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MINISTRY OF WATER RESOURCES

RESTRUCTURING OF CENTRAL WATER COMMISSION

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Contents

Description	Page
Water Resources of India – An Overview	1
Overall water availability	1
Per capita water availability	2
Status of Structural Measures for Water Resources Development	2
Irrigation Development	2
Flood Management	2
Storage Capacity Created	2
Domestic Sector – Urban and Rural Water Supply	3
Hydropower Development	3
Industrial & Other Uses	3
Role of Central Agencies in Water Resources Development	3
Constitutional Provisions	4
River Board Act	4
Inter-State River Water Dispute Act	4
National Water Resources Council	5
Functions Ministry of Water Resources	5
Organizations under Ministry of Water Resources	5
Issues and Upcoming Challenges in Water Sector	6
Declining per capita water availability	6
Rising multi-sectoral water demand for food production, energy generation etc.	6
Deteriorating Water Quality	6
Over-exploitation of Ground water resources	6
Impact of climate change	6
Low Water Use Efficiency	7
Over-use of Resources – Problems of Water Logging	7
Other issues	7
Strategies for addressing the challenges	7
Gap between creation & utilization of facilities - Improved Management Practices	8
Promotion of Research & Development	8
Basin Level Planning for Integrated Management and Development of Water Resources	9
National Water Policy Guidelines	9
Recommendations of NCIWRDP	9
Integrated Water Resources Management	10
Basin approach	10
Basin approach initiatives in India	11

Description	Page
National Water Mission	11
Basin level planning	12
River Basin Organisation – an Institution for IWRM	12
Institutional Arrangement for River Basin Plans	12
Present Functions of CWC – in Brief	13
Restructuring of CWC	13
Phasing of Restructuring	14
Financial implications	14
Outputs of restructured CWC	14

WATER RESOURCES OF INDIA - AN OVERVIEW

India which has about 16% of the world's population has roughly four percent of the world's water resources and only about 2.45% of the world's land area. As per the World Water Development Report - 1 of the United Nations, India has been ranked at Sl. No. 133 (Out of total of 182 countries) in terms of total renewable per capita water resources (m^3/capita/ year).The per capita water availability as indicated in WWDR - 1 and that of in WWDR - 2 are tabulated as under:

Sl. No.	Ranking (as per WWDR - 1)	Country	Total renewable per capita water resources (m^3/capita/ year)	
			as per WWDR – 1	as per WWDR – 2
1	13	Norway	85478	83920
2	25	Brazil	48314	45570
3	34	Russian Federation	30980	31650
4	40	Australia	25708	24710
5	63	United States	10837	10270
6	74	Nepal	9122	8170
7	76	Bangladesh	8809	8090
8	104	France	3439	3370
9	106	Japan	3383	3360
10	114	Pakistan	2961	1420
11	128	China	2259	2140
12	133	India	1880	1750
13	134	Germany	1878	1870
14	150	South Africa	1154	1110
15	167	Israel	276	250
16	171	Singapore	149	139

The average annual rainfall in the country is about 117 cm. The total precipitation including the snowfall, when converted in volumetric terms, works out to be about 4000 billion cubic meters (BCM).

The average annual rainfall varies considerably from about 1,000 cm in north eastern region to less than 10 cm in western part of Rajasthan. Figure-1 illustrates the variations in the rainfall from one region to the other. In India, the rainfall mostly occurs during the monsoon and that too through a few spells of intense rainfall. It has been estimated that the lower rainfall zone (less than 750 mm annual rainfall) accounts for 33% of net sown area. The medium rain fall zone (750-1125 mm) accounts for 35% of net sown area, the high rain fall zone (1125 to 2000 mm) covers 24% of net sown area where as very high rainfall zone (more than 2000 mm) accounts for remaining 8% of net sown area.

Overall Water Availability

After accounting for the losses due to evaporation, the total average annual water availability for the country has been estimated to be 1869 BCM. However, due to hydrological characteristics and topographical constraints, the utilizable water works out to be only 1123 BCM, out of which about 690 BCM is from surface water and about 433 BCM is through replenishable ground water. However, there are considerable spatial and temporal variations in availability of water as in case of rainfall. Ganga-Brahmaputra river basin contributes to about 60% of the total annual water availability.

Per Capita Water Availability

In view of growing population, the per capita water availability is getting reduced year after year. The estimated per capita water availability is given in the table below:

Year	Population (million)	Per Capita water availability (m^3)
1951	361	5177
2001	1027	1820
2011	1210	1545
2025 (projected)	1394	1341
2050 (projected)	1640	1140

WATER RESORUCES DEVELOPMENT – PRESENT STATUS

Irrigation Development

The gross ultimate irrigation potential for the country has been estimated to be about 139.9 million hectare (Mha). At pre-Plan stage i.e. in the year 1951, the total irrigation potential created was about 22.6 Mha. There has been considerable development in water resources sector. About 108 Mha i.e., about 77% of the ultimate irrigation potential has since been created. The details of the ultimate irrigation potential and the irrigation potential created through various categories of projects are illustrated in the table given below.

Description	Major & Medium	Minor		Total
		Surface water	Ground water	
Ultimate irrigation potential	58.47	17.38	64.05	139.9
Potential created	45.26	15.84	47.11	108.2
Balance potential	13.21	1.54	16.94	31.69

Flood Management

Floods are frequent in the country causing substantial damage. Because of varying rainfall distribution, many a times, areas which are not prone to floods also experience severe inundation. With the increase in population and developmental activity, there has been a tendency to occupy flood plains which has resulted in more serious nature of damages over the year. The phenomenon of urban flooding due to inadequacy of storm water drainage also seems to be more frequent. The area prone to the floods in the country has been assessed to be of the order of about 46 Mha. Flood control measures mostly in the form of flood embankments have been undertaken and about 18.22 Mha of flood prone area have been protected. CWC maintains a network of 145 flood forecasting stations and 28 inflow forecasting stations for advance warning in respect of incoming floods. The CWC is providing technical and financial assistance to States for effective flood management. A State Sector Scheme “Flood Management Programme (FMP)” under which central assistance is provided to States for taking up flood protection, anti-erosion and drainage schemes is also being implemented by CWC.

Storage Capacity Created

Due to large variability of rainfall in space & time the conservation of water through storage either over the ground or under the ground is very important in view of very high temporal

variations. The status in respect of the storage capacity created through large and small reservoirs in the country is furnished in the table below. In addition, there are several traditional water bodies.

Storage already created	225 BCM
Storage in Projects under construction	64 BCM
Estimated storages through projects under consideration	108 BCM

Domestic Sector – Urban and Rural Water Supply

About 92% of urban population has been covered by safe drinking water. Drinking water requirement of most of mega cities are met from reservoirs of irrigation or multi-purpose schemes existing nearby and even by long distance transfer. The rural habitations have been provided access to the safe drinking water from nearly 3 million hand pumps and stand posts and about 0.11 million mini and regional piped water supply schemes. More than 85% of rural water supply is ground water based and consumes about 5% of the total annual replenishable ground water.

Hydropower Development

Out of a total power developed in the country so far hydropower's share stands at 25%. Only 20% of the hydropower potential of the country has been harnessed so far and 10% is under various stages of development. The share of hydropower in the overall energy mix has been declining over the years. Against an ideal hydroelectric-thermal mix of 40:60 it presently stands at 25:75. Due to this the peaking deficits are high. In order to remedy this situation by expediting systematic hydropower development, an initiative of adding 50,000 MW has been taken up.

In sharp contrast to what we have achieved in hydropower development, the continents of North America, Europe and Oceania have developed sizeable percentage of their respective practicable hydropower. India, even lags behind the world average.

Industrial & Other Uses

Water requirement for industries in India, is quite small compared to the quantity of water needed in agriculture. Only about 3 to 4% of present water use is for industrial purposes. However, when industrial demand is concentrated in specific locations, heavy point loads are created on available water resources. There are no fixed norms for water demand for industries but rather a range of values determined by the technology used, selection of plant and process, practice in providing maximum recycling to reduce demand and pollution. The requirement of water for other uses such as navigation, ecological recreation, etc., though not so significant in terms of consumptive use, will continue to be important and will have specific quantity and temporal needs.

ROLE OF CENTRAL AGENCIES IN WATER RESORUCES DEVELOPMENT

The majority of the rivers are in India are inter-state and some of the very important ones including Ganga, Brahmaputra, Indus etc. are trans-boundary, which makes role of Central Government very important in water resources planning and management. In this regard, the constitutional provisions are as under:

Constitutional Provisions

Water is included in the State list (List 2) of 7th schedule of the Constitution of India and hence all activities related to planning, development and management of water resources are undertaken by the respective States. Further, the Constitution provides for regulation and development of inter-State rivers and river valleys by the Union Government to the extent to which such regulation is

Entries Related to Water in State and Union Lists
Entry 17 of List II (State List) of the 7th Schedule
"Water, that is to say, water supplies, irrigation and canals, drainage and embankments, water storage and water power subject to provisions of entry 56 of List I."
Entry 56 of List I (Union List) of the 7th Schedule
"Regulation and development of inter-state rivers and river valleys to the extent to which such regulation and development under the control of the Union is declared by Parliament by law to be expedient in the public interest."

Over the time various measures were taken by the Central Government for effective coordination and management of water resources in the country. Some very important initiatives are given in the paragraphs below:

River Board Act

A "River Board Act" has been enacted for integrated management of inter-State rivers. However, no River Board has been established for integrated planning, development and management of water resources of the river basin due to lack of consensus among co-basin States. Central organizations such as Brahmaputra Board, Narmada Control Authority, Damodar valley Corporation, Bhakhara Beas Management Board, Betwa River Board, Bansagar Board and Tungabhadra Board have been established for specific purposes to plan, manage and regulate the water resources in specified river basins.

Inter-State River Water Dispute Act

The Inter-State issues are generally addressed through mutual agreements among the co-basin States and the Government of India facilitates such agreement. There are about 125 Inter-State agreements which have facilitated the water resources development of Inter-State basins. However, in case of non-agreement, the disputes are adjudicated as per Article 262 of the Constitution. "Inter-State River Water Dispute Act" enacted under Article 262, provides for setting up of Tribunal for adjudication of disputes. At the moment, four Tribunals for Cauvery, Krishna, Ravi-Beas and Vanshdhara rivers have been established.

Article 262 of the Constitution Disputes relating to Water - Adjudication of disputes relating to waters of inter-State rivers or river valleys
Parliament may by law provide for the adjudication of any dispute or complaint with respect to the use, distribution or control of the waters of, or in, any inter-State river or river valley.
Notwithstanding anything in this Constitution, Parliament may by law provide that neither the Supreme Court nor any other court shall exercise jurisdiction in respect of any such dispute or complaint as is referred to in clause (1).

National Water Resources Council

There is a "National Water Resources Council" for laying down National Water Policy and evolving consensus on water related issues among States. The Hon'ble Prime Minister is the Chairman and all Chief Ministers of the States are its members. There is also a National Water Board under the chairmanship of Secretary (WR) for evolving consensus on water related issues and to assist the National Water Resources Council. CWC provides for complete assistance to the Council as well as to the Board.

Functions of Ministry of Water Resources

As per the Allocation of Business Rules functions of the Ministry are outlined as under:

- Development, conservation and management of water as a national resource; overall national perspective of water planning and coordination in relation to diverse uses of water
- National Water Resources Council
- General Policy, technical assistance, research and development training and all matters relating to irrigation, including multi-purpose, major, medium, minor and emergency irrigation works, hydraulic structures for navigation and hydropower; tube wells and groundwater exploration and exploitation; protection and preservation of ground water resources; conjunctive use of surface and ground water, irrigation for agricultural purposes, water management, command area development; management of reservoirs and reservoir sedimentation; flood (control) management, drainage, drought proofing, water logging and sea erosion problems; and dam safety.
- Regulation and development of inter-State rivers and river valleys. Implementation of Awards of Tribunals through Schemes, River Boards.
- Water Laws, legislation.
- Water quality assessment.
- International organizations, commissions and conferences relating to water resources development and International Water Law.
- International Water Law.
- Matters relating to rivers common to India and neighbouring countries; the Joint Rivers Commission with Bangladesh; the Indus Waters Treaty 1960; the Permanent Indus Commission.
- Bilateral and external assistance and cooperation programmes in the field of water resources development.

Organisations under the Ministry of Water Resources

The Ministry is discharging its above listed functions through various attached & subordinate offices, statutory & autonomous bodies and public sector undertakings as listed below:

- Central Water Commission (CWC)
- Central Soil and Material Research Station (CSMRS)
- Ganga Flood Control Commission (GFCC)
- Farakka Barrage Project (FBP)
- Central Water and Power Research Station (CWPRS)
- Central Ground Water Board (CGWB)
- Bansagar Control Board
- Sardar Sarovar Construction Advisory Committee (SSCAC)
- Upper Yamuna River Board (UYRB)
- Narmada Control Authority (NCA)
- Brahmaputra Board (BB)
- Betwa River Board
- Tungabhadra Board

- National Institute of Hydrology (NIH)
- National Water Development Agency (NWDA)
- Water and Power Consultancy Services (India) Limited (WAPCOS)
- National Projects Construction Corporation Limited (NPCC)

ISSUES AND UPCOMING CHALLENGES IN WATER SECTOR

The pressure on our water & land resources is continuously increasing with the rise in population, urbanization and industrialization and threat of adverse impacts of climate change. Consequently, a number of issues have cropped up in water sector which call for timely and effective redressal. Some of these issues are being briefly brought out below:

Declining per capita water availability

The declining per capita water availability is a cause of serious concern. Though from the point-of-view of the National level scenario, India may be above the internationally accepted standards of water scarcity, yet the figures at the basin level vary widely from 13636 m^3 per year in Brahmaputra-Barak basin to 298 m^3 per year in Sabarmati basin. The situation is projected to get even more serious by 2050 when, some part of the country may be under absolute scarcity condition.

Rising multi-sectoral water demand for food production, energy generation etc.

The signal of the dwindling gap between availability and water demand is evident from the projections made for the coming decades. The projections clearly indicate that in 2050, the water demand may be significantly higher in comparison to the utilisable water resources of the country. Judiciously catering to this ever increasing multi-sectoral water requirement will be the most stringent challenge in the days ahead.

Deteriorating Water Quality

Water pollution is a major environmental concern in India. The main sources of water pollution are discharge of domestic sewage and industrial effluents, which contain organic pollutants, chemicals & heavy metals and run-off from land based activities such as agriculture and mining. Non-availability of minimum flow in the rivers has also reduced natural purification capacity of rivers thus increasing pollution.

Over-exploitation of Ground water resources

Rapid pace of ground water development has resulted in a number of problems. In many arid and hard rock areas, overdraft and associated water quality problems are increasing. The unscientific development of groundwater in some coastal areas in the country has led to landward movement of seawater fresh water interface resulting in contamination of fresh water aquifers. In addition to problems caused due to human interference, natural factors like occurrence of high content of fluoride, arsenic and iron are also affecting the ground water quality in several parts of the country.

Impact of climate change

The studies have projected intensification of hydrological cycle due to rise in temperature ie. increase in rainfall but with increased variability in time and space leading to floods-drought-

flood like situations more frequently and more severely affecting the poor and vulnerable sections of the society at large.

Low Water Use Efficiency

The irrigation efficiency in our country is of the order of only 30-35% in most irrigation system, with efficiency of 40-45% in a few exceptional cases. Some of the prime reasons for low irrigation efficiency are completion of dam/ head works ahead of canals, dilapidated irrigation systems, unlined canal systems, lack of field channels, lack of canal communication network, lack of field drainage, improper field leveling etc. Increase of water use efficiency by 20% is very important goal of the National Water Mission recently approved by the Government of India.

Over-use of Resources – Problems of Water Logging

Although development of irrigation has resulted in increase in agricultural production, it has also caused adverse effect in the form of water logging leading to soil salinity. Problem of water logging has been observed in the canal irrigation system and also in the areas of poor drainage resulting in accumulation of water. Apart from lining of canals, wherever required there is a need for drainage development either through surface/sub surface/bio drainage or a combined approach followed by appropriate agronomic measures. There is also a need for conjunctive use of surface and ground water.

Other Issues

Apart from these there are also governance issues like addressing the growing conflicts amongst the users of various sectors as also different regions, lack of co-ordination among the agencies involved in water sector; policy issue like shift from project specific planning to integrated approach with basin or sub-basin as a unit; and administrative issues like problems of land acquisition and Environment & Forests clearance of projects.

Strategies for addressing the challenges

There is urgent need for addressing the above-stated issues effectively. Broadly, the approach route for mitigating the issues & challenges can be categorized into three principal heads. Category one is to bridge the gap between availability and utilization through developmental activities. The second one is to adopt improved management practices to fill up the gap between creation and utilization and the third one is to bridge the gap between demand and availability by investigation and planning backed by research and development. It is to be however noted that the proper implementation of all the activities identified under each category is of paramount importance to eradicate or even dilute the looming threats being mounted by those steep challenges. Therefore, co-operation and co-ordination among all the agencies involved in the water sector is a prerequisite for achieving any success in the future.

The level of creation of storages in India is decisively lower compared to some other nations in the world. The per capita storage in the country which is about 225 m^3 is way below the storage achieved in many of the countries such as Russia (6103 m^3), Australia (4733 m^3), Brazil (3145 m^3), United States (1964 m^3), Turkey (1739 m^3), Spain (1410 m^3), Mexico (1245 m^3), China (1111 m^3) and South Africa (753 m^3) and there is an urgent need to vigorously pursue the case for creating storages, wherever feasible, given its projected rise in population, urbanization & industrialization.

Gap between Creation and utilization of facilities - Improved Management Practices

Improvement in water use efficiency is increasingly perceived to be a very important strategy for mitigating the receding gap between availability and demand. This is even more relevant in case of irrigation sector since a small improvement in the efficiency can lead to considerable saving of water that can be utilized for catering to the demand from other sectors. Different water management practices need to be followed in different sectors depending on their suitability.

With the demand from other sectors rising at a faster pace, the availability of water for irrigation would reduce. It is, therefore necessary to improve the performance of existing system. Higher degree of efficiencies in the management of water use in irrigation sector is required to be achieved to sustain production of crops. Some of the management practices that need to be taken up in right earnest are implementation of restructured CAD&WM programme in States, participatory irrigation management (PIM), modernisation of irrigation system and performance improvement, rationalization of water rates, benchmarking of irrigation systems, conjunctive use of surface and ground water, on farm management, etc.

Promotion of Research & Development

The finite water availability and the ever rising demand due to rise in population, urbanization, industrialization etc. requires a well focused Research and Development Programme to gauge the intensity of the problem as well as its remedial measures.

Since, after implementation of all the development as well as management strategies, the total utilizable water resources of the country may not be able to match the water demand by the year 2050 and therefore, exploration of newer concepts for augmenting the available resources is an equally vital area where the country needs to concentrate as a part of the long term strategy. Some of these are recycling & reuse of water, Inter-basin transfer of water, Artificial Recharge of ground water, Desalination of sea water etc.

The other miscellaneous water requirements are for recreation, navigation etc., most of which are non-consumptive. Necessity for maintaining minimum flow may arise out of the necessity to maintain water quality, river regime, maintenance of river eco system or other public necessities such as bathing etc. Maintenance of minimum flow in river can also be considered as a water use since it restricts the quality of water that can be diverted for other uses. The quantity will vary according to river regimes.

Water resource development is to be seen not merely as a single-sector-end objective, but as a prime mover in developing larger systems with multiple linkages. This calls for a well set out multi-disciplinary research agenda covering not only technological issues but also issues of social, economic, legal and environmental concerns. Therefore the planning, development and management of water resources has to be taken up in an integrated manner for addressing the concerns facing the water sector considering basin as a hydrologic unit. This integration has to be a multi-disciplinary approach which would take care of all the conflicting issues and deliver solutions that would be technically feasible, economically viable, socially acceptable and ecologically & environmentally sound. Water use, in turn, has its impact on water quality and therefore utilization of water has to be so managed as not to contribute to the deterioration of water quality that may seriously jeopardize its future availability.

Adequate, well-trained and motivated work force always forms the backbone of any developmental activity. In a hugely diversified field like the water sector also, there is pressing need for sustained human resource development through multi-level training of personnel involved in the sector to undertake the challenging tasks ahead.

BASIN LEVEL PLANNING FOR INTEGRATED MANAGEMENT AND DEVELOPMENT OF WATER RESOURCES

National Water Policy Guidelines

The National Water Policy, 2002 highlighted water as a scarce and precious national resource to be planned, developed, conserved and managed as such, and on an integrated and environmentally sound basis, keeping in view the socio-economic aspects and needs of the states.

- The Policy states that *a standardized national information system should be established with a network of data banks and data bases, integrating and strengthening the existing central and state level agencies and improving the quality of data and the processing capabilities. It states that standards of coding, classification, processing of data and methods/ procedures for its collection should be adopted and special efforts should be made to develop and continuously upgrade technological capability to collect, process and disseminate reliable data in the desired time frame.*
- The Policy further states that *water resources development and management will have to be planned for a hydrological unit such as drainage basin as a whole or for a sub-basin, multi-sectorally, taking into account surface and ground water for sustainable use incorporating quantity and quality aspects as well as environmental considerations. The policy has accordingly advocated that appropriate River Basin Organisations should be established for the planned development and management of a river basin as a whole or sub-basins, wherever necessary, the scope and powers of which shall be decided by the basin states themselves. The Policy provides that there should be an integrated and multi-disciplinary approach to the planning, formulation, clearance and implementation of projects, including catchment area treatment and management, environment and ecological aspects, the rehabilitation of affected people and command area development. The policy also states that both surface water and ground water should be regularly monitored for quality and a phased programme should be undertaken for improvements in water quality. In respect of flood control and management, the Policy provides that there should be a master plan for each flood prone basin.*

Recommendations of NCIWRDP

The National Commission for Integrated Water Resources Development Plan (NCIWRDP), set up by the Government of India under the chairmanship of Dr. S.R. Hashim, Member, Planning Commission, in its report of September, 1999, had inter-alia opined as given in the box below:

- Need has been felt to have a statutory apex body at the Central level which could be entrusted with the responsibility of collection, analysis and dissemination of data, preparation of guidelines for integrated development and management plans, monitoring the implementation of schemes and principles of sharing water in the inter-state rivers. In our opinion, the Central Water Commission could be restructured and made to shoulder this responsibility after making it a statutory body. The restructured CWC besides performing the above functions could also prescribe technical standards for the designs, approve the major schemes for implementation and assist the River Basin Organisations (RBOs) to evolve agreements/consensus between the states in respect of matters pertaining to inter-basin transfers and pollution control.

- We recommend that the CWC should be restructured into a statutory high powered inter-disciplinary Commission, with maximum autonomy, in order to deal with policy and reforms, centre-state and inter-state issues, planning and project finalization, international aspects other than those that have to be retained with the ministry; legal, economic and financial issues, water productivity, conservation and management, environmental aspects and rehabilitation, people's participation and communication, coordination and facilitation of inter-disciplinary research, HRD and training and a National Information/Data System. This responsibilities will be fulfilled by organizing the work of the Commission in major Divisions, which be headed not by engineers alone, but also by senior professional in respective fields with expertise in water sector. The Commission should have powers to establish innovative organizational structures for specific functions, say, for example, designs, which is a very important activity.
- The Ministry of Water Resources was concerned, from its earlier days as Ministry of Irrigation and Power, mainly with 'irrigation' aspects of water resources. Its current mandate in the allocation of business includes the following general clause, namely:
  - "Development, conservation and management of water as a national resource; overall national perspective of water planning and coordination in relation to diverse use of water."
  - Water supply - urban and rural, soil conservation and watershed development, environment, water quality, etc. are dealt with by other Ministries/ Departments, the policies and programmes of the one impinge on the other. Since water has diverse uses, the entire subject cannot be brought under one Ministry and as stated above, what is essential is to ensure coordination. For this purpose, the ministry (secretariat) and more so, its attached office (head of the department) should have multidisciplinary capability.
- In our view, the Chairman, CWC should actually function as a Secretary to Government in the Ministry in respect of certain delineated responsibilities. We suggest that the entire question of restructuring of the CWC . . . . may be got studied in detail, ... by appointing competent consultants."

Integrated Water Resources Management

Integrated Water Resources Management (IWRM) is defined as a process that promotes the coordinated development and management of water, land and related resources, in order to maximize the resultant economic and social welfare in and equitable manner without compromising the sustainability of vital ecosystems. Integrated Planning for Water Resources encompasses a very wide range of processes e.g.

- integration of planning process for development of different sources of water i.e. surface water and ground water;
- integration of various purposes i.e. drinking water requirement, irrigation, industrial needs, hydropower, environmental purposes etc.;
- integration of planning for development of various possible sites and also to integrate the management.

Basin Approach

The objective of integrated planning for water resources development and management can be achieved only through a basin approach. All individual development projects and proposals should be formulated and considered within the framework of such an overall plan keeping in view the existing agreements/awards for a basin or a sub-basin so that the best possible combination of options can be selected and sustained. Special multi-disciplinary units should be set up to prepare comprehensive plans taking into account not only the needs of irrigation but also harmonising various other water uses, so that the available water resources are determined and put to optimum use having regard to existing agreements or awards of

Tribunals under the relevant laws. The scope and powers of the river basin organisations shall be decided by the basin states themselves.

Essential high-level water governance functions

1. **Organizing and building capacity in the water sector**
   - 1.1 Creating and modifying an organizational structure
   - 1.2 Assigning roles and responsibilities
   - 1.3 Setting national water policy
   - 1.4 Coordinating and integrating among sub-sectors, levels, and national sub-regions
   - 1.5 Establishing linkages with neighboring riparian countries
   - 1.6 Building public and political awareness of water sector issues
   - 1.7 Securing and allocating funding for the sector
   - 1.8 Developing and utilizing well-trained water sector professionals
2. **Planning strategically**
   - 2.1 Collecting, managing, storing and utilizing water-relevant data
   - 2.2 Projecting future supply and demand for water
   - 2.3 Designing strategies for matching expected long-term water supply and demand and dealing with shortfalls (including drought mitigation strategies)
   - 2.4 Developing planning and management tools to support decision making
3. **Allocating water**
   - 3.1 Awarding and recording water rights and corollary responsibilities
   - 3.2 Establishing water and water rights transfer mechanisms
   - 3.3 Adjudicating disputes
   - 3.4 Assessing and managing third party impacts of water and water rights transactions
4. **Developing and managing water resources**
   - 4.1 Constructing public infrastructure and authorizing private infrastructure development
   - 4.2 Forecasting seasonal supply and demand and matching the two
   - 4.3 Operating and maintaining public infrastructure according to established plans and strategic priorities
   - 4.4 Applying incentives and sanctions to achieve long and short term supply/demand matching (including water pricing)
   - 4.5 Forecasting and managing floods and flood impacts
5. **Regulating water resources and services**
   - 5.1 Issuing and monitoring operating concessions to water service providers
   - 5.2 Enforcing withdrawal limits associated with water rights
   - 5.3 Regulating water quality in waterways, water bodies, and aquifers (including enforcement)
   - 5.4 Protecting aquatic ecosystems
   - 5.5 Monitoring and enforcing water service standards

Basin Approach Initiatives in India

The National Commission for Integrated Water Resources Development in its report has summarized the efforts made in India in this direction. The various initiatives in the form of (a) Damodar Valley Corporation, (b) Krishna –Godavari Commission, (c) Sone River Commission, (d) Ganga Flood Control Commission, (e) Brahmaputra Board, (f) Narmada Control Authority, (g) Bhakara-Beas Management Board, and (h) Upper Yamuna River Board have been taken by the Government from time to time.

National Water Mission

The National Action Plan on Climate Change envisages National Water Mission as one of the eight missions to effectively address the impact of climate change on water resources. One of the important goals identified for National Water Mission is promotion of basin level integrated water resources management. The studies and required data collection has also

been considered necessary strategies not only for reliable assessment of the impacts but also for continued monitoring of the changes in hydrological parameters.

Basin Level Planning

The country is on the path of becoming world leader with its all-round socio-economic development. The demand on water by different sectors for sustaining the pace of development, food security, changing life style and environmental concerns is accordingly increasing. It is clearly emerging from policy documents of the Government, the recommendations made by various high level committees from time to time that there is *urgent need to adopt river basins as the fundamental block for integrated planning, development and management of water resources in the country* in order to tackle present issues being faced by the water sector and the future emerging challenges in the sector.

River Basin Organisation – an Institution for IWRM

As already mentioned that though there is a "River Board Act" enacted for integrated management of inter-State rivers. However, no River Basin Organisation (RBO) has been established for integrated planning, development and management of water resources of the river basin due to lack of consensus among co-basin States. The Central Government has all along been promoting creation of RBOs and in 11th FYP a scheme has been under implementation for creation of two RBOs but they could not be setup. However, there is no alternative but to move ahead for basin specific data collection, knowledge base development in order to develop basin plans for the so that RBOs may start functioning without loss of time once they are in place.

Institutional Arrangement for River Basin Plans

Among the available organizations dealing with all the facets of water with national perspective and also with basin orientation, Central Water Commission should be entrusted with the responsibility. Over the years, CWC has developed in to a multifaceted organisation occupying a very large space in the national programme for development of water resources in the country. Its vast technological and managerial experience over the years and the spatial spread of such experience makes it a pre-eminent institution in the world. This is recognized both internationally and by all the State Governments. Thorough un-biasness, transparency and neutrality in dealing with inter-state matters make CWC the most acceptable organization, not only by the States but also by the hon'ble courts of law and policy makers. Successive tribunals put their highest faith in the data observed by the CWC as well as its analysis and delivered their awards based on the feedback of CWC. Advice of CWC has been backbone of the Government's negotiations with the neighboring countries on various water related issues in order to safeguard the national interests.

Evolution of CWC	
1867	Establishment of Irrigation Department
1919	Irrigation became provincial subject; Power to sanction irrigation projects beyond Rs.5 million remained with Central Government in addition to projects having inter-provincial implications
1935	Irrigation continued to be provincial subject even after the GOI Act of 1935 passed
1945	a high level body "**Central Waterways Irrigation and Navigation Commission**

Evolution of CWC	
	(CWINC)" was set up with one Chairman, two Members and six Directorates for considering large irrigation projects
1951	The CWINC and the Central Electricity Commission were merged to form the **Central Water and Power Commission (CWPC)** for better co-ordination between the irrigation and power sectors to give more emphasis to hydropower sector. [*The CWPC was charged with the responsibility of initiating, co-ordinating and furthering projects and schemes meant for the utilisation, conservation and control of surface water resources and also schemes for power development (including thermal power), transmission and utilisation of electric energy throughout the country.*]
1957 & 1967	Two committees appointed by the GoI commended the work of CWPC and recommended it's strengthening
1965	Central Water Engineering Services (CWES) Group 'A' created
1968	First field office of CWPC opened in Patna mainly for setting up flood forecasting network in the country
1974	CWPC was bifurcated into the **Central Water Commission (CWC)** and the **Central Electricity Authority (CEA)**, the former being charged with the development of irrigation and of water resource management (WRM)
1992-93	CWC widened its field formation mainly to orient itself in line of basins and decentralized project appraisal and monitoring activities in addition to hydrological observation, flood forecasting, survey & investigation etc. works through its 13 Chief Engineer level Offices all through the country. These offices maintained close coordination with the related State agencies and subsequently entrusted with the more works including appraisal & monitoring of AIBP projects, monitoring of CAD & WM projects in PIM activities and later on monitoring of RRR of water bodies and flood management schemes being implemented by the States

Present Functions of CWC – in Brief

The CWC, as already mentioned, has presence in almost all the aspects of water resources development and management. The main functions of CWC are given as below which are being discharged through its India-wide field basin oriented setup:

- Hydrological observations and studies,
- Maintaining water resources information system for each river basin,
- Providing assistance in regulation and development of inter-state rivers,
- Issuing flood/inflow forecasts,
- Carrying out techno-economic appraisal of projects,
- Taking up survey and investigation of projects on request,
- Providing design consultancy, and
- Advising and assisting the Government of India on related matters.

Restructuring of CWC

CWC has already evolved and oriented towards basin level planning and management on smaller scale. To carry out the present tasks of preparing basin plans in order to address basin specific present water issues and future challenges, the organization need to be (a) further orient and strengthen in the basin itself to cater the local needs and to serve the States in a better way; and (b) assess the manpower and capacity requirement to discharge the given functions smoothly and of the desired quality. The manpower requirement for restructured Regional Offices and Headquarters organization of CWC in indicated at Annex-I.

Phasing of Restructuring

The proposed restructuring ie. Opening of new hydrological observation stations, modernization of data collection, manpower recruitment, infrastructure development for the Offices, Outsourcing of the routine secretarial works and related matters etc. would be completed in phased but accelerated manner as detailed at Annex-II.

Financial Implications

The financial implication has also been worked out for (a) opening and maintaining of the hydrological observation stations; (b) opening of office space for the officials and staff in the field offices; (c) increased fund requirement for the salaries of officers and staff (not substantial because of Government's scheme of non-functional upgradation, many officers are already drawing salary of senior level). The non-recurring expenditure in this regard has been estimated as Rs. 289.60 crore and annual recurring expenditure as Rs 119.92 crore. The details are available at Annex-III.

The detailed proposal on Restructuring of CWC is included in Volume II of the report.

Outputs of Restructured CWC

The expected outputs, by 2025, of the restructured CWC has been listed as given below:

- Ready with Basin Plans;
- Establish system for continuous updation of Basin Plans;
- Ready with Water Strategy plans w.r.t. neighboring countries;
- Ready with adaptation measures for climate change;
- Fully equipped with latest know-how in water sector;
- Well developed data collection network, communication and analysis centres;
- Dynamic GIS based Water resources information system in place; and
- Increase in water use efficiency by 20%.

Abstract of Different Cadre Posts at various Field Offices and Head Quarters of CWC

Designation	Upper Ganga		Lower Ganga		Indus		Brahmaputra		Narmada & Tapi		Mahanadi & ER		Krishna & Godavari		Cauvery & Southern Rivers		National Water Academy		Total Field Setup		CWC Head Quarters		Grand Total	
	Existing	Proposed	Existing	Proposed	Existing	Proposed	Existing	Proposed	Existing	Proposed	Existing	Proposed	Existing	Proposed	Existing	Proposed	Existing	Proposed	Existing	Proposed	Existing	Proposed	Existing	Proposed
Chairman																					1	1	1	1
Vice Chairman																					0	2	0	2
Chief Commissioner / Member	0	1	1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	0	1	8	3	2	4	10
Commissioner /Chief Engineer	2	4	4	5	1	3	2	4	2	4	1	3	2	4	2	4	1	1	17	32	17	18	34	50
Director/ Superintending Engr.	9	16	13	21	4	11	8	16	8	14	3	13	6	16	7	16	5	7	63	130	83	64	146	194
Deputy Director/ Executive Engr	11	29	29	45	6	19	12	26	9	27	3	22	9	35	7	23	3	15	89	241	152	97	241	338
Deputy Director (Hydromet)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	4	4
Deputy Director (COMM)																			0	0	2	4	2	4
Under Secretary																			0	0	11	11	11	11
Principal Private Secretary																			0	0	5	5	5	
Asstt. Director /Asstt. Executive Engr.	19	39	17	43	8	20	17	33	10	30	5	27	9	37	13	31	0	14	98	274	154	103	252	377
Asstt. Director (COMM)	1	1	1	1	0	0	1	1	0	1	0	0	0	1	0	0	0	0	3	5	2	4	5	9
Asstt. Director (Hydromet)	0	0	2	3	0	2	1	2	0	0	0	0	0	0	0	2	0	0	3	9	3	3	6	12
Research Officer	2	5	0	0	0	0	0	0	0	0	0	0	2	2	1	1	0	0	5	8	1	1	6	9
Other 'Gr 'A'	1	1	14	14	0		0	0	0	0	0	0	0	0	0	0	0	1	15	16	31	31	46	47
Total 'Gr-A'	**45**	**96**	**81**	**133**	**19**	**56**	**41**	**83**	**29**	**77**	**12**	**66**	**28**	**96**	**30**	**78**	**9**	**38**	**294**	**723**	**469**	**350**	**763**	**1073**
Asstt. Director - II/Sub Divisional Engr.	30	47	57	63	5	27	39	45	15	25	8	28	30	75	17	31	0	2	201	343	172	124	373	467
Asstt. Engr. (COMM)	4	6	2	4	0	0	1	3	1	2	2	2	1	3	0	0	0	0	11	20	1	2	12	22
Asstt Engr.(HM)	1	1	1	4	0	0	3	4	2	3	1	2	2	4	0	0	0	0	10	18	3	3	13	21
Asstt. Research Officer	2	5	1	4	0	0	1	2	1	2	0	0	1	5	2	3	0	0	8	21	0	0	8	21
Junior Engineer	147	200	147	260	31	100	120	145	63	110	31	110	126	337	67	96	2	2	734	1360	14	20	748	1380
Junior Engineer (COMM)	14	14	13	14	1	1	11	12	8	8	4	4	4	8	0	0	0	0	55	61	1	1	56	62
Senior Research Assistant	4	9	0	0	1	5	1	2	0	0	0	0	2	10	2	3	0	0	10	29	0	0	10	29
Sr. Professional Assistant (HM)	2	4	3	3	1	3	3	4	1	2	1	2	1	2	0	0	0	1	12	21	5	5	17	26
Hd. Draughtsman	4	4	10	9	1	1	2	2	0	0	0	0	1	1	1	1	0	0	19	18	48	48	67	66
Sr. Draughtsman	26	60	24	24	10	10	27	24	12	12	5	5	12	12	12	12	1	1	129	160	280	158	409	318
Section Officer (CSS)	1	2	4	6	0	0	0	0	0	0	0	0	1	4	0	0	0	0	6	12	21	21	27	33
Jr. /Asstt. Accounts Officer	8	15	5	16	1	5	8	10	3	7	2	9	5	25	3	4	0	1	35	92	0	0	35	92
Assistant (CSS)	2	6	23	25	0	2	2	5	0	2	0	2	2	12	2	7	0	0	31	61	103	103	134	164
Private Secretary (CSSS)	2	5	5	6	1	5	0	1	0	1	1	4	1	6	2	5	0	0	12	33	35	35	47	68
Personal Assistant (CSSS)	0	7	1	7	0	7	0	7	0	7	0	7	1	13	3	16	0	0	5	71	85	85	90	156
Office Superintendent (SO)	5	10	1	4	1	4	3	4	1	2	1	4	2	8	0	0	0	0	14	36	0	0	14	36
Stenographer Gr-1(SO)	2	3	5	5	1	2	3	4	0	0	1	4	3	8	0	0	2	2	17	28	1	1	18	29
Other 'Gr-B'	1	1	60	60					0	0					0	0	0	1	61	62	19	19	80	81
Total 'Gr-B'	**255**	**399**	**362**	**514**	**54**	**172**	**224**	**274**	**107**	**183**	**57**	**183**	**195**	**533**	**111**	**178**	**5**	**10**	**1370**	**2446**	**788**	**625**	**2158**	**3071**
Assistant (SO)	14	22	6	20	5	5	15	19	6	10	4	10	7	20	5	7	1	2	63	115	2	2	65	117
UDC(CSCS)	1	4	4	8	0	0	1	1	3	6	0	2	5	20	3	8	0	0	17	49	77	72	94	121
UDC(SO)	70	86	96	116	15	30	50	60	16	25	14	25	34	60	20	25	1	2	316	429	5	5	321	434
LDC(CSCS)	1	5	5	5	1	8	2	2	0	3	0	6	5	15	2	7	0	0	16	51	102	98	118	149
LDC(SO)	38	55	70	70	13	25	38	45	13	20	11	20	23	50	10	14	2	7	218	306	3	3	221	309
Stenographer	13	13	36	36	5	9	10	10	10	18	5	9	6	10	6	8	3	6	94	119	32	32	126	151
Mechanic (COMM)	14	14	10	10	0	0	8	8	2	2	1	1	3	3	0	0	0	0	38	38	0	0	38	38
Technical Assistant (COMM)	28	28	31	50	0	0	33	33	21	25	11	20	13	13	0	0	0	0	137	169	0	0	137	169
Professional Assistant (HM)	13	18	10	15	1	4	9	9	6	10	4	8	4	15	0	0	0	0	47	79	5	5	52	84
Research Asstt/ Sr. Research Asstt.	48	114	21	74	2	13	4	6	9	20	6	26	12	35	8	11	0	1	110	300	4	4	114	304
Other Gr-C	192	205	602	605	32	33	177	178	68	69	64	66	110	110	39	39	6	15	1290	1320	404	384	1694	1704
Total 'Gr-C'	**432**	**564**	**891**	**1009**	**74**	**127**	**347**	**371**	**154**	**208**	**120**	**193**	**222**	**351**	**93**	**119**	**13**	**33**	**2346**	**2975**	**634**	**605**	**2980**	**3580**
Grand Total	**732**	**1059**	**1334**	**1656**	**147**	**355**	**612**	**728**	**290**	**468**	**189**	**442**	**445**	**980**	**234**	**375**	**27**	**81**	**4010**	**6144**	**1891**	**1580**	**5901**	**7724**

Annex-1 **(Sheet -1)**

Upper Ganga

Designation	Employees (Existing)	Employees (Required)	Employees (Proposed)
	Number	Number	Number
Chief Commissioner / Member	0	1	1
Commissioner /Chief Engineer	2	5	4
Director/ Superintending Engr.	9	25	16
Deputy Director/ Executive Engr	11	36	29
Deputy Director (Hydromet)	0	1	0
Asstt. Director /Asstt. Executive Engr.	19	52	39
Asstt. Director (COMM)	1	2	1
Asstt. Director (Hydromet)	0	2	0
Asstt. Director (ISS)	1	2	1
Research Officer	2	5	5
Total 'Gr -A'	**45**	**132**	**96**
Asstt. Director - II/Sub Divisional Engr.	30	70	47
Asstt. Engr. (COMM)	4	9	6
Asstt Engr.(HM)	1	3	1
Asstt. Research Officer	2	5	5
Junior Engineer	147	320	200
Junior Engineer (COMM)	14	33	14
Senior Research Assistant	4	9	9
Sr. Professional Assistant (HM)	2	5	4
Hd. Draughtsman	4	6	4
Sr. Draughtsman	26	60	60
Section Officer (CSS)	1	2	2
Jr. /Asstt. Accounts Officer	8	17	15
Assistant (CSS)	2	6	6
Private Secretary (CSSS)	2	5	5
Personal Assistant (CSSS)	0	7	7
Office Superintendent (SO)	5	10	10
Steno-1(SO)	2	3	3
Other 'Gr-B'	1	2	1
Total 'Gr-B'	**255**	**574**	**399**
Assistant (SO)	14	26	22
UDC(CSCS)	1	6	4
UDC(SO)	70	113	86
LDC(CSCS)	1	8	5
LDC(SO)	38	75	55
Stenographer	13	30	13
Mechanic (COMM)	14	33	14
Technical Assistant (COMM)	28	66	28
Professional Assistant (HM)	13	32	18
Research Asstt/ Sr. Research Asstt.	48	114	114
Other Gr-C	192	442	205
Total 'Gr-C'	**432**	**945**	**564**
Grand Total	**732**	**1651**	**1059**

CSS - Central Secretariat Service
CSSS - Central Secretariat Stenographers Service
CSCS- Central Secretariat Clerical Service

SO - Subordinate Office
HM - Hydromet Cadre
COMM - Communication Cadre

Indus Basin Organisation

Designation	Employees (Existing)	Employees (Required)	Employees (Proposed)
Chief Commissioner / Member	0	1	1
Commissioner /Chief Engineer	1	5	3
Director/ Superintending Engr.	4	17	11
Deputy Director/ Executive Engr	6	34	19
Deputy Director (Hydromet)	0	1	0
Asstt. Director /Asstt. Executive Engr.	8	40	20
Asstt. Director (Hydromet)	0	2	2
Total ' Gr-A'	**19**	**99**	**56**
Asstt. Director - II/Sub Divisional Engr.	5	35	27
Asstt Engr.(HM)	0	1	0
Junior Engineer	31	156	100
Junior Engineer (COMM)	1	8	1
Sr. Professional Assistant (HM)	1	8	3
Sr. Research Assistant (SRA)	1	5	5
Hd. Draughtsman	1	5	1
Sr. Draughtsman	10	44	10
Jr. /Asstt. Accounts Officer	1	5	5
Assistant (CSS)	0	2	2
Private Secretary (CSSS)	1	5	5
Personal Assistant (CSSS)	0	7	7
STENO-1(SO)	1	2	2
Office Superintendent (SO)	1	4	4
Total 'Gr-B'	**54**	**286**	**172**
Assistant (SO)	5	21	5
UDC(CSCS)	0	4	0
UDC(SO)	15	63	30
LDC(CSCS)	1	8	8
LDC(SO)	13	44	25
Stenographer	5	16	9
Professional Assistant (HM)	1	6	4
Research Asstt/ Sr. Research Asstt.	2	13	13
Other Gr-C	32	154	33
Total 'Gr-C'	**74**	**330**	**127**
Grand Total	**147**	**715**	**355**

CSS - Central Secretariat Service
CSSS - Central Secretariat Stenographers Service
CSCS- Central Secretariat Clerical Service

SO - Subordinate Office
HM - Hydromet Cadre
COMM - Communication Cadre

Annex-I **(Sheet-3)**

Lower Ganga Basin Organisation

Designation	Employees (Existing)	Employees (Required)	Employees (Proposed)
	Number	Number	Number
Chief Commissioner / Member	1	1	1
Commissioner /Chief Engineer	4	5	5
Director/ Superintending Engr.	13	27	21
Deputy Director/ Executive Engr	29	57	45
Deputy Director (Hydromet)	0	1	0
Asstt. Director /Asstt. Executive Engr.	17	54	43
Asstt. Director (COMM)	1	4	1
Asstt. Director (Hydromet)	2	9	3
A(Others)	14	14	14
Total 'Gr -A'	**81**	**172**	**133**
Asstt. Director - II/Sub Divisional Engr.	57	109	63
Asstt. Engr. (COMM)	2	7	4
Asstt Engr.(HM)	1	5	4
Asstt. Research Officer	1	4	4
Junior Engineer	147	306	260
Junior Engineer (COMM)	13	47	14
Senior Research Assistant			
Sr. Professional Assistant (HM)	3	10	3
Hd. Draughtsman	10	11	9
Sr. Draughtsman	24	66	24
Section Officer (CSS)	4	6	6
Jr. /Asstt. Accounts Officer	5	16	16
Assistant (CSS)	23	25	25
Private Secretary (CSSS)	5	8	6
Personal Assistant (CSSS)	1	10	7
Office Superintendent (SO)	1	4	4
Steno-1(SO)	5	8	5
Other 'Gr-B'	60	60	60
Total 'Gr-B'	**362**	**701**	**514**
Assistant (SO)	6	21	20
UDC(CSCS)	4	15	8
UDC(SO)	96	138	116
LDC(CSCS)	5	20	5
LDC(SO)	70	112	70
Stenographer	36	49	36
Mechanic (COMM)	10	36	10
Technical Assistant (COMM)	31	113	50
Professional Assistant (HM)	10	37	15
Research Asstt/ Sr. Research Asstt.	21	74	74
Other Gr-C	602	922	605
Total 'Gr-C'	**891**	**1536**	**1009**
Grand Total	**1334**	**2408**	**1656**

CSS - Central Secretariat Service

CSSS - Central Secretariat Stenographers Service

CSCS- Central Secretariat Clerical Service

SO - Subordinate Office

HM - Hydromet Cadre

COMM - Communication Cadre

Brahmaputra & Barak

Designation	Employees (Existing)	Employees (Required)	Employees (Proposed)
Chief Commissioner / Member	0	1	1
Commissioner /Chief Engineer	2	4	4
Director/ Superintending Engr.	8	20	16
Deputy Director/ Executive Engr	12	30	26
Deputy Director (Hydromet)	0	1	0
Asstt. Director /Asstt. Executive Engr.	17	36	33
Asstt. Director (Hydromet)	1	4	2
Asstt. Director (COMM)	1	2	1
Total 'Gr-A'	**41**	**96**	**83**
Asstt. Director - II/Sub Divisional Engr.	39	64	45
Asstt. Engr. (COMM)	1	3	3
Asstt Engr.(HM)	3	6	4
Asstt. Research Officer	1	2	2
Junior Engineer	120	161	145
Junior Engineer (COMM)	11	17	12
Senior Research Assistant	1	2	2
Sr. Professional Assistant (HM)	3	5	4
Hd. Draughtsman	2	4	2
Sr. Draughtsman	27	50	24
Jr. /Asstt. Accounts Officer	8	10	10
Assistant (CSS)	2	5	5
Private Secretary (CSSS)	0	1	1
Personal Assistant (CSSS)	0	7	7
Office Superintendent (SO)	3	4	4
Steno-1(SO)	3	4	4
Total 'Gr-B'	**224**	**344**	**274**
Assistant (SO)	15	19	19
UDC(CSCS)	1	6	1
UDC(SO)	50	67	60
LDC(CSCS)	2	9	2
LDC(SO)	38	54	45
Stenographer	10	17	10
Mechanic (COMM)	8	13	8
Technical Assistant (COMM)	33	52	33
Professional Assistant (HM)	9	15	9
Research Asstt/ Sr. Research Asstt.	4	6	6
Other Gr-C	177	280	178
Total 'Gr-C'	**347**	**539**	**371**
Grand Total	**612**	**980**	**728**

CSS - Central Secretariat Service
CSSS - Central Secretariat Stenographers Service
CSCS- Central Secretariat Clerical Service
SO - Subordinate Office
HM - Hydromet Cadre
COMM - Communication Cadre

Narmada Basin Organisation

Designation	Employees (Existing)	Employees (Required)	Employees (Proposed)
Chief Commissioner / Member	0	1	1
Commissioner /Chief Engineer	2	5	4
Director/ Superintending Engr.	8	23	14
Deputy Director/ Executive Engr	9	28	27
Deputy Director (Hydromet)	0	1	0
Assistant Director (COMM)	0	1	1
Asstt. Director /Asstt. Executive Engr.	10	30	30
Asstt. Director (Hydromet)	0	2	0
Total 'Gr-A'	**29**	**91**	**77**
Asstt. Director - II/Sub Divisional Engr.	15	44	25
Asstt. Engr. (COMM)	1	2	2
Asstt Engr.(HM)	2	5	3
Asstt. Research Officer	1	2	2
Junior Engineer	63	137	108
Junior Engineer (COMM)	8	17	8
Sr. Professional Assistant (HM)	1	2	2
Hd. Draughtsman	0	1	0
Sr. Draughtsman	12	35	12
Jr. /Asstt. Accounts Officer	3	7	7
Assistant (CSS)	0	2	2
Private Secretary (CSSS)	0	1	1
Personal Assistant (CSSS)	0	7	7
Office Superintendent (SO)	1	2	2
Total 'Gr-B'	**107**	**265**	**181**
Assistant (SO)	6	13	10
UDC(CSCS)	3	11	6
UDC(SO)	16	35	25
LDC(CSCS)	0	6	3
LDC(SO)	13	28	20
Stenographer	10	23	18
Mechanic (COMM)	2	4	2
Technical Assistant (COMM)	21	46	25
Professional Assistant (HM)	6	14	10
Research Asstt/ Sr. Research Asstt.	9	20	20
Other Gr-C	68	160	69
Total 'Gr-C'	**154**	**360**	**208**
Grand Total	**290**	**716**	**466**

CSS - Central Secretariat Service
CSSS - Central Secretariat Stenographers Service
CSCS- Central Secretariat Clerical Service
SO - Subordinate Office
HM - Hydromet Cadre
COMM - Communication Cadre

Annex-I **(Sheet -6)**

Mahanadi & Eastern Rivers

Designation	Employees (Existing)	Employees (Required)	Employees (Proposed)
Chief Commissioner / Member	0	1	1
Commissioner /Chief Engineer	1	4	3
Director/ Superintending Engr.	3	17	13
Deputy Director/ Executive Engr	3	23	22
Deputy Director (Hydromet)	0	1	0
Asstt. Director /Asstt. Executive Engr.	5	28	27
Asstt. Director (Hydromet)	0	2	0
Total 'Gr A'	**12**	**76**	**66**
Asstt. Director - II/Sub Divisional Engr.	8	42	28
Asstt. Engr. (COMM)	2	9	2
Asstt Engr.(HM)	1	5	2
Junior Engineer	31	130	110
Junior Engineer (COMM)	4	17	4
Sr. Professional Assistant (HM)	1	4	2
Hd. Draughtsman	0	1	0
Sr. Draughtsman	5	31	5
Jr. /Asstt. Accounts Officer	2	9	9
Assistant (CSS)	0	2	2
Private Secretary (CSSS)	1	4	4
Personal Assistant (CSSS)	0	7	7
Office Superintendent (SO)	1	4	4
Steno -1 (SO)	1	4	4
Total 'Gr-B'	**57**	**268**	**183**
Assistant (SO)	4	16	10
UDC(CSCS)	0	4	2
UDC(SO)	14	58	25
LDC(CSCS)	0	6	6
LDC(SO)	11	44	20
Stenographer	5	15	9
Mechanic (COMM)	1	4	1
Technical Assistant (COMM)	11	47	20
Professional Assistant (HM)	4	18	8
Research Asstt/ Sr. Research Asstt.	6	26	26
Other Gr - C	64	286	66
Sub Total'C'	**120**	**524**	**193**
Grand Total	**189**	**868**	**442**

CSS - Central Secretariat Service
CSSS - Central Secretariat Stenographers Service
CSCS- Central Secretariat Clerical Service
SO - Subordinate Office
HM - Hydromet Cadre
COMM - Communication Cadre

Annex-I **(Sheet-7)**

Krishna & Godavari Basin

Designation	Employees (Existing)	Employees (Required)	Employees (Proposed)
Chief Commissioner / Member	0	1	1
Commissioner /Chief Engineer	2	9	4
Director/ Superintending Engr.	6	31	16
Deputy Director/ Executive Engr	9	54	35
Deputy Director (Hydromet)	0	1	0
Asstt. Director /Asstt. Executive Engr.	9	45	37
Asstt. Director (COMM)	0	1	1
Asstt. Director (Hydromet)	0	2	0
Research Officer	2	10	2
Total 'Gr-A'	**28**	**154**	**96**
Asstt. Director - II/Sub Divisional Engr.	30	164	75
Asstt. Engr. (COMM)	1	5	3
Asstt Engr.(HM)	2	11	4
Asstt. Research Officer	1	5	5
Junior Engineer	126	626	337
Junior Engineer (COMM)	4	20	8
Senior Research Assistant	2	10	10
Sr. Professional Assistant (HM)	1	5	2
Hd. Draughtsman	1	6	1
Sr. Draughtsman	12	62	12
Section Officer (CSS)	1	4	4
Jr. /Asstt. Accounts Officer	5	25	25
Assistant (CSS)	2	12	12
Private Secretary (CSSS)	1	6	6
Personal Assistant (CSSS)	1	13	13
Office Superintendent (SO)	2	10	8
Steno-1(SO)	3	13	8
Other 'Gr-B'	**195**	**998**	**533**
Assistant (SO)	7	34	20
UDC(CSCS)	5	22	20
UDC(SO)	34	169	60
LDC(CSCS)	5	25	15
LDC(SO)	23	112	50
Stenographer	6	23	10
Mechanic (COMM)	3	15	3
Technical Assistant (COMM)	13	66	13
Professional Assistant (HM)	4	21	15
Research Asstt/ Sr. Research Asstt.	12	58	35
Other Gr-C	110	554	110
Total 'Gr-C'	**222**	**1100**	**351**
Grand Total	**445**	**2252**	**980**

CSS - Central Secretariat Service
CSSS - Central Secretariat Stenographers Service
CSCS- Central Secretariat Clerical Service

SO - Subordinate Office
HM - Hydromet Cadre
COMM - Communication Cadre

Cauvery and Southern Rivers

Designation	Employees (Existing)	Employees (Required)	Employees (Proposed)
Chief Commissioner / Member	0	1	1
Commissioner /Chief Engineer	2	5	4
Director/ Superintending Engr.	7	23	16
Deputy Director/ Executive Engr	7	28	23
Deputy Director (Hydromet)	0	1	0
Asstt. Director /Asstt. Executive Engr.	13	34	31
Asstt. Director (Hydromet)	0	2	2
RO	1	1	1
Total 'Gr-A'	**30**	**95**	**78**
Asstt. Director - II/Sub Divisional Engr.	17	40	31
Asstt Engr.(HM)	0	1	0
Asstt. Research Officer	2	3	3
Junior Engineer	67	96	96
Sr Research Assistant (SRA)	2	3	3
Hd. Draughtsman	1	2	1
Sr. Draughtsman	12	29	12
Jr. /Asstt. Accounts Officer	3	4	4
Assistant (CSS)	2	7	7
Private Secretary (CSSS)	2	5	5
Personal Assistant (CSSS)	3	16	16
Total 'Gr-B'	**111**	**207**	**178**
Assistant (SO)	5	7	7
UDC(CSCS)	3	11	8
UDC(SO)	20	29	25
LDC(CSCS)	2	11	7
LDC(SO)	10	17	14
Stenographer	6	11	8
Professional Assistant (HM)	0	1	0
Research Asstt/ Sr. Research Asstt.	8	11	11
Other Gr-C	39	73	39
Total 'Gr -C'	**93**	**171**	**119**
Grand Total	**234**	**473**	**375**

CSS - Central Secretariat Service
CSSS - Central Secretariat Stenographers Service
CSCS- Central Secretariat Clerical Service

SO - Subordinate Office
HM - Hydromet Cadre
COMM - Communication Cadre

Annex-I (Sheet-9)

National Water Academy

Designation	Employees (Existing)	Employees (Proposed)
Chief Engineer	1	1
Director/ Superintending Engr.	5	7
Deputy Director/ Executive Engr	3	15
Asstt. Director /Asstt. Executive Engr.	0	14
Total 'Gr -A'	**9**	**37**
Asstt. Director - II/Sub Divisional Engr.	0	2
Junior Engineer	2	2
Sr. Professional Assistant (HM)	0	1
Sr. Draughtsman	1	1
Section Officer (CSS)	0	1
Jr. /Asstt. Accounts Officer	0	1
Stenographer 'Gr-1'(SO)	2	2
Other 'Gr-B'	0	1
Total 'Gr-B'	**5**	**11**
Assistant (SO)	1	2
UDC(SO)	1	2
LDC(SO)	2	7
Research Asstt/ Sr. Research Asstt.	0	1
Stenographer	3	6
Other 'Gr C'	6	15
Total 'Gr-C'	**13**	**33**
Grand Total	**27**	**81**

CSS - Central Secretariat Service

SO - Subordinate Office

HM - Hydromet Cadre

Annex-I **(Sheet-10)**

CWC HEADQUARTER

Designation	Employees (Existing)	Employees (Proposed)
Chairman	1	1
Vice Chairman	0	2
Chief Commissioner / Member	3	2
Commissioner /Chief Engineer	17	18
Director/ Superintending Engr.	83	64
Deputy Director/ Executive Engr	152	97
Deputy Director (Hydromet)	4	4
Deputy Director (COMM)	2	4
Under Secretary	11	11
Principal Private Secretary	5	5
Asstt. Director /Asstt. Executive Engr.	154	103
Asstt. Director (COMM)	2	4
Asstt. Director (Hydromet)	3	3
Research Officer	1	1
Other 'Gr 'A'	31	31
Total 'Gr-A'	**469**	**350**
Asstt. Director - II/Sub Divisional Engr.	172	124
Asstt. Engr. (COMM)	1	2
Asstt Engr.(HM)	3	3
Asstt. Research Officer		
Junior Engineer	14	20
Junior Engineer (COMM)	1	1
Senior Research Assistant		
Sr. Professional Assistant (HM)	5	5
Hd. Draughtsman	48	48
Sr. Draughtsman	280	158
Section Officer (CSS)	21	21
Jr. /Asstt. Accounts Officer		
Assistant (CSS)	103	103
Private Secretary (CSSS)	35	35
Personal Assistant (CSSS)	85	85
Office Superintendent (SO)		
Steno-1(SO)	1	1
Other 'Gr-B'	19	19
Total 'Gr-B'	**788**	**625**
Assistant (SO)	2	2
UDC(CSCS)	77	72
UDC(SO)	5	5
LDC(CSCS)	102	98
LDC(SO)	3	3
Stenographer	32	32
Mechanic (COMM)	0	0
Technical Assistant (COMM)	0	0
Professional Assistant (HM)	5	5
Research Asstt/ Sr. Research Asstt.	4	4
Other Gr-C	404	384
Total 'Gr-C'	**634**	**605**
Grand Total	**1891**	**1580**

CSS - Central Secretariat Service
CSSS - Central Secretariat Stenographers Service
CSCS- Central Secretariat Clerical Service

SO - Subordinate Office
HM - Hydromet Cadre
COMM - Communication Cadre

Restructuring of Central Water Commission - Proposed Action Plan

S. No.	Description of Activity	Time in Years																			
		1				2				3				4				5			
		I	II	II	IV	I	II	II	IV	I	II	II	IV	I	II	II	IV	I	II	II	IV
1	**Infrastructure development for Regional Offices of CWC**																				
(i)	Financial Approval and allocation of funds																				
(ii)	Land acquisition and tendering for award of work																				
(iii)	Setting up of new office and related infrastructure																				
2	**Establishment of Nodes/ Liaison with State Govts. for coordination, collection and compilation of requisite information for Integrated Water Resources Management and will be continuous activity thereafter.**																				
																					◆
3	**Reorientation and redistribution of works/activities as well as manpower/resources between CWC (HQ) and Regional Offices.**																				
(i)	Strengthening of Monitoring activities of Irrigation and Multi-purpose projects in Regional Offices																				
(ii)	Strengthening of Regional Offices to take up Appraisal of Major projects																				
(iii)	Taking up enhanced functionary roles such as hydrological studies, dam safety activities, morphological studies, etc.																				
4	**Filling up of posts due to Restructuring of CWC & expanded scope of work through special recruitment drives at entry level i.e. for AD's, JE's, etc. and through deputation from State Govts., etc.**																				

S. No.	Description of Activity	Time in Years																			
		1				2				3				4				5			
		I	II	II	IV	I	II	II	IV	I	II	II	IV	I	II	II	IV	I	II	II	IV
5	**Expansion and modernisation of Hydrological Network.**																				
(i)	Network Planning and identification of location for new Hydrological Observation and Flood Forecasting sites																				
(ii)	Infrastructure Development - Land acquisition and building of new site offices																				
(iii)	Operationalisation of new sites (through outsources, automation, etc.)																				
6	**Establishment of Network for coastal data collection and preparation of plans for coastal management**																				
(i)	Network Planning and identification of location of sites for coastal data observation																				
(ii)	Operationalisation of new sites (through outsources, automation, etc.)																				
(iii)	Studies for preparing Coastal plans																				
7	**Integrated Basin Planning and related activities**																				
(i)	Water availability and demand assessment in the basins in coordination with State Govts.																				
(ii)	Preliminary studies for preparation of basin plans (outline studies) in close coordination with states																				
(iii)	Draft basins plans keeping in view priority of States.																				
8	**Capacity Building**																				
9	**Applied Research (Water Management, water use efficiency, performance evaluation studies etc.)**																				

Annex-III/1

Total financial Implication on account of Restructuring of CWC (Abstract)

Offices	Non Recurring Expenditure	Annual Recurring Expenditure		Total Expenditure for the Office
	For Additional Offices / Infrastructure requirement	Establishment Exp. (on account of salaries)	Office Expenses (R&M of Offices)	
	Amount (Rs. In lakh)	Amount (Rs. In lakh)	Amount (Rs. In lakh)	Amount (Rs. In lakh)
1 Office of Chief Commissioner (Upper Ganga)	3440	1632.14	324.00	5396.144
2 Office of Chief Commissioner (Indus)	3540	1126.49	334.00	5000.488
3 Office of Chief Commissioner (Lower Ganga)	3490	1598.48	329.00	5417.484
4 Office of Chief Commissioner (Brahmaputra & Barak)	1990	701.66	179.00	2870.664
5 Office of Chief Commissioner (Narmada and Tapi)	3760	959.64	356.00	5075.64
6 Office of Chief Commissioner (Mahanadi and Eastern Rivers)	4020	1362.88	385.00	5767.876
7 Office of Chief Commissioner (Krishna and Godavari)	6950	2792.39	675.00	10417.388
8 Office of Chief Commissioner (Cauvery and Eastern Rivers)	1780	849.96	154.00	2783.96
9 National Water Academy, Pune	0	302.52	0	302.52
Total for Regional Offices	**28970**	**11326.164**	**2736**	**43032.164**
10 CWC (Head Quarters)	0	-2070.18	0	-2070.18
Total financial Implication on account of Restructuring of CWC	**28970**	**9255.984**	**2736**	**40961.984**

Financial Implications (Recurring expenditure) on account of salaries taking into account pay parity and MACP given to employees is given at Annex III/2

Financial Implications (Non-recurring) on account of Restructuring of CWC is given at Annex III/3

Office of Chief Commissioner (Upper Ganga)

Number of H.O. Sites to be increased from 174 to 429

Establishment Cost	Existing Strength	Required	Difference	Non-Recurring Exp.		Annual Recurring Exp.	
						Av. Salary per month (in Rs.)	Amount (Rs. In Lakh)
Group A							
Chief Commissioner	0	1	1			129700	15.56
Commissioner/ CE	2	4	2			111200	26.69
DIR/SE	9	16	7			96700	81.23
DD/EE	11	29	18			62900	135.86
AD/AEE	19	39	20			53400	128.16
A(Others)	4	7	3			56800	20.45
Total A	**45**	**96**	**51**				
Group B							
AD-II/SDE	30	47	17			48000	97.92
JE	147	200	53			43800	278.57
B(others)	78	152	74			47300	420.02
Total B	**255**	**399**	**144**				
Group-C	**432**	**564**	**132**			27000	427.68
A+B+C	**732**	**1059**	**327**				
Sub-Total							**1632.14**

Additional Offices/ Infra-Structure Required		For one office	Total	For one office	Total
Office of Chief Commissioner	1	800	800	60.00	60.00
Office of Sub-Divisional Engineer	4	35	140	3.50	14.00
Site Offices	125	20	2500	2.00	250.00
Sub-Total			**3440**		**324.00**
Total			**3440**		**1956.14**

Office of Chief Commissioner (Indus)

Number of H.O. Sites to be increased from 36 to 298

Establishment Cost	Existing Strength	Required	Difference	Non-Recurring Exp.		Annual Recurring Exp.	
						Av. Salary per month (in Rs.)	Amount (Rs. In Lakh)
Group A							
Chief Commissioner	0	1	1			129700	15.56
Commissioner/ CE	1	3	2			111200	26.69
DIR/SE	4	11	7			96700	81.23
DD/EE	6	19	13			62900	98.12
AD/AEE	8	20	12			53400	76.90
A(Others)	0	2	2			56800	13.63
Total A	**19**	**56**	37				
Group B							
AD-II/SDE	5	27	22			48000	126.72
JE	31	100	69			43800	362.66
B(others)	18	45	27			47300	153.25
Total B	**54**	**172**	118				
Group-C	**74**	**127**	53			27000	171.72
A+B+C	**147**	**355**	**208**				
Sub-Total							**1126.49**

Additional Offices/ Infra-Structure Required		For one office	Total	For one office	Total
Office of Chief Commissioner	1	800	800	60.00	60.00
Office of Sub-Divisional Engineer	4	35	140	3.50	14.00
Site Offices	130	20	2600	2.00	260.00
Sub-Total			**3540**		**334.00**
Total			**3540**		**1460.49**

Office of Chief Commissioner (Lower Ganga)

Number of H.O. Sites to be increased from 111 to 430

Establishment Cost	Existing Strength	Required	Difference	Non-Recurring Exp.		Annual Recurring Exp.	
						Av. Salary per month (in Rs.)	Amount (Rs. In Lakh)
Group A							
Chief Commissioner	1	1	0			129700	0.00
Commissioner/ CE	4	5	1			111200	13.34
DIR/SE	13	21	8			96700	92.83
DD/EE	29	45	16			62900	120.77
AD/AEE	17	43	26			53400	166.61
A(Others)	17	18	1			56800	6.82
Total A	**81**	**133**	**52**				
Group B							
AD-II/SDE	57	63	6			48000	34.56
JE	147	260	113			43800	593.93
B(others)	158	191	33			47300	187.31
Total B	**362**	**514**	**152**				
Group-C	**891**	**1009**	**118**			27000	382.32
A+B+C	**1334**	**1656**	**322**				
Sub-Total							**1598.48**

Additional Offices/ Infra-Structure Required		For one office	Total	For one office	Total
Office of Chief Commissioner	1	800	800	60.00	60.00
Office of Executive Engineer	1	50	50	5.00	5.00
Office of Sub-Divisional Engineer	4	35	140	3.50	14.00
Site Offices	125	20	2500	2.00	250.00
Sub-Total			**3490**		**329.00**
Total			**3490**		**1927.48**

Office of Chief Commissioner (Brahmaputra & Barak)

Number of H.O. Sites to be increased from 163 to 259

Establishment Cost	Existing Strength	Required	Difference	Non-Recurring Exp.		Annual Recurring Exp. Av. Salary per month (in Rs.)	Annual Recurring Exp. Amount (Rs. In Lakh)
Group A							
Chief Commissioner	0	1	1			129700	15.56
Commissioner/ CE	2	4	2			111200	26.69
DIR/SE	8	16	8			96700	92.83
DD/EE	12	26	14			62900	105.67
AD/AEE	17	33	16			53400	102.53
A(Others)	2	3	1			56800	6.82
Total A	**41**	**83**	**42**				
Group B							
AD-II/SDE	39	45	6			48000	34.56
JE	120	145	25			43800	131.40
B(others)	65	84	19			47300	107.84
Total B	**224**	**274**	**50**				
Group-C	**347**	**371**	24			27000	77.76
A+B+C	**612**	**728**	**116**				
Sub-Total							**701.66**

Additional Offices/ Infra-Structure Required		For one office	Total	For one office	Total
Office of Chief Commissioner	1	800	800	60.00	60.00
Office of Executive Engineer	1	50	50	5.00	5.00
Office of Sub-Divisional Engineer	4	35	140	3.50	14.00
Site Offices	50	20	1000	2.00	100.00
Sub-Total			**1990**		**179.00**
Total			**1990**		**880.66**

Office of Chief Commissioner (Narmada and Tapi)

Number of H.O. Sites to be increased from 99 to 223

Establishment Cost	Existing Strength	Required	Difference	Non-Recurring Exp.		Annual Recurring Exp. Av. Salary per month (in Rs.)	Annual Recurring Exp. Amount (Rs. In Lakh)
Group A							
Chief Commissioner	0	1	1			129700	15.56
Commissioner/ CE	2	4	2			111200	26.69
DIR/SE	8	14	6			96700	69.62
DD/EE	9	27	18			62900	135.86
AD/AEE	10	30	20			53400	128.16
A(Others)	0	1	1			56800	6.82
Total A	**29**	**77**	**48**				
Group B							
AD-II/SDE	15	25	10			48000	57.60
JE	63	108	45			43800	236.52
B(others)	29	48	19			47300	107.84
Total B	**107**	**181**	**74**				
Group-C	**154**	**208**	**54**			27000	174.96
A+B+C	**290**	**466**	**176**				
Sub-Total							**959.64**

Additional Offices/ Infra-Structure Required		For one office	Total	For one office	Total
Office of Chief Commissioner	1	800	800	60.00	60.00
Office of Executive Engineer	3	50	150	5.00	15.00
Office of Sub-Divisional Engineer	6	35	210	3.50	21.00
Site Offices	130	20	2600	2.00	260.00
Sub-Total			**3760**		**356.00**
Total			**3760**		**1315.64**

Office of Chief Commissioner (Mahanadi and Eastern Rivers)

Number of H.O. Sites to be increased from 73 to 335

Establishment Cost	Existing Strength	Required	Difference	Non-Recurring Exp.		Annual Recurring Exp.	
						Av. Salary per month (in Rs.)	Amount (Rs. In Lakh)
Group A							
Chief Commissioner	0	1	1			129700	15.56
Commissioner/ CE	1	3	2			111200	26.69
DIR/SE	3	13	10			96700	116.04
DD/EE	3	22	19			62900	143.41
AD/AEE	5	27	22			53400	140.98
A(Others)	0	0	0			56800	0.00
Total A	**12**	**66**	**54**				
Group B							
AD-II/SDE	8	28	20			48000	115.20
JE	31	110	79			43800	415.22
B(others)	18	45	27			47300	153.25
Total B	**57**	**183**	**126**				
Group-C	**120**	**193**	**73**			27000	236.52
A+B+C	**189**	**442**	**253**				
Sub-Total							**1362.88**
Additional Offices/ Infra-Structure Required				For one office	Total	For one office	Total
Office of Chief Commissioner			1	800	800	60.00	60.00
Office of Superindending Engr			1	170	170	20.00	20.00
Office of Executive Engineer			2	50	100	5.00	10.00
Office of Sub-Divisional Engineer			10	35	350	3.50	35.00
Site Offices			130	20	2600	2.00	260.00
Sub-Total					**4020**		**385.00**
Total					**4020**		**1747.88**

Office of Chief Commissioner (Krishna and Godavari)

Number of H.O. Sites to be increased from 125 to 684

Establishment Cost	Existing Strength	Required	Difference	Non-Recurring Exp.		Annual Recurring Exp. Av. Salary per month (in Rs.)	Annual Recurring Exp. Amount (Rs. In Lakh)
Group A							
Chief Commissioner	0	1	1			129700	15.56
Commissioner/ CE	2	4	2			111200	26.69
DIR/SE	6	16	10			96700	116.04
DD/EE	9	35	26			62900	196.25
AD/AEE	9	37	28			53400	179.42
A(Others)	2	3	1			56800	6.82
Total A	**28**	**96**	**68**				
Group B							
AD-II/SDE	30	75	45			48000	259.20
JE	126	337	211			43800	1109.02
B(others)	39	121	82			47300	465.43
Total B	**195**	**533**	**338**				
Group-C	**222**	**351**	**129**			27000	417.96
A+B+C	**445**	**980**	**535**				
Sub-Total							**2792.39**
Additional Offices/ Infra-Structure Required				For one office	Total	For one office	Total
Office of Chief Commissioner			1	800	800	60.00	60.00
Office of Executive Engineer			2	50	100	5.00	10.00
Office of Sub-Divisional Engineer			30	35	1050	3.50	105.00
Site Offices			250	20	5000	2.00	500.00
Sub-Total					**6950**		**675.00**
Total					**6950**		**3467.39**

Office of Chief Commissioner (Cauvery and Eastern Rivers)

Number of H.O. Sites to be increased from 97 to 136

Establishment Cost	Existing Strength	Required	Difference	Non-Recurring Exp.		Annual Recurring Exp.	
						Av. Salary per month (in Rs.)	Amount (Rs. In Lakh)
Group A							
Chief Commissioner	0	1	1			129700	15.56
Commissioner/ CE	2	4	2			111200	26.69
DIR/SE	7	16	9			96700	104.44
DD/EE	7	23	16			62900	120.77
AD/AEE	13	31	18			53400	115.34
A(Others)	1	3	2			56800	13.63
Total A	**30**	**78**	**48**				
Group B							
AD-II/SDE	17	31	14			48000	80.64
JE	67	96	29			43800	152.42
B(others)	27	51	24			47300	136.22
Total B	**111**	**178**	**67**				
Group-C	**93**	**119**	**26**			27000	84.24
A+B+C	**234**	**375**	**141**				
Sub-Total							**849.96**

Additional Offices/ Infra-Structure Required		For one office	Total	For one office	Total
Office of Chief Commissioner	1	800	800	60.00	60.00
Office of Superintending Engineer	2	170	340	15.00	30.00
Office of Executive Engineer	2	50	100	5.00	10.00
Office of Sub-Divisional Engineer	4	35	140	3.50	14.00
Site Offices	20	20	400	2.00	40.00
Sub-Total			**1780**		**154.00**
Total			**1780**		**1003.96**

National Water Academy, Pune

Establishment Cost	Existing Strength	Required	Difference	Non-Recurring Exp.		Annual Recurring Exp. Av. Salary per month (in Rs.)	Annual Recurring Exp. Amount (Rs. In Lakh)
Group A							
Chief Commissioner	0	0	0			129700	0.00
Commissioner/ CE	1	1	0			111200	0.00
DIR/SE	5	7	2			96700	23.21
DD/EE	3	15	12			62900	90.58
AD/AEE	0	14	14			53400	89.71
A(Others)	0	0	0			56800	0.00
Total A	**9**	**37**	**28**				
Group B							
AD-II/SDE	0	2	2			48000	11.52
JE	2	2	0			43800	0.00
B(others)	3	7	4			47300	22.70
Total B	**5**	**11**	**6**				
Group-C	**13**	**33**	**20**			27000	64.80
A+B+C	**27**	**81**	**54**				
Sub-Total							**302.52**

CWC (Head Quarters)

Establishment Cost	Existing Strength	Required	Difference	Non-Recurring Exp.		Annual Recurring Exp.	
						Av. Salary per month (in Rs.)	Amount (Rs. In Lakh)
Group A							
Chairman	1	1	0			149600	
Vice-Chairman	0	2	2			140600	
Member	3	2	-1			137000	-16.44
Chief Engineer	17	18	1			117400	14.09
DIR/SE	83	64	-19			102000	-232.56
DD/EE	152	97	-55			66300	-437.58
AD/AEE	154	103	-51			56200	-343.94
A(Others)	59	63	4			59900	28.75
Total A	**469**	**350**	**-119**				
Group B							
AD-II/SDE	172	124	-48			50700	-292.03
JE	14	20	6			46200	33.26
B(others)	602	481	-121			49900	-724.55
Total B	**788**	**625**	**-163**				
Group-C	**634**	**605**	**-29**			28500	-99.18
A+B+C	**1891**	**1580**	**-311**				
Sub-Total							**-2070.18**

Total Financial Implications on Restructuring

				Non-Recurring Exp.	Annual Recurring Exp.
Total for Regional Office	**4010**	**6142**	**2132**	**28970**	**14062.16**
Head Quarters					**-2070.18**
Grand Total				**28970**	**11991.984**
Total financial implication on Restructuring of CWC (Recurring and Non-recurring)					**40961.984**

Annex III/2

Financial Implication on Restructuring of CWC

(Recurring expenditure on account of salaries taking into account pay parity and MACP given to employees) - Abstract

	Offices	Annual Recurring Expenditure
		Establishment Exp. (on account of salaries)
		Amount (Rs. In lakh)
1	Office of Chief Commissioner (Upper Ganga)	1160.93
2	Office of Chief Commissioner (Indus)	801.42
3	Office of Chief Commissioner (Lower Ganga)	1167.58
4	Office of Chief Commissioner (Brahmaputra & Barak)	500.90
5	Office of Chief Commissioner (Narmada and Tapi)	696.96
6	Office of Chief Commissioner (Mahanadi and Eastern Rivers)	978.73
7	Office of Chief Commissioner (Krishna and Godavari)	2017.60
8	Office of Chief Commissioner (Cauvery and Eastern Rivers)	608.00
9	National Water Academy, Pune	235.46
	Total for Regional Offices	**8167.584**
10	CWC (Head Quarters)	-1493.11
	Financial Implication on Restructuring of CWC (Recurring expenditure on account of salaries taking into account pay parity and MACP given to employees)	**6674.472**

Office of Chief Commissioner (Upper Ganga)

Number of H.O. Sites to be increased from 174 to 429

Establishment Cost

Annual Recurring Exp.

	Existing Strength	Required	Difference	Av. Salary per month (in Rs.)	Amount (Rs. In Lakh)
Group A					
Chief Commissioner	0	1	1		
Commissioner/ CE	2	4	2		
DIR/SE	9	16	7		
DD/EE	11	29	18		
AD/AEE	19	39	20		
A(Others)	4	7	3		
Total A	**45**	**96**	**51**	50000	306.00
Group B					
AD-II/SDE	30	47	17		
JE	147	200	53		
B(others)	78	152	74		
Total B	**255**	**399**	**144**	32700	565.06
Group-C	**432**	**564**	**132**	18300	289.87
A+B+C	**732**	**1059**	**327**		
Sub-Total					**1160.93**

Office of Chief Commissioner (Indus)

Number of H.O. Sites to be increased from 36 to 298

Annual Recurring Exp.

Establishment Cost

	Existing Strength	Required	Difference	Av. Salary per month (in Rs.)	Amount (Rs. In Lakh)
Group A					
Chief Commissioner	0	1	1		
Commissioner/ CE	1	3	2		
DIR/SE	4	11	7		
DD/EE	6	19	13		
AD/AEE	8	20	12		
A(Others)	0	2	2		
Total A	**19**	**56**	37	50000	222.00
Group B					
AD-II/SDE	5	27	22		
JE	31	100	69		
B(others)	18	45	27		
Total B	**54**	**172**	118	32700	463.03
Group-C	**74**	**127**	53	18300	116.39
A+B+C	**147**	**355**	**208**		
Sub-Total					**801.42**

Office of Chief Commissioner (Lower Ganga)

Number of H.O. Sites to be increased from 111 to 430

Annual Recurring Exp.

Establishment Cost

	Existing Strength	Required	Difference	Av. Salary per month (in Rs.)	Amount (Rs. In Lakh)
Group A					
Chief Commissioner	1	1	0		
Commissioner/ CE	4	5	1		
DIR/SE	13	21	8		
DD/EE	29	45	16		
AD/AEE	17	43	26		
A(Others)	17	18	1		
Total A	**81**	**133**	**52**	50000	312.00
Group B					
AD-II/SDE	57	63	6		
JE	147	260	113		
B(others)	158	191	33		
Total B	**362**	**514**	**152**	32700	596.45
Group-C	**891**	**1009**	**118**	18300	259.13
A+B+C	**1334**	**1656**	**322**		
Sub-Total					**1167.58**

Office of Chief Commissioner (Brahmaputra & Barak)

Number of H.O. Sites to be increased from 163 to 259

Annual Recurring Exp.

Establishment Cost

	Existing Strength	Required	Difference	Av. Salary per month (in Rs.)	Amount (Rs. In Lakh)
Group A					
Chief Commissioner	0	1	1		
Commissioner/ CE	2	4	2		
DIR/SE	8	16	8		
DD/EE	12	26	14		
AD/AEE	17	33	16		
A(Others)	2	3	1		
Total A	**41**	**83**	**42**	50000	252.00
Group B					
AD-II/SDE	39	45	6		
JE	120	145	25		
B(others)	65	84	19		
Total B	**224**	**274**	**50**	32700	196.20
Group-C	**347**	**371**	24	18300	52.70
A+B+C	**612**	**728**	**116**		
Sub-Total					**500.90**

Office of Chief Commissioner (Narmada and Tapi)

Number of H.O. Sites to be increased from 99 to 223

Annual Recurring Exp.

Establishment Cost

	Existing Strength	Required	Difference	Av. Salary per month (in Rs.)	Amount (Rs. In Lakh)
Group A					
Chief Commissioner	0	1	1		
Commissioner/ CE	2	4	2		
DIR/SE	8	14	6		
DD/EE	9	27	18		
AD/AEE	10	30	20		
A(Others)	0	1	1		
Total A	**29**	**77**	**48**	50000	288.00
Group B					
AD-II/SDE	15	25	10		
JE	63	108	45		
B(others)	29	48	19		
Total B	**107**	**181**	**74**	32700	290.38
Group-C	**154**	**208**	**54**	18300	118.58
A+B+C	**290**	**466**	**176**		
Sub-Total					**696.96**

Office of Chief Commissioner (Mahanadi and Eastern Rivers)

Number of H.O. Sites to be increased from 73 to 335

Annual Recurring Exp.

Establishment Cost

	Existing Strength	Required	Difference	Av. Salary per month (in Rs.)	Amount (Rs. In Lakh)
Group A					
Chief Commissioner	0	1	1		
Commissioner/ CE	1	3	2		
DIR/SE	3	13	10		
DD/EE	3	22	19		
AD/AEE	5	27	22		
A(Others)	0	0	0		
Total A	**12**	**66**	**54**	50000	324.00
Group B					
AD-II/SDE	8	28	20		
JE	31	110	79		
B(others)	18	45	27		
Total B	**57**	**183**	**126**	32700	494.42
Group-C	**120**	**193**	**73**	18300	160.31
A+B+C	**189**	**442**	**253**		
Sub-Total					**978.73**

Office of Chief Commissioner (Krishna and Godavari)

Number of H.O. Sites to be increased from 125 to 684

Annual Recurring Exp.

Establishment Cost

	Existing Strength	Required	Difference	Av. Salary per month (in Rs.)	Amount (Rs. In Lakh)
Group A					
Chief Commissioner	0	1	1		
Commissioner/ CE	2	4	2		
DIR/SE	6	16	10		
DD/EE	9	35	26		
AD/AEE	9	37	28		
A(Others)	2	3	1		
Total A	**28**	**96**	**68**	50000	408.00
Group B					
AD-II/SDE	30	75	45		
JE	126	337	211		
B(others)	39	121	82		
Total B	**195**	**533**	**338**	32700	1326.31
Group-C	**222**	**351**	**129**	18300	283.28
A+B+C	**445**	**980**	**535**		
Sub-Total					**2017.60**

Office of Chief Commissioner (Cauvery and Eastern Rivers)

Number of H.O. Sites to be increased from 97 to 136

Annual Recurring Exp.

Establishment Cost

	Existing Strength	Required	Difference	Av. Salary per month (in Rs.)	Amount (Rs. In Lakh)
Group A					
Chief Commissioner	0	1	1		
Commissioner/ CE	2	4	2		
DIR/SE	7	16	9		
DD/EE	7	23	16		
AD/AEE	13	31	18		
A(Others)	1	3	2		
Total A	**30**	**78**	**48**	50000	288.00
Group B					
AD-II/SDE	17	31	14		
JE	67	96	29		
B(others)	27	51	24		
Total B	**111**	**178**	**67**	32700	262.91
Group-C	**93**	**119**	**26**	18300	57.10
A+B+C	**234**	**375**	**141**		
Sub-Total					**608.00**

National Water Academy, Pune

Annual Recurring Exp.

Establishment Cost

	Existing Strength	Required	Difference	Av. Salary per month (in Rs.)	Amount (Rs. In Lakh)
Group A					
Chief Commissioner	0	0	0		
Commissioner/ CE	1	1	0		
DIR/SE	5	7	2		
DD/EE	3	15	12		
AD/AEE	0	14	14		
A(Others)	0	0	0		
Total A	**9**	**37**	**28**	50000	168.00
Group B					
AD-II/SDE	0	2	2		
JE	2	2	0		
B(others)	3	7	4		
Total B	**5**	**11**	**6**	32700	23.54
Group-C	**13**	**33**	**20**	18300	43.92
A+B+C	**27**	**81**	**54**		
Sub-Total					**235.46**

CWC (Head Quarters)

Annual Recurring Exp.

Establishment Cost

	Existing Strength	Required	Difference	Av. Salary per month (in Rs.)	Amount (Rs. In Lakh)
Group A					
Chairman	1	1	0		
Vice-Chairman	0	2	2		
Member	3	2	-1		
Chief Engineer	17	18	1		
DIR/SE	83	64	-19		
DD/EE	152	97	-55		
AD/AEE	154	103	-51		
A(Others)	59	63	4		
Total A	**469**	**350**	**-119**	52600	-751.13
Group B					
AD-II/SDE	172	124	-48		
JE	14	20	6		
B(others)	602	481	-121		
Total B	**788**	**625**	**-163**	34500	-674.82
Group-C	**634**	**605**	**-29**	19300	-67.16
A+B+C	**1891**	**1580**	**-311**		
Sub-Total					**-1493.11**

Total Financial Implications on Restructuring

				Annual Recurring Exp.
Total for Regional Offices	**4010**	**6142**	**2132**	**8167.58**
Head Quarters				**-1493.11**
Grand Total				**6674.47**
Total financial implication on Restructuring of CWC (Recurring expenditure on account of salaries taking into account pay parity and MACP given to employees)				**66.75 crore**

Annex III/3

Financial Implication (Non-recurring) on account of Restructuring of CWC

Offices	Number of new offices to be set up				
	Office of Chief Commissioner	Office of Suprintending Engineer	Office of Executive Engineer	Office of Sub-Divisional Engineer	Site Office
1 Office of Chief Commissioner	1	0	0	4	125
2 Office of Chief Commissioner (Indus)	1	0	0	4	130
3 Office of Chief Commissioner (Lower Ganga)	1	0	1	4	125
4 Office of Chief Commissioner (Brahmaputra & Barak)	1	0	1	4	50
5 Office of Chief Commissioner (Narmada and Tapi)	1	0	3	6	130
6 Office of Chief Commissioner	1	1	2	10	130
7 Office of Chief Commissioner (Krishna and Godavari)	1	0	2	30	250
8 Office of Chief Commissioner (Cauvery and Eastern Rivers)	1	2	2	4	20
Total nos of new offices to be set up	**8**	**3**	**11**	**66**	**960**
Cost of setting up of one office (Rs. in lakhs)	**800**	**170**	**50**	**35**	**20**
Total Non-recurring expenditure on account of setting up of new offices under Restructuring of CWC (Rs. in lakhs)	**6400**	**510**	**550**	**2310**	**19200**
Grand Total for non-recurring expenditure (Rs. in lakhs)					**28970**

Estimate for setting up of of o/o Chief Commissioner

S No	Specification	Qty./ nos.	Rate	Amount (INR)
1	RCC framed Structure (Normal Building) with floor height of 3.35 m	2250 sq m	13200	29700000
2	Electrification, Water supply,and other miscellaneous work in the building		20%	5940000
3	Land cost considering ground plus two floors for the building	2500 sq m	15000	37500000
4	Office Furnitures, fixtures and interior partitioning etc.			3000000
5	Office Equipment			
	Computers including UPS, printer etc.	50 nos	60000	3000000
	Photocopiers, FAX, LCD projectors etc.			1000000
	Total estimate for new office of Chief Commissioner			80140000
			(Rs in lakhs)	801.4
				Say, Rs. 8 crore

Estimate for setting up of of o/o Superintending Engineer

S No	Specification	Qty./ nos.	Rate	Amount (INR)
1	RCC framed Structure (Normal Building) with floor height of 3.35 m	500 sq m	13200	6600000
2	Electrification, Water supply,and other miscellaneous work in the building		20%	1320000
3	Land cost considering ground plus two floors for the building	600 sq m	12000	7200000
4	Office Furnitures, fixtures and interior partitioning etc.			1000000
5	Office Equipment			
	Computers including UPS, printer etc.	10 nos	60000	600000
	Photocopiers, FAX, LCD projectors etc.			400000
	Total estimate for new office of Chief Commissioner			17120000
			(Rs in lakhs)	171.20
				Say, Rs. 1.7 crore

Estimate for setting up of of o/o Executive Engineer

S No	Specification	Qty./ nos.	Rate	Amount (INR)
1	RCC framed Structure (Normal Building) with floor height of 3.35 m	250 sq m	8000	2000000
2	Electrification, Water supply,and other miscellaneous work in the building		20%	400000
3	Land cost considering two floors for the building	250 sq m	8000	2000000
4	Office Furnitures, fixtures and interior partitioning etc.			200000
5	Office Equipment			
	Computers including UPS, printer etc.	4 nos	60000	240000
	Photocopiers, FAX, LCD projectors etc.			200000
	Total estimate for new office of Chief Commissioner			5040000
			(Rs in lakhs)	50.40
				Say, Rs. 50 lakh

Estimate for setting up of of o/o Sub-divisional Engineer

S No	Specification	Qty./ nos.	Rate	Amount (INR)
1	RCC framed Structure (Normal Building) with floor height of 3.35 m	150 sq m	8000	1200000
2	Electrification, Water supply,and other miscellaneous work in the building		20%	240000
3	Land cost considering ground plus two floors for the building	150 sq m	8000	1200000
4	Office Furnitures, fixtures and interior partitioning etc.			200000
5	Office Equipment			
	Computers including UPS, printer etc.	2 nos	60000	120000
	Photocopiers, FAX, LCD projectors etc.			100000
	Total estimate for new office of Chief Commissioner			3060000
			(Rs in lakhs)	30.60
				Say, Rs. 35 lakh

Estimate for setting up of Site Office

S No	Specification	Qty./ nos.	Rate	Amount (INR)
1	Sheds/ hutment for site office	80 sq m	8000	640000
2	Electrification, Water supply,and other miscellaneous work in the building		20%	128000
3	Land cost	100 sq m	5000	500000
4	Office Furnitures, fixtures and interior partitioning etc.			50000
5	Site Equipment			
	Site equipments for guage, discharge and water quality measurement etc.			600000
	Phone, FAX, wireless equipment etc.			100000
	Total estimate for new office of Chief Commissioner			2018000
			(Rs in lakhs)	20.18
				Say, Rs. 20 lakh