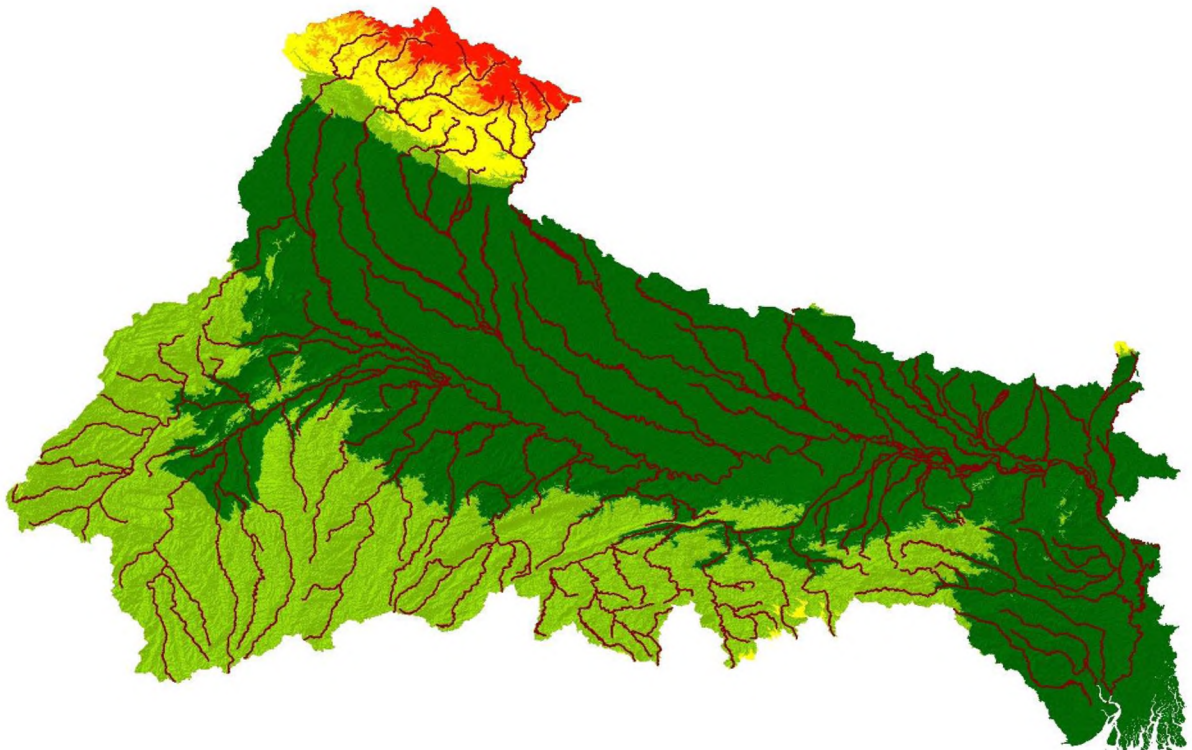




**Government of India  
Ministry of Water Resources, River Development &  
Ganga Rejuvenation  
Ganga Flood Control Commission, Patna**

**ANNUAL REPORT 2016-17**



**Ganga River Basin**

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# From Chairman's Desk



The Ganga River basin covers the eleven States of India comprising Bihar, Jharkhand, Uttar Pradesh, Uttarakhand, West Bengal, Haryana, Rajasthan, Madhya Pradesh, Chhattisgarh, Himachal Pradesh, and Delhi. The occurrence of floods in one part or the other in Ganga River basin is an annual feature during the monsoon period. Since the Ganga is an inter-state river, it is necessary to prepare integrated flood management plans to tackle the flood and related problems of the basin and to ensure their implementation in a co-ordinated and phased manner.

Ganga Flood Control Board (GFCB) was set up in 1972 inter-alia to lay down broad policies, decide priorities in the implementation of such schemes and issue directions to Ganga Flood Control Commission (GFCC). GFCC was created in 1972 as a subordinate office of Ministry of Water Resources to provide secretarial assistance to GFCB. Since its inception, GFCC has played a vital role in assisting the Ganga basin States to manage the floods. As a part of its mandate, GFCC has prepared comprehensive plans for flood management of all the 23 river systems of the Ganga basin, updated 22 comprehensive plans once, five comprehensive plans twice and has sent the reports to the State Governments for taking follow up actions on the recommendations made therein. GFCC has also prepared the reports for adequacy of waterways under road & rail bridges for all the 23 river systems except for main Ganga for the Buxar to Haridwar and Haridwar to Gangotri reaches and Tidal rivers, which are under preparation.

GFCC has carried out its assigned functions as described in detail in this report in an efficient and effective manner during the year 2016-17 in spite of many constraints, especially shortage of technical officers and secretarial staff. Particular mention is to be made about the proactive role played by GFCC in implementation of the schemes of Flood Management Programme (FMP) in the Ganga basin, a Programme of national importance initiated by the Government of India during the 11<sup>th</sup> Five Year Plan and continuing in 12<sup>th</sup> Plan. The FMP has made good progress and a financial assistance to the tune of Rs. 12.61 crore has been provided to the Ganga basin States during the year 2016-17.

Actions on modernization of GFCC which include procurement of computers and software for technical support for efficient management of the works handled in GFCC have been initiated. Special efforts have been made to keep the GFCC premises clean by way of weeding out of old records and auction of unserviceable T&P materials.

GFCC officers have also played important role in tackling international issues with the Government of Nepal and Bangladesh in matters relating to flood and drainage management. The implementation of schemes on extension of the embankment on the international rivers Lalbakeya, Bagmati and Kamla in Nepal have achieved good progress.

It gives me great pleasure to present the Annual Report of GFCC for the year 2016-17 and I am sure that this report will give a comprehensive overview of the role of GFCC and its contribution in the field of flood management and other associated works in the Ganga basin during the year.

Chairman  
Ganga Flood Control Commission

# Highlights of the Year 2016-17

1. Techno-economic appraisal of 56 Flood Management schemes of various Ganga Basin States was carried, out of which 17 schemes were techno-economically cleared by GFCC/AC-MoWR, whereas 22 schemes were examined and comments/observations were conveyed to the concerned State Governments. 17 schemes were dropped by GFCC and sent back to State Governments.
2. Inspection/Monitoring of various Flood Management/Anti Erosion Schemes under FMP pertaining to Ganga Basin States was carried out and recommended for Central Assistance.
3. Fifth meeting of Joint Standing Technical Committee (JSTC) was held in New Delhi on 26th May 2016 in which various issues of bilateral concern of Indo-Nepal were discussed. The Committee was chaired by Chairman, GFCC.
4. Recommendations for taking up flood management works on river Kosi and right bank of river Gandak before the flood of 2017 were made by Kosi High Level Committee (KHLC) and Gandak High Level Standing Committee (GHLSC) respectively after inspection of sites. Both the Committee were chaired by Chairman, GFCC.
5. Updating of Comprehensive Plans for Flood Management of Rupnarain-Haldi-Rasulpur river system was taken up.
6. The 49<sup>th</sup> meeting of the Ganga Flood Control Commission under chairmanship of Chairman, GFCC, was held on 8<sup>th</sup> June, 2016 at New Delhi in which various issues related to floods and its management in Ganga basin States were discussed and various decisions were taken for follow up action.
7. Chairman, GFCC took two meetings of the Expert Committee for formulation of guidelines for use of geo-textiles, geo-bags and geo-tubes in construction of flood management works and guidelines were finalized.
8. Actions on modernization of GFCC which includes procurement of computers, software for technical support for efficient management of the works handled in GFCC.
9. Special efforts were made to keep the GFCC premises clean by way of weeding out of old records and auction of unserviceable T&P materials as a part of 'Swachh Bharat Mission'.

# 1 Introduction

## 1.1 The Ganga River Basin

Two holy rivers originating from the glacial peaks of the Himalayas at an altitude of about 7000 meter, the Alaknanda and the Bhagirathi unite near Devprayag and form river Ganga which traverses its course of 2525 Km (1450 Km in Uttarakhand and Uttar Pradesh, 110 Km along Uttar Pradesh-Bihar border, 445 km in Bihar and Jharkhand and 520 km in West Bengal) before its outfall into the Bay of Bengal. The important tributaries which join the Ganga in its course are the Ramganga, Gomati, Ghaghra, Gandak, Burhi Gandak, Kosi, Kamla, Bagmati and Mahananda on the left and Yamuna, Tons, Sone, Punpun, Kiul, Ajoy, Damodar and Rupnarayan on the right. A line diagram of river Ganga is placed in Plate-1.1 at the end of this chapter. The Ganga river drains a total catchment area of 10.86 lakh Sq. Km, out of which 8.61 lakh Sq Km lies in India, which is nearly 26% of the total geographical area of the country. The basin lies between east longitudes 73°2' to 89°5' and north latitudes 21°6' to 31°21' having maximum length and width of approx. 1,543 km and 1024 km. The basin is bounded by the Himalayas on the north, by the Aravalli on the west, by the Vindhya and Chhotanagpur plateau on the south and by the Brahmaputra Ridge on the east. All the major left bank rivers draining into the Ganga are of the Himalayan origin. On the other hand, out of the major right bank rivers only the Yamuna is of Himalayan origin whereas the rest of the major right bank rivers originate either from the Vindhya or the plateau between the Ganga and the Vindhya. The major part of basin in Indian territory is covered with agricultural land accounting to 65.57% of the total area.

