commitment towards the Safety of its stake holder including its employees, has endeavored to acquire Occupational Health & Safety Management System (OHSMS:18001) for all its 7 Centers & simultaneously implementing Integral Management System (IMS) comprising of EMS, QMS & OHSMS.

For further improvement in the Management System, BBMB is gearing up forup gradation of OHSMS 18001 to the latest OHSMS 45001:2018 certifications for all its centres under IMS program.

2. 2X21MW Baggi HEP

DPR of 2X21 MW Baggi HEP submitted to DoE, Govt. of H.P. on 18.11.2020.After incorporation of DoE observations, Revised DPR of 2X21 MW Baggi HEP was submitted in DoE, Govt. of H.P. on 21.05.2021.Tender/ NIT to engage Consultant for execution of Baggi HEP was floated online on 14.01.2022 and opened on 15.03.2022.

3. OPERATION & MAINTENANCE OF 66 KV SUB-STATION, PGIMER, CHANDIGARH

Operation & Maintenance of 66 KV Sub-station, PGIMER, Chandigarh has been carried out by BBMB for the period of 01.04.2021 to 31.03.2022 at BBMB approved rates. The O&M of 66 KV Sub-Station, PGIMER in continued till date.

4. Setting of Mini Hydel Project on Bhakra Mail Line Canal (BML)

In pursuance of decision taken in 29th meeting of the Northern Zonal Council held on 29-09-2019, a technical committee headed under the chairmanship of Secretary, MNRE with members from Ministry of Jalshakti, Central Water Commission, NIH Roorkee, Hydro & Renewal Energy Dept. Roorkee and Member from BBMB has been constituted.

In the 2nd meeting of technical committee held on 17.06.2021, the issue of possible increase in siltation and reduction of flow in Bhakra Main line Canal

because of construction of proposed small hydro projects of 63.75 MW at 27 sites was discussed.

Subsequently MNRE, Govt. of India, vide their letter dated 23.06.2021 requested CWC to examine the said issue and to submit the report in the matter. In response, CWC submitted its report in July 2021.

अध्याय-12

Chapter-12

सूचना का अधिकार

Right to Information

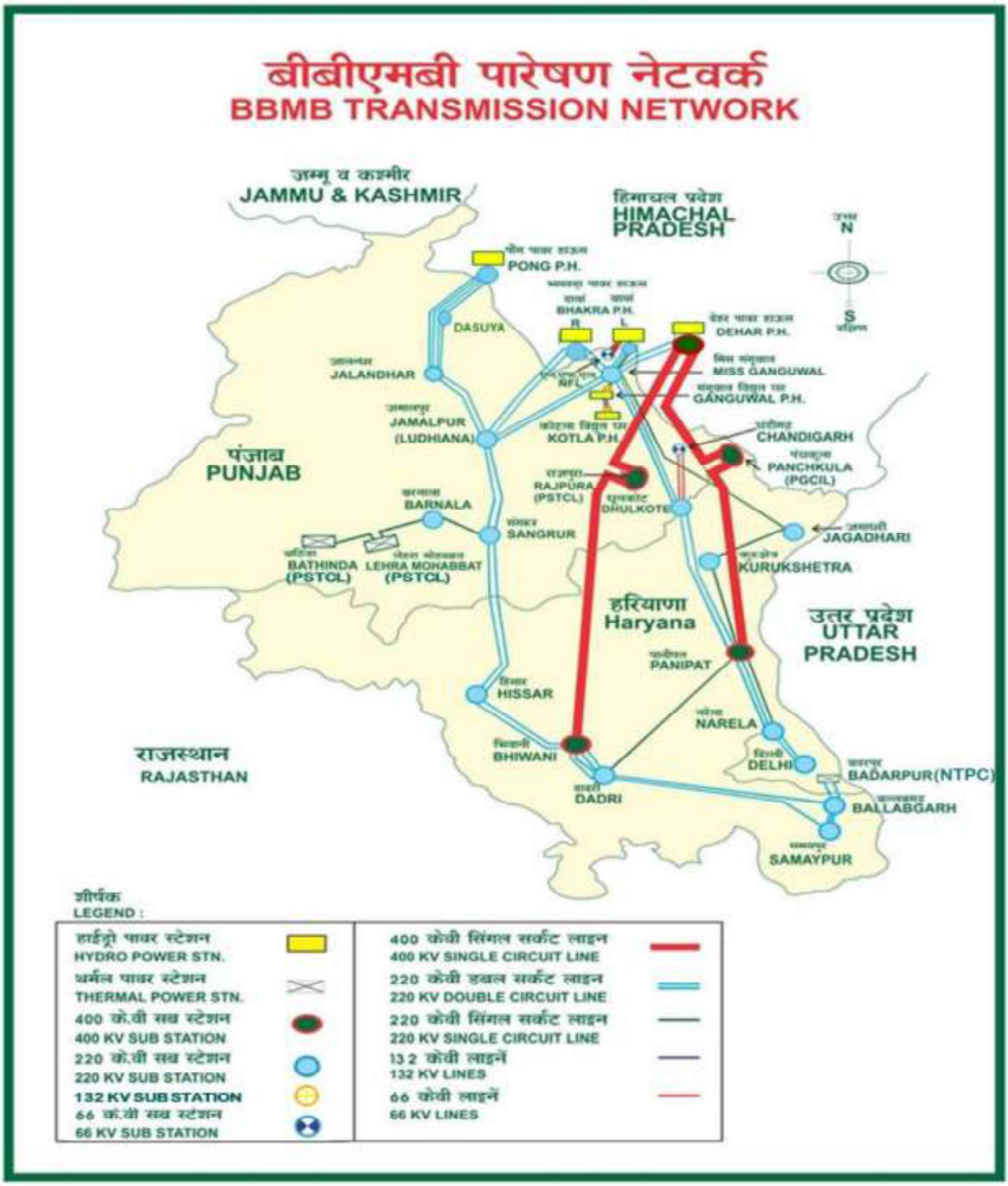
Public Grievances /RTI (Chapter 31 And 32)

Right to Information Act 2005 is in place and fully operational w.e.f. 12th October, 2005. The Act provides for setting out the practical regime of right to information in order to promote openness, transparency and accountability in public offices. BBMB has adopted and implemented the Act in letter and sprint. The necessary infrastructure has been provided for Operationalization of the Act. BBMB designated nine Assistant Public Information Officers (APIOs) and eight Public Information Officers (PIOs) at different locations. In line with requirements of the Act, eight Appellate Authorities have also been designated. The official Website of BBMB **(www.bbmb.gov.in)** depicts official designations, addresses and phone nos. of these officers. Comprehensive details regarding the procedure in respect of applying for information have been given on the website. The information regarding 17 No. manuals which have been prepared as per provisions of Section 4(2) of the RTI Act, (Pro-Active disclosure) is also available on the website. The information is regularly updated from time to time as per provisions of the RTI Act. The quantum of applications received under the Act appeals made & other related details are given in Annexure-1 .

Annexure-1

Details relevant to RTI Act for the years 2021-2022 (As on 31.03.2022)

Sr.No	No. of requests received	No. of decision	Decision where applications for information rejected													Number of cases where disciplinary action was taken against any officer in respect of Administration of this Act.	Amount of Charges collected (Rs.)
			No. of times various provisions were invoked														
			Section 8(1)									Other Section					
			a	b	C	D	e	F	g	h	I	j	9	11	24	Other		
1.	349	349	NIL										NIL				NIL	**13682**/-


बीबीएमबी पारेषण नेटवर्क
BBMB TRANSMISSION NETWORK
जम्मू व कश्मीर
JAMMU & KASHMIR
हिमाचल प्रदेश
HIMACHAL PRADESH
N
S
PONG P.H.
BHAKRA P.H.
R
L
DEHAR P.H.
DASUYA
JALANDHAR
MISS GANGUWAL
GANGUWAL P.H.
JAMALPUR (LUDHIANA)
KOTLA P.H.
CHANDIGARH
PANCHKULA (PGCIL)
पंजाब
PUNJAB
RAJPURA (PSTCL)
DHULKOTE
BARNALA
SANGRUR
JAGADHARI
BATHINDA (PSTCL)
LEHRA MOHABBAT (PSTCL)
KURUKSHETRA
हरियाणा
Haryana
उत्तर प्रदेश
UTTAR PRADESH
PANIPAT
HISSAR
NARELA
BHIWANI
DELHI
BADARPUR(NTPC)
DADRI
BALLABGARH
SAMAYPUR
राजस्थान
RAJASTHAN
शीर्षक
LEGEND :
हाईड्रो पावर स्टेशन
HYDRO POWER STN.
थर्मल पावर स्टेशन
THERMAL POWER STN.
400 के.वी सब स्टेशन
400 KV SUB STATION
220 के.वी सब स्टेशन
220 KV SUB STATION
132 KV SUB STATION
66 के.वी सब स्टेशन
66 KV SUB STATION
400 केवी सिंगल सर्कट लाइन
400 KV SINGLE CIRCUIT LINE
220 केवी डबल सर्कट लाइन
220 KV DOUBLE CIRCUIT LINE
220 केवी सिंगल सर्कट लाइन
220 KV SINGLE CIRCUIT LINE
132 केवी लाइनें
132 KV LINES
66 केवी लाइनें
66 KV LINES