Ganga basin is spread over 11 States namely, (i)Uttarakhand, (ii)Himachal Pradesh,(iii)Haryana, (iv)Delhi, (v)Uttar Pradesh, (vi)Rajasthan, (vii)Madhya Pradesh, (viii)Chhattisgarh, (ix) Bihar, (x)Jharkhand and (xi)West Bengal. The basin spreads over 239 parliamentary constituencies (2009) and 2,86,557 villages fall in the Ganga basin. The cities in the basin have large and growing populations and a rapidly expanding industrial base.

The Ganga basin has vast water resources in form of Surface Water and Ground Water resources. Average Water Potential is 525020 MCM & Utilisable Surface Water is 250000 MCM. 3.47% of basin is covered by water bodies in form of Lakes/Pond, Reservoir, Tanks etc. There are 784 dams situated in the Ganga basin, out of which 158 dams are included in National Register of Large Dam (NRLD) and 66 barrages, 92 weir and 45 lift schemes are also constructed in the basin. The water resource assets especially dams in Ganga basin are used for varied purpose like Irrigation, Water Supply, Hydro-Electric, and Drinking Water where 92.83% of total assets are used for irrigation purpose. The Ganga basin also contains

one Inland National Waterways (NW-1) and 12 Inter Basin Transfer Links are proposed by National Waterways Development Authority of India.

In the Ganga basin, there are several major systems of canals which cater to almost 28 percent of the net irrigated area. There are 478 major and medium irrigation projects that represent a command area of about 36.12 percent of the basin.

The 39 hydro-electric projects and 56 powerhouse of Ganga basin are a testament to the regions importance to India's overall hydroelectricity portfolio. As per the latest assessment, the hydroelectric power potential of the basin is 20711 MW. As on 01/08/2013 total installed capacity of 4987.20 MW are in operation and a total installed capacity of about 1307.0 MW are in various stages of construction. These schemes together account for only 31.08% of the assessed potential of the basin. Therefore, a large part of the hydropower potential remains to be exploited. Major Hydro Power Stations in operation are Tehri, Koteshwar, Rihand, Rajghat, Chambal Valley and Yamuna Valley.

In Ganga basin groundwater is a worthy source and easily accessible especially from the aquifers in the alluvial zone. The groundwater usage for irrigation in the states falling under Ganga basin accounted for nearly 50 percent of the groundwater irrigated area of the entire country.

The Ganga basin has been divided into 23 river systems. The river systems of the basin are (i) Gomati, (ii) Adhwara Group, (iii) Ghaghra, (iv) Mahananda, (v) Kamla Balan, (vi) Burhi Gandak, (vii) Bagmati, (viii) Punpun, (ix) Kosi, (x) Gandak, (xi) Ajoy, (xii) Kiul-Harohar, (xiii) Damodar, (xiv) Mayurakshi, (xv) Yamuna, (xvi) Ramganga, (xvii) Tons, (xviii) Badhua-Chandan, (xix) Rupnarain-Haldi-Rasulpur, (xx) Jalangi, (xxi) Sone, (xxii) Tidal rivers and (xxiii) Main Ganga Stem. Most of these rivers are inter-state though a few are within one state.

Ganga basin with 23 river system is shown in Plate 1.2.

## **1.2 Flood Problem in the Ganga Basin**

Among the various Ganga basin States, the State of Bihar (particularly its northern part), Uttar Pradesh (particularly its eastern part) and West Bengal are the worst flood affected. The flood problems in the other Ganga basin States are not so severe. The main reasons of flood in the Ganga basin are as under:

- (i) Heavy precipitation for long duration in the catchment.
- (ii) Impediment of flow in tributaries and catchment drains by the river Ganga due to its high stage in monsoon season.
- (iii) Bank erosion by the river during the monsoon season.

- (iv) Meandering of river causing loss of land, property and life.
- (v) Inadequate bank full capacity.
- (vi) Poor maintenance of flood control structures resulting in their damage during the monsoon period.
- (vii) Inundation of villages situated within the flood plains of the rivers.

As regards erosion problems, longitudinal bed slopes of the river Ganga and its tributaries are steep in the upper reaches, become flatter in middle reaches and are almost level in the lower reaches. The upper courses are noted predominantly for deep erosion i.e., bed retrogression. The scoured material is carried downstream by the flow and the middle courses have evidence of both erosion and aggradation. The lower reaches where the bed slope is flatter and velocities are low, accumulation process i.e., sedimentation and accretion of the river bed is predominant. At the same time due to meandering, erosion and sedimentation take place simultaneously.

As per XII Plan Working Group Report, total flood affected area in the country as a whole is about 50 million Ha, out of which 24 million Ha lies in Ganga Basin States i.e. nearly 50% of flood affected area in the country lies in Ganga Basin States.

A total area of 24.00 million hectares (about 50% of total flood prone area in the country) is prone to floods in these States and recurring floods cause huge loss to life and property every year.

The State-wise details of flood prone area in the Ganga basin are given in the Table 1.1 below and Figure 1.1:

**Table 1.1**

Sl. No.	State	Flood Prone Area (in Lakh Ha.)	
		As assessed by RBA	As reported by States to 12 <sup>th</sup> Plan Working Group
1	Himachal Pradesh	2.30	2.31
2	Haryana	23.50	23.50
3	NCT of Delhi	0.50	0.70
4	Uttar Pradesh (including Uttarakhand)	73.36	73.40
5	Rajasthan	32.60	32.60
6	Madhya Pradesh (including Chhattisgarh)	2.60	3.37
7	Bihar (including Jharkhand)	42.60	68.80
8	West Bengal	26.50	37.66
	<b>Total</b>	<b>203.96</b>	<b>242.34</b>

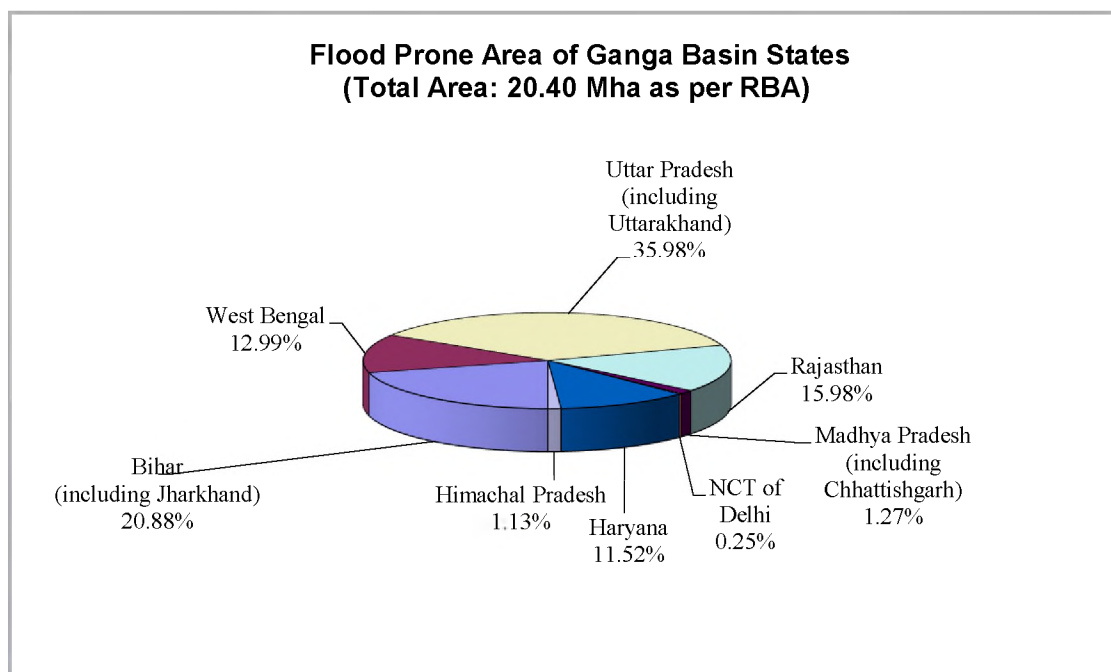


Figure-1.1

## 1.2 Ganga Flood Control Board

With the objective to effectively tackle the critical and chronic flood problems of the Ganga basin and to minimize the associated damages, it was considered necessary to have an integrated plan of flood management, erosion control, etc. and facilitate quick drainage and its implementation in a comprehensive and coordinated manner. To achieve this objective, Ganga Flood Control Board (GFCB) was constituted by the Government of India vide Resolution No.FC-47(2)/72 dated 18.4.1972, headed by the Hon'ble Union Minister of Water Resources.

### Functions:

- To lay down the broad policies and decide priorities in the implementation of various schemes.
- To issue necessary directions to Ganga Flood Control Commission in respect of formulation of a comprehensive plan of flood control in the Ganga Basin and approval of the schemes so formulated.

### 1.2.1 Composition of Ganga Flood Control Board

The composition of Ganga Flood Control Board as notified by the Ministry of Water Resources vide Resolution no.22/3/99-ER/2586 dated 28.06.2001 is given below

1.	Union Minister of Water Resources	Chairman
2.	Union Minister of State for Water Resources	Member #
3.	Union Minister of Finance or his representative	Member



4.	Union Minister of Railways or his representative	Member
5.	Union Minister of Road Transport and Highways or his representative	Member
6.	Union Minister of Agriculture or his representative	Member
7.	Chief Minister of Bihar or his representative	Member
8.	Chief Minister of West Bengal or his representative	Member
9.	Chief Minister of Uttar Pradesh or his representative	Member
10.	Chief Minister of Haryana or his representative	Member
11.	Chief Minister of Rajasthan or his representative	Member
12.	Chief Minister of Madhya Pradesh or his representative	Member
13.	Chief Minister of Himachal Pradesh or his representative	Member
14.	Chief Minister of Jharkhand or his representative	Member
15.	Chief Minister of Uttarakhand or his representative	Member
16.	Chief Minister of Chhattisgarh or his representative	Member
17.	Member, Planning Commission	Member
18.	Chief Minister, NCT of Delhi or his representative	Member
19.	Chairman, Ganga Flood Control Commission	Member-Secretary

# (Chairman in absence of Union Minister of Water Resources)

Up to March, 2017, 17 meetings of the Ganga Flood Control Board have been held. The 17<sup>th</sup> meeting of GFCB was held on 28.05.2015 at Patna in which various issues relating to floods and its management in Ganga basin States were discussed and necessary decisions were taken for implementation.

### **1.3 Ganga Flood Control Commission (GFCC)**

To deal with floods and its management in the Ganga basin States, Ganga Flood Control Commission was created in the year 1972 vide Government of India Resolution No. F.C.47(3)/72 dated 18.4.1972 as a subordinate office of Ministry of Water Resources and as the Secretariat and executive limb of Ganga Flood Control Board with its headquarters at Patna.

#### **1.3.1 Composition of Ganga Flood Control Commission**

The composition of Ganga Flood Control Commission (GFCC) is given below:

Chairman, GFCC

Chairman

**Full Time Members**

- |                                 |        |
|---------------------------------|--------|
| 1. Member (Planning), GFCC      | Member |
| 2. Member (Co-ordination), GFCC | Member |

**Part Time Members**

- |   |        |
|---|--------|
| 1. Member (River Management), Central Water Commission, Government of India, New Delhi                        | Member |
| 2. Chief Engineer, Incharge of Flood Control, Water Resources Department, Government of Bihar.                | Member |
| 3. Chief Engineer, Incharge of Flood Control, Water Resources Department, Government of Jharkhand.            | Member |
| 4. Chief Engineer, Incharge of Flood Control, Irrigation Department, Government of Uttar Pradesh.             | Member |
| 5. Chief Engineer, Incharge of Flood Control, Irrigation Department, Government of Uttarakhand                | Member |
| 6. Chief Engineer, Incharge of Flood Control, Irrigation and Waterways Department, Government of West Bengal. | Member |
| 7. Engineer-in-Chief, Water Resources Department, Government of Madhya Pradesh.                               | Member |
| 8. Engineer-in-Chief, Water Resources Department, Government of Chhattisgarh.                                 | Member |
| 9. Director, Central Water and Power Research Station, Government of India, Pune.                             | Member |
| 10. Chief Engineer (Lower Ganga Basin), Central Water Commission, Government of India, Patna                  | Member |
| 11. Chief Engineer (Planning), Roads Wing, Ministry of Road Transport and Highways, Government of India.      | Member |
| 12. Director (Civil Engineering Wing), Railway Board, Government of India.                                    | Member |

**Permanent Invitees of the Commission**

1. Chief Engineer, Incharge of Flood Control, Government of Haryana.
2. Chief Engineer, Incharge of Flood Control, Government of Himachal Pradesh.
3. Chief Engineer, Incharge of Flood Control, Government of Rajasthan.
4. Chief Engineer, Incharge of Flood Control, Government of NCT of Delhi.

5. Director (B&S), R.D.S.O., Ministry of Railways, Lucknow.

### **1.3.2 Functions of GFCC**

The main functions of GFCC as originally envisaged are as under.

- (a) Preparation of comprehensive plan for flood management in the Ganga Basin.
- (b) To chalk out a phased and coordinated programme of implementation of the works included in the basin wise flood management plans by the States concerned.
- (c) Formulate and ensure proper standards for works and their regular maintenance.

In due course of time, some additional works were entrusted to GFCC by Ministry of Water Resources and today its broad functions are as under:

- (a) To prepare and update a Comprehensive Plan of flood management in the Ganga basin comprising 23 river sub-basins. The field investigation and collection of data for the purpose are carried out by the concerned State Governments as directed by the Ganga Flood Management Board.
- (b) To draw out a phased and co-ordinated programme of implementation of works included in the sub-basin wise comprehensive flood management plans.
- (c) To advise the States concerned to follow guidelines in respect of quality management, material specifications and maintenance in order to ensure the implementation of works and the maintenance thereof to proper standards.
- (d) To prepare the annual programme of works and recommend allocation of funds, wherever required for consideration of the Board.
- (e) To make an assessment of the existing waterways under the road and rail bridges and to determine additional waterways to be provided for reducing the drainage congestion to reasonable limits and their periodic updation.
- (f) To monitor the execution of the important flood management schemes particularly those receiving central assistance or being executed under the central sector.
- (g) To examine all major and medium flood management, drainage, anti-waterlogging and anti-erosion schemes of Ganga basin States except for schemes of the States of Haryana, Uttar Pradesh and Delhi on the river Yamuna in the reach from Tajewala to Okhla barrage.
- (h) Processing the proposals received from Ganga Basin States for central funding under Flood Management Programme, RMBA and monitoring of such schemes.

- (i) Documentation and dissemination of findings emerging out of special studies or investigations conducted in participation with scientific organisations for appropriate use by basin States.
- (j) To evaluate the performance of major flood management measures executed by the States including all the inter-State flood management schemes.
- (k) To participate in various National and International Committees set up by the Government of India and the Ganga basin States pertaining to the subject of flood management.

GFCC apart from being engaged in the preparation and periodic updation of comprehensive master plans for flood management in the Ganga basin is also responsible for carrying out techno-economic appraisal of flood management and anti-erosion schemes in the Ganga basin. It has also been given the task of coordinating several activities concerning flood management with Nepal and Bangladesh.

### 1.3.3 Annual Meetings of Ganga Flood Control Commission

A total of 49 meetings of the GFCC have been held so far and its 49<sup>th</sup> meeting was held on 08.06.2016 at New Delhi under the Chairmanship of Chairman, GFCC. In the meetings, various issues pertaining to the Ganga Basin such as floods management and anti-erosion works, progress made in implementation of recommendations of Rashtriya Barh Ayog, preparation of flood plain zoning/flood risk maps, implementation of sub-basin wise comprehensive plans for flood control, monitoring and evaluation of flood management schemes, use of remote sensing techniques/satellite imageries for delineation of flood plain areas, use of model studies before formulation and execution of flood management and anti-erosion schemes, preparation of annual catalogue of flood management schemes etc. were discussed and decisions taken thereon for follow up action by the Ganga basin States / Central organisations concerned.

### 1.3.4 Organisational Structure of GFCC

Ganga Flood Control Commission has sanctioned strength of 97 officers and supporting staff. Out of the total sanctioned strength of 97, seventy six posts were allowed to be continued during the year 2016-17 as other posts had gone into deemed abolished category and their revival is required. The Regular staff strength of GFCC as on 31.3.2017 is 51. The category-wise details of the regular posts are given below.

**Table 1.2**

S. No.	Group	Sanctioned	Continuation of Posts conveyed by MoWR for 2016-17		
			Total	Filled	Vacant
1	A	23	23	16	7
2	B (Gazetted)	13	12	5	8
3	B (Non-Gazetted)	16	11	6	10

S. No.	Group	Sanctioned	Continuation of Posts conveyed by MoWR for 2016-17		
			Total	Filled	Vacant
4	C	45	30	24	21
	<b>Total</b>	<b>97</b>	<b>76</b>	<b>51</b>	<b>46</b>

Organisation Chart of GFCC is in Figure-1.2.

In addition, 23 sanctioned post of work-charged staff comprising of 3 Motor Vehicle drivers (1 vacant), 4 Work Sarkar and 16 Khalasis (6 vacant) are also working on the strength of GFCC for carrying out various field activities.

All the Engineering cadre posts from Chairman and upto the level of Junior Engineer in GFCC are being filled from the Central Water Engineering Services Group 'A' & 'B' Services.

#### 1.4 Vigilance and Disciplinary Cases

No vigilance or disciplinary case concerning any officer or staff was pending or contemplated in the Commission during the year 2016-17.

#### 1.5 Parliament Questions and VIP References

- (i) 57 Parliament questions were received by GFCC during 2016-17. The material for reply to these questions was prepared and sent to the Ministry of Water Resources, RD & GR.
- (ii) 32 VIP references on various matters were received by GFCC during 2016-17. The material for reply to these references was prepared and sent to the Ministry of Water Resources, RD & GR.

# GANGA FLOOD CONTROL COMMISSION ORGANISATION CHART

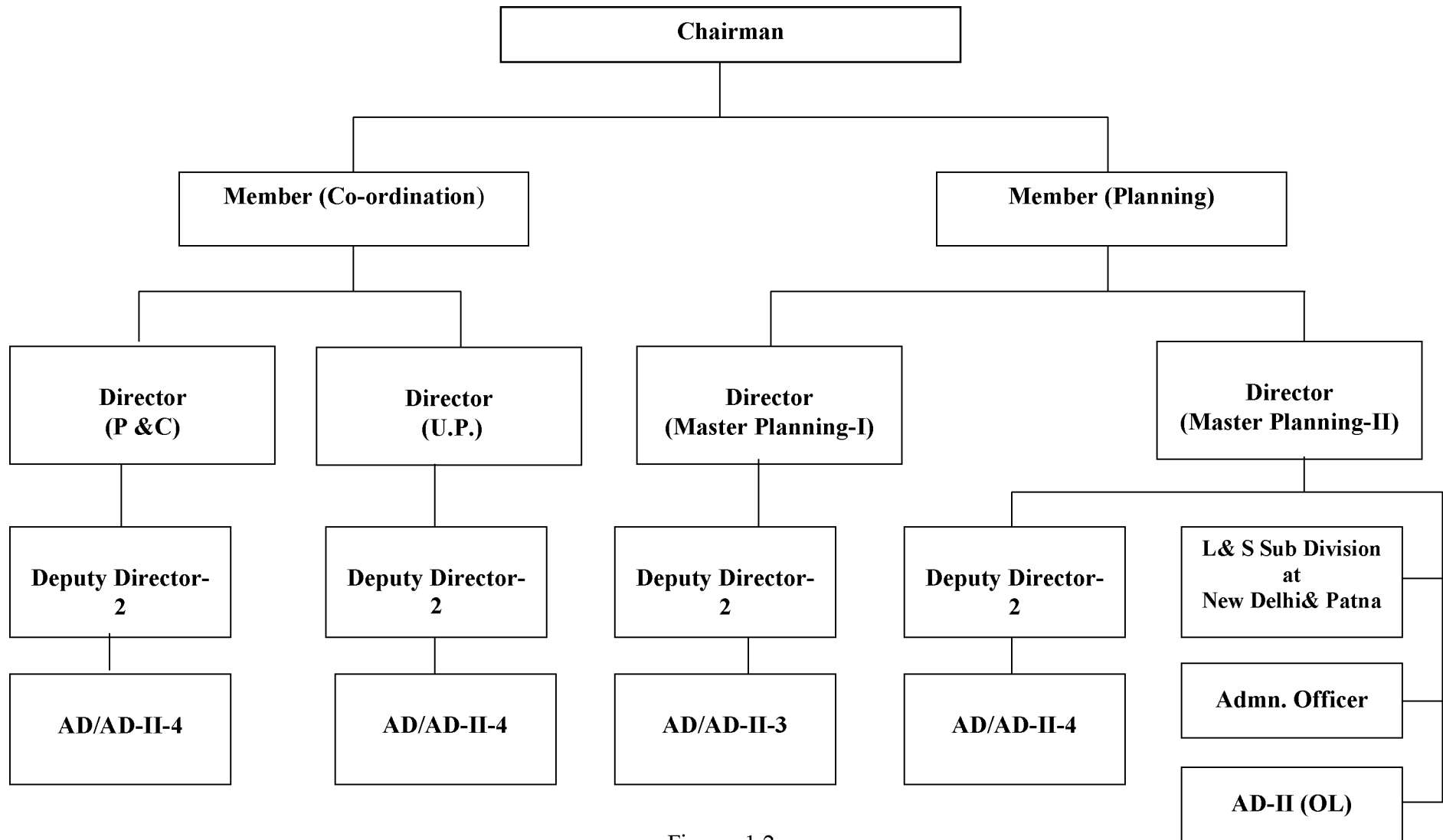


Figure: 1.2

## 1.6 Implementation of RTI Act, 2005

The Ganga Flood Control Commission has designated the following officers as Appellate Authority, Central Public Information Officer (CPIO) and Assistant Public Information Officer (APIO) to provide information to the applicants in compliance of RTI Act,2005.

1	Sh.A.K.Sinha, Member (Planning)	Appellate Authority
2	Sh. Manoj Kumar, Director(MP-I)	Central Public Information Officer
3	Sh. Harsha Vardhan, Deputy Director	Assistant Public Information Officer

Ganga Flood Control Commission has implemented the directions as indicated in the RTI Act, 2005. The Commission has compiled and published manuals under clause 4(1)(b) of the Act and displayed them on its Website (<http://gfcc.bih.nic.in>).

During the year 2016-17, sixty one requests for supply of information under RTI Act, 2005 were received in GFCC. The necessary information was provided to applicants in compliance of said Act.

## 1.7 Financial Aspect

An expenditure of Rs. 733.61 lakhs was incurred by GFCC during the year 2016-17. A statement showing sub-head-wise final estimate and actual expenditure during 2016-17 is given below:

**Table 1.3**

**(Amount in Rs.)**

S.No.	Head of account	Final Estimate 2016-17	Expenditure 2016-17
1	Salary	5,57,00,000	5,54,29,901
2.	Medical	4,00,000	3,99,719
3	Domestic Travel Expenses	32,00,000	31,93,378
4	Foreign Travel Expenses	3,00,000	NIL
5	Office Expenses	11,00,000	10,92,554
6	Minor Works	1,20,00,000	1,13,24,750
7	Machinery & Equipment	25,00,000	19,20,678
8	Over Time Allowances	10,000	NIL
	<b>TOTAL</b>	<b>7,52,10,000</b>	<b>7,33,60,980</b>

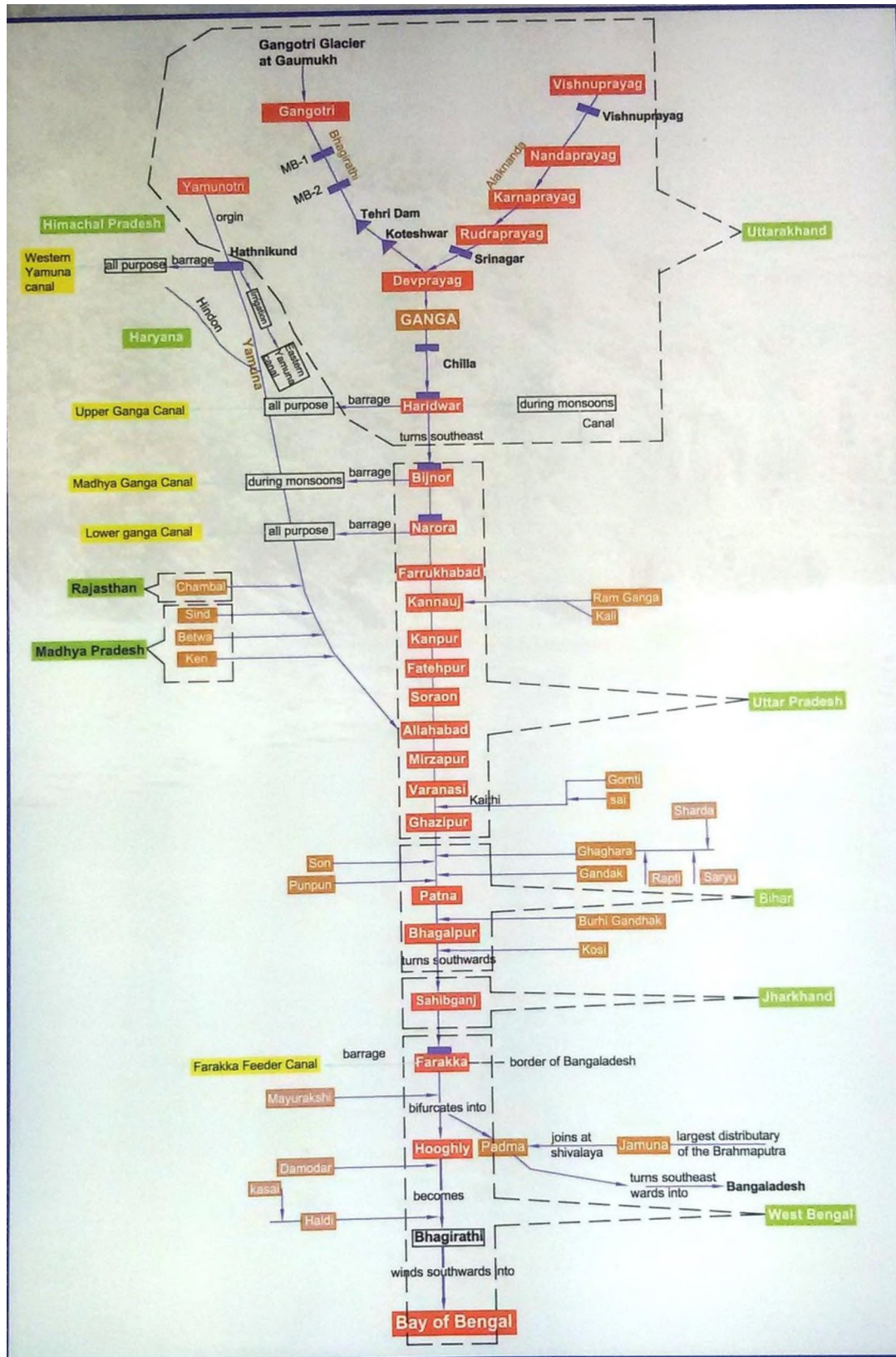


Plate-1.1: Line Diagram of the Ganga River



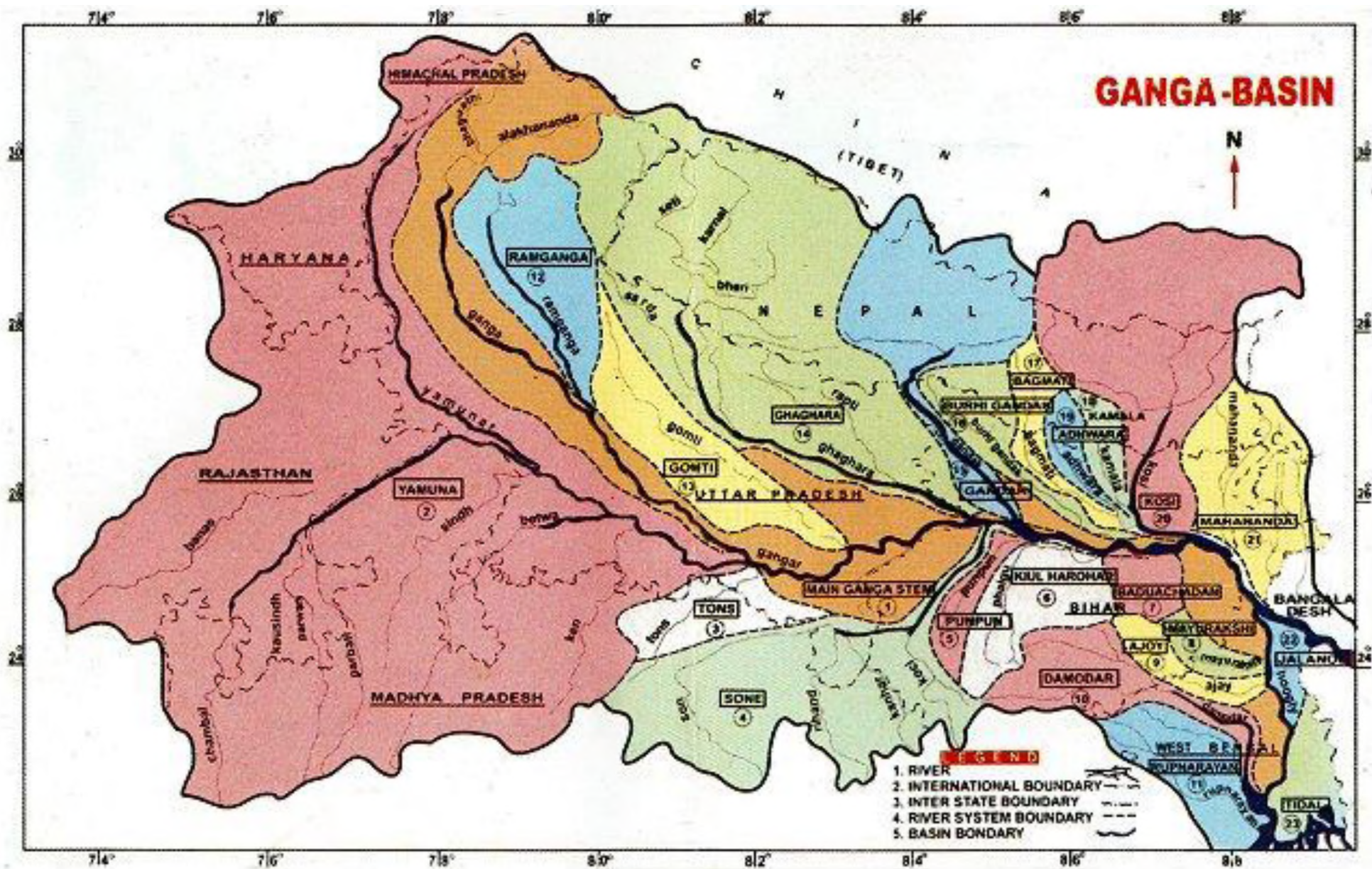


Plate: 1.2

## GLIMPSES



Anti Erosion work in Kandi Project, West Bengal



Anti Erosion works on Narayani Chittoni Embankment, Uttar Pradesh

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# 2

## Comprehensive Plans for Flood Management

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### 2.1 Preparation of Comprehensive Plans for Flood Management

In the Ganga basin, covering eleven States, floods in some part or the other are an annual feature. On account of the inadequacy of the protection works carried out so far, the large scale damage due to floods often occur every year. It was therefore felt necessary to prepare an integrated plan to tackle floods, erosion and drainage problems in the basin and implement it in a coordinated manner. It was with this in view that GFCC was set up to prepare Comprehensive Plans for flood management for the Ganga basin. The Ganga basin is broadly divided into 23 river systems and comprehensive plans for flood management of these 23 river systems were prepared by GFCC between 1975 and 1990. These comprehensive plans were then circulated to the State Governments concerned for preparing specific schemes for implementation as per recommendations given therein.

### 2.2 Updating of Comprehensive Plans for Flood Management

Due to changes in the behavior of the rivers in the Ganga basin over a period of time and for other associated changes, it was considered necessary to update the Comprehensive Plans for flood management of all the river systems periodically. This work was started in 1986 and till March 2015, GFCC has updated comprehensive plans for twenty two river systems once and five comprehensive plan twice.

The updated comprehensive plans were also circulated to the State Governments concerned for further follow-up action.

During the year 2016-17, the work of updating of Comprehensive plan of the Rupnarain-Haldi-Rasulpur river system was in advance stage of completion.

### 2.3 Monitoring of Floods and Preparation of Flood Reports

The flood situation in the year 2016 in Ganga Basin States was monitored and 18 weekly reports were sent to the Ministry of Water Resources, RD&GR.

The state-wise summary of flood situation during 2016 in Ganga Basin States is as under:

#### 2.3.1 Rainfall

The country received annual rainfall of 91% of its normal rainfall of 118.7 cm and, during SW monsoon season, 97% of its normal rainfall of 89 cm. During SW monsoon season, country experienced deficiency in rainfall as compared to its normal rainfall during the months of June (10%), August (8%) and September (3%). However, in July, it was 7% more than its normal rainfall. The

country was at maximum deficiency in rainfall of 57% during winter season. It did not receive rainfall more than or equal to normal in any season.

### 2.3.2 Flood situation in rivers in Ganga Basin

According to data received from Central Water Commission, the State-wise flood situation in rivers during 2016-17 was as under:

- (i) **Uttar Pradesh:** The River Ganga at Ballia; River Ghaghra at Elgin Bridge, Ayodhya, and Turtipar and River Sharda at Palia Kalan were reported to flow beyond Danger Level during the monsoon season.
- (ii) **Bihar:** The River Ganga at Gandhighat, Hathidah, Bhagalpur, Sahebganj and Kahalgaon; River Kosi at Baltara and Kursela; River Bagmati at Benibad; River Burhi Gandak at Khagaria, ; River Mahananda at Dhengraghat and Jhawa; and River Kamla Balan at Jhanjharpur were reported to flow above the Danger Level during the monsoon months. The level at Gandhighat in Patna attained a new HFL of 50.52m exceeding the previous HFL of 50.27 (1994), whereas Hathidah near Mokama attained a new HFL of 43.18m exceeding the previous HFL of 43.15m (1971). In Bhagalpur district, a new HFL of 34.71m was attained exceeding the previous level of 34.50m (2013). This caused inundation in 31 districts of Bihar viz. Araria, Supaul, Darbhanga, Purnea, Kishanganj, Katihar, Madhepura, Bhagalpur, Saharsa, Gopalganj, East Champaran, West Champaran, Muzaffarpur, Saran, Nalanda, Mungar, Vaishali, Buxar, Samastipur, Khagaria, Begusarai, Lakhisarai, Patna, Arrah, Arwal, Aurangabad, Kaimur, Rohtas, Gaya, Jahanabad and Madhubani.
- (iii) **West Bengal:** River Ganga at Farakka was reported to flow above the Danger Level during the monsoon months.

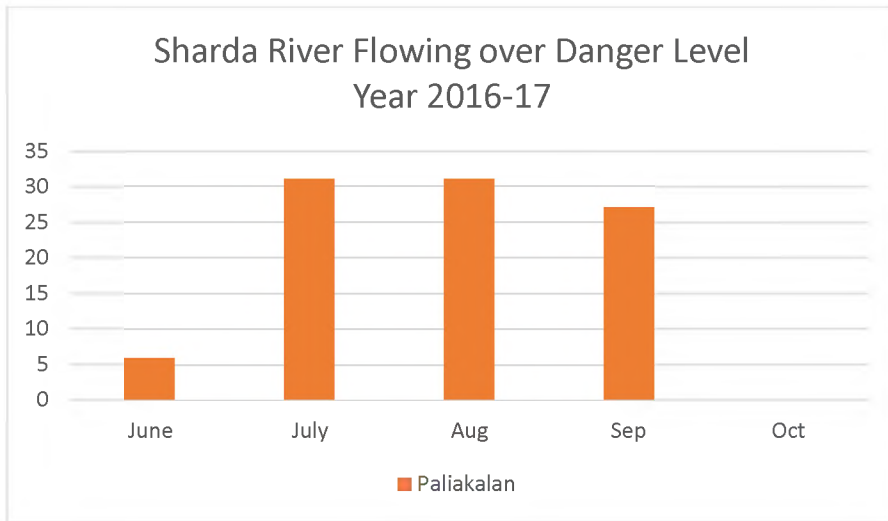
River Flowing over Danger Level at selected station is shown in Fig 2.1-Fig 2.9

### 2.3.3 Flood Damage

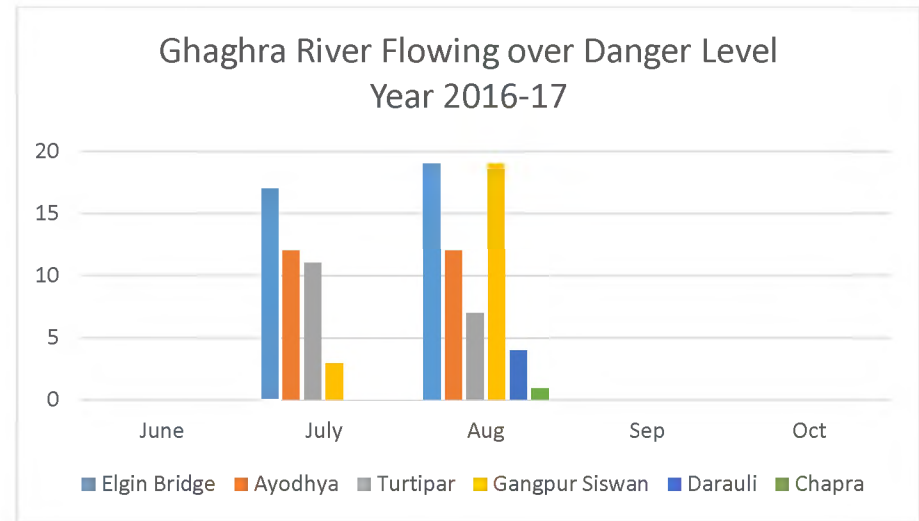
As per the report of Disaster Management Division, Ministry of Home affairs cumulative figures of Flood damages in Ganga Basin States are shown in Table-2.1

**Table 2.1**

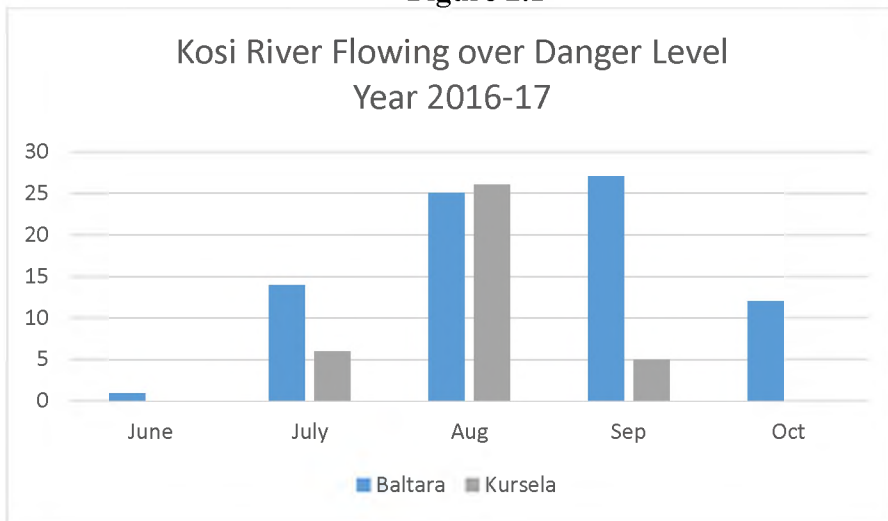
Name of States /UTs	Date when updated	No. of human lives lost	No. of cattle/ Live-stock lost	Cropped area affected (in ha)	No. of houses damaged	
					Fully	Partially/ Severely Including huts/shade
<b>Bihar</b>	15.10.2016	254	246	410000	3262	13456
<b>Haryana</b>	-	-	-	-	-	-
<b>Himachal Pradesh</b>	-	-	-	-	-	-
<b>Jharkhand</b>	-	-	-	-	-	-
<b>Madhya Pradesh</b>	12.09.2016	184	400	-	20000	60000
<b>Rajasthan</b>	-	-	-	-	-	-
<b>Uttar Pradesh</b>	14.09.2016	74	311	271412.24	3581	29224
<b>Uttarakhand</b>	10.12.2016	110	823	--	147	3177
<b>West Bengal</b>	-	-	-	-	-	-



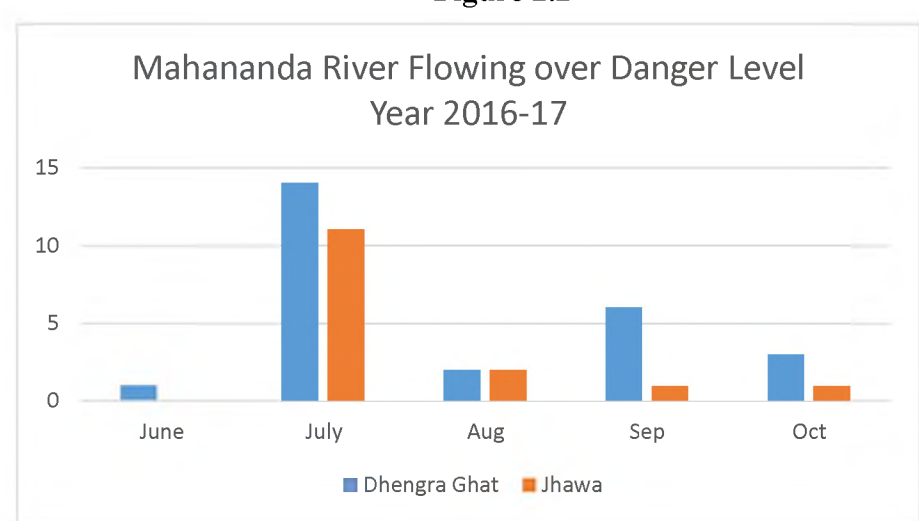
**Figure 2.1**



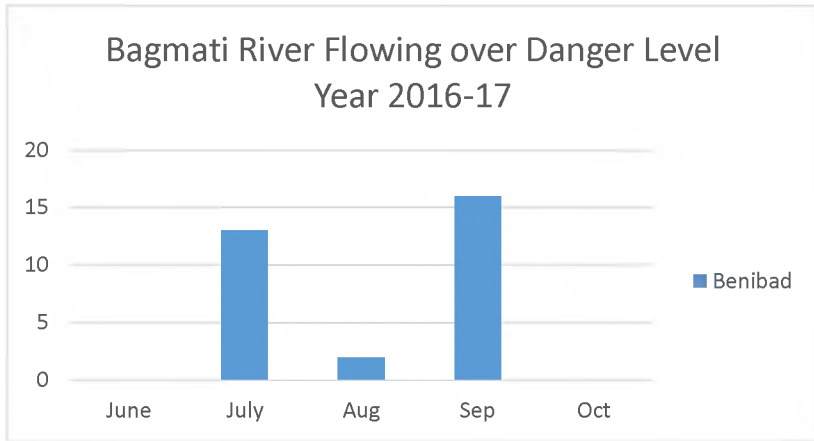
**Figure 2.2**



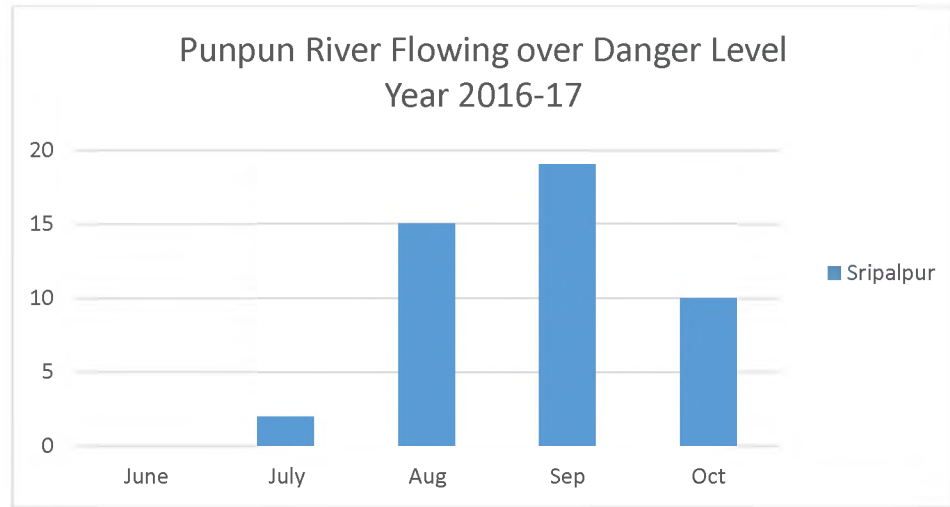
**Figure 2.3**



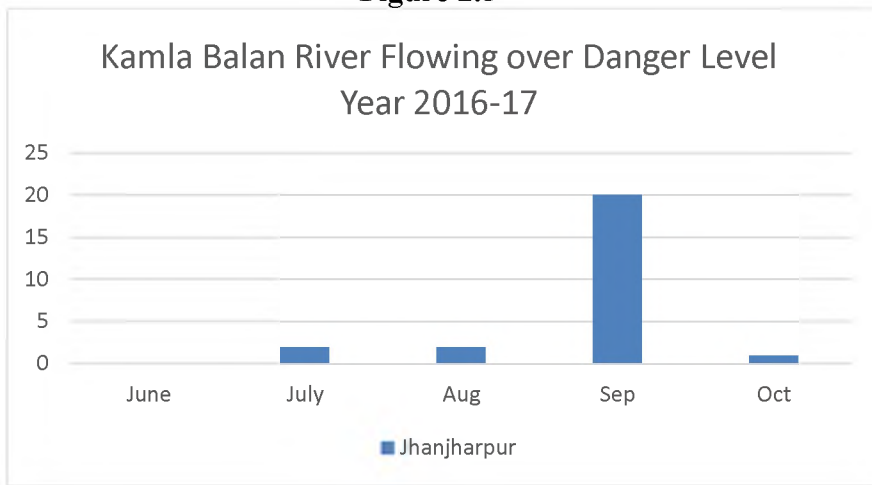
**Figure 2.4**



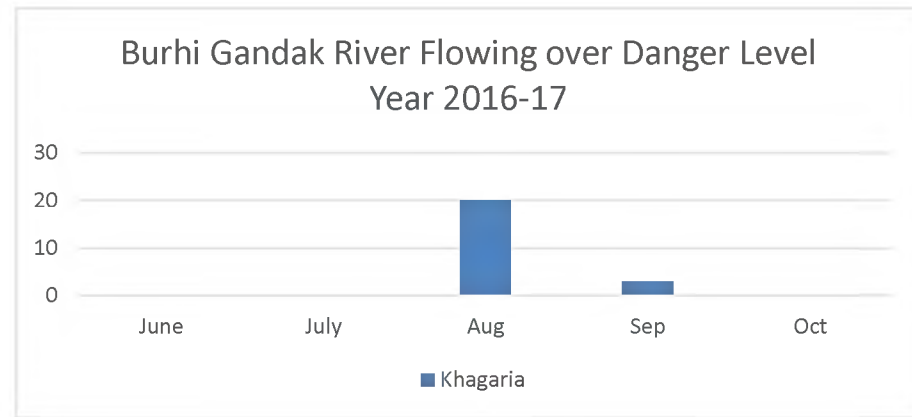
**Figure 2.5**



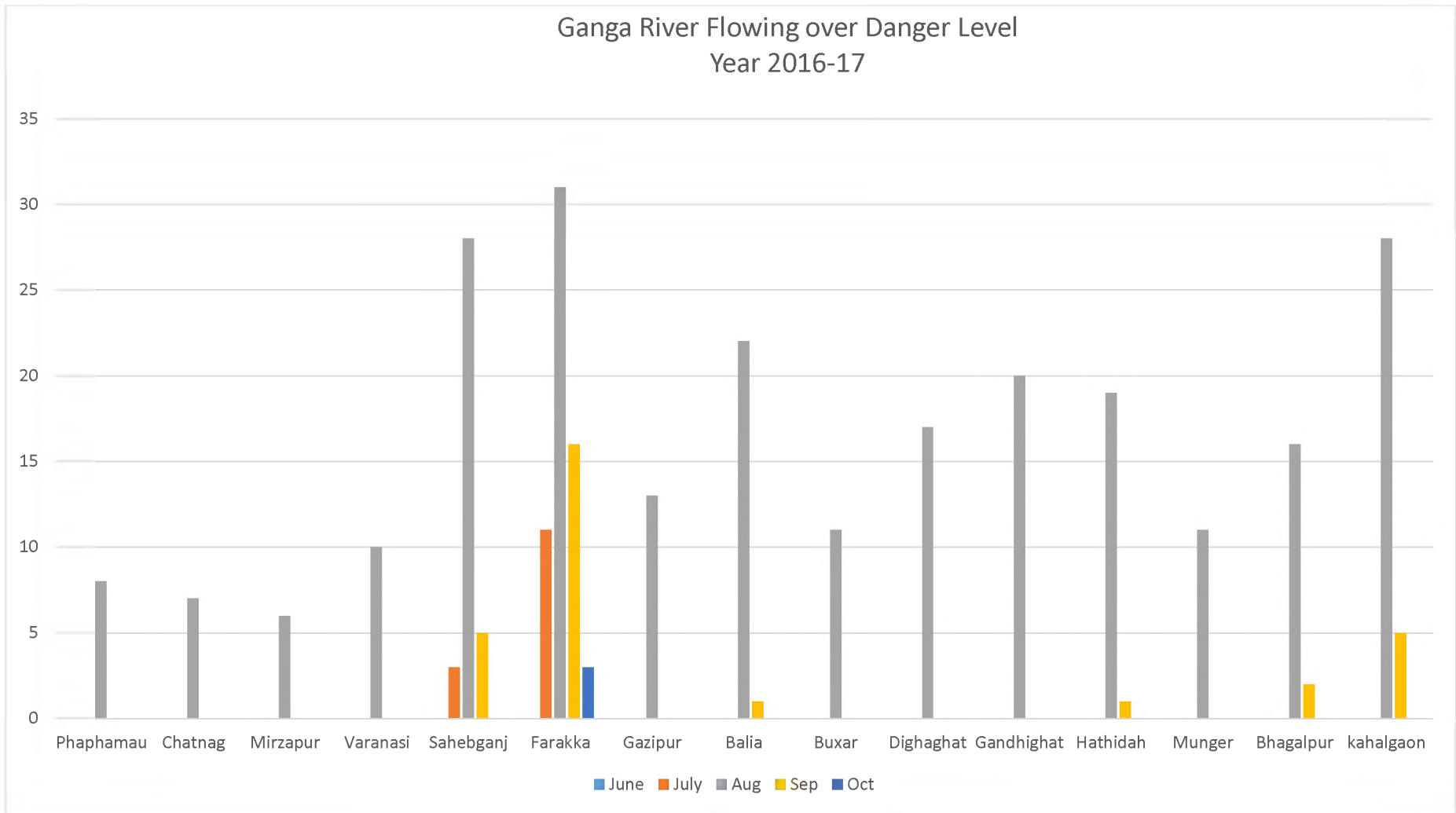
**Figure 2.6**



**Figure 2.7**



**Figure 2.8**



**Figure 2.9**  
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# 3

## Assessment of Adequacy of Waterways under Road and Rail Bridges

3.1 This exercise is aimed at determining additional waterways required for reducing drainage congestion to a reasonable limit. This activity which commenced during the later half of the eighties has been completed except for some stretches of the Ganga main stem.

3.2 These reports have been circulated to the Ganga basin States and departments of Central and State Governments concerned for follow up action. The list of river basins along with the year of completion of reports on adequacy of water ways is given in Table 3.1.

**Table 3.1**

**List of Adequacy of Waterways under Road & Rail Bridges**

Sl. No.	Name of Basin	Year of Completion
1	Punpun	1986
2	Ajoy	1987
3	Burhi Gandak	1987
4	Mayurakshi	1988
5	Bagmati	1988
6	Mahananda	1989
7	Damodar	1990
8	Yamuna	1990
9	Jalangi	1991
10	Gandak	1991
11	Gomati	1991
12	Ghaghra	1992
13	Ramganga	1992
14	Rupnarayan Haldi Rasulpur	1993
15	Tons	1994
16	Kamla Balan	1994
17	Adhwara Group	1996
18	Kiul-Harohar	1996
19	Badua Chandan	1997
20	Sone	1999
21	Kosi	2002
22	Damodar (updating)	2003
23	(a) Ganga (Buxar to Sahabaganj)	2005
	(b) Ganga (Sahabganj to outfall)	2011



	(c) Ganga (Haridwar to Gangotari)	<ul style="list-style-type: none"> <li>• Survey from Haridwar to Harsil (via Devprayag, Tehri, Chamba and Uttarkasi) completed.</li> <li>• Survey from Harsil to Gangotri to be done.</li> <li>• Survey from Devprayag to Joshimath (via Rudraprayag-Karanprayag-Gopeshwar) to be done.</li> </ul>
	(d) Ganga (Buxar to Haridwar)	Survey completed.

The balance works at (b) and (c) are proposed to be taken up next year i.e. 2017-18.

3.3 GFCC has often been called upon to examine the adequacy or otherwise of the waterways under existing rail and road bridges by the Ministry of Railways and also by the Ministry of Road Transport and Highways.

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# 4 | Flood Management Programme

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## 4.1 Background

Due to unprecedented floods in Bihar, Assam and West Bengal and consequent large scale damages in these States in the year 2004, Government of India under the direction of Hon'ble Prime Minister of India, keeping in view the seriousness of the flood problem and consequently the grave situation created on the ground, constituted a Task Force for Flood Management/Erosion Control headed by the Chairman, Central Water Commission, New Delhi to look into the problem of recurring floods in Assam and neighbouring States as well as Bihar, West Bengal and Eastern Uttar Pradesh in August 2004. The Task Force deliberated upon various issues relating to floods in these States and taking into account the prevailing situation on the ground, suggested various measures for controlling flood/erosion. The report of the Task Force was submitted to the Ministry of Water Resources in December, 2004.

## 4.2 Flood Management Programme

Keeping in view the recommendations of Task Force and other similar committees, a Plan Scheme titled 'Flood Management Programme' with a budget of Rs.8000 crore under the State sector was drawn up by MoWR for implementation during the XI Plan period. This scheme continued in XII plan with a budget of Rs.10000 crore.

Earlier, the financial approval of the individual schemes was given by an Empowered Committee headed by the Secretary (Expenditure), Ministry of Finance, Government of India after taking into consideration the critical and emergent situation and availability of annual budget/plan outlay and provision of State share and Central share by the respective State Govts. Now, the Government has approved the transfer of powers for according Investment clearance to major, medium irrigation, Extension, Renovation & Modernisation (ERM) of projects, Flood Control and Multi-purpose projects from the erstwhile Planning Commission to the Ministry of Water Resources, River Development and Ganga Rejuvenation.

The detailed schemes for flood management are formulated and submitted by the implementing States to the concerned appraising agency for techno-economic appraisal as per the prevailing guidelines laid down by the erstwhile Planning Commission.

The central assistance is provided to the State Govts. on the following funding pattern in XII Plan:

- (i) For special category States – 70%.  
(The special category States cover the North Eastern States, Sikkim, Himachal Pradesh, Jammu & Kashmir and Uttarakhand)
- (ii) For non-special category States – 50%.
- (iii) For restoration of damaged flood management works and funding pattern for such works will be applicable to respective category of State. Central Assistance will not be provided for regular maintenance of flood management works but only for restoration of flood management works damaged under force majeure like conditions. It would be ensured that such works are not covered under CRF (SDRF)/NCCF(NDRF).

The central assistance for the schemes approved during XI plan to the State Governments will continue to get the Central assistance on the following funding pattern:

- (i) For special category States – 80%.  
(The special category States cover the North Eastern States, Sikkim, Himachal Pradesh, Jammu & Kashmir and Uttarakhand)
- (ii) For non-special category States – 50%.

Financial and physical management, quality control, timely completion of the works aspects are being taken care by the implementing agencies of the respective State Govts.

#### **4.3 Monitoring of schemes under Flood Management Programme (FMP)**

The schemes under Flood Management Programme shall be monitored by the Central Water Commission (CWC), Ganga Flood Control Commission (GFCC) and Brahmaputra Board (BB) in their respective jurisdictions. The Department of Space / NRSC are also associated in monitoring of physical progress of the works through remote sensing techniques.

After the completion of work, performance evaluation studies are conducted by independent agencies in consultation with CWC/GFCC/Brahmaputra Board as the case may be.

#### **4.4 Schemes taken up during XI Plan for execution with their status (State-wise):**

The details of the FMP schemes taken up (State-wise) and their progress during the XI Plan are given below in Table 4.1:

**Table 4.1**

Sl. No	State	No. of schemes approved	No. of schemes completed	No. of schemes under progress during 2016-17 (spillover schemes)
1	Bihar	46	40	3 <sup>#</sup>
2	Jharkhand	3	2	1
3	West Bengal	11	8	2*
4	Uttar Pradesh	24	12	12
5	Uttarakhand	12	12	-
6	Himachal Pradesh	1	-	1
	<b>Total</b>	<b>97</b>	<b>74</b>	<b>19</b>

# Two schemes of Bihar dropped by EC- FMP and one scheme foreclosed

\* One scheme of West Bengal withdrawn by the State Government

#### 4.5 Schemes taken up during XII Plan and their status (State-wise)

The details of the FMP schemes taken up (State-wise) and their progress during the XII Plan are given below:

**Table 4.2**

Sl. No	State	No. of schemes approved	No. of schemes completed	No. of schemes under progress during 2016-17
1	Bihar	4	1	3
2	Jharkhand	-	-	-
3	West Bengal	1	-	1
4	Uttar Pradesh	2	-	2
5	Uttarakhand	9	8	1
6	Himachal Pradesh	1	1	0
	<b>Total</b>	<b>17</b>	<b>10</b>	<b>7</b>

## GLIMPSES



Elgin Bridge Embankment(UP-27)- Barabanki(U.P.)



Elgin Bridge Embankment(UP-27)- Barabanki(U.P.)

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# 5 Appraisal of Flood Management and Anti-Erosion Schemes

## 5.1 Appraisal of schemes by GFCC- Scope

Techno-economic appraisal of flood management and anti-erosion schemes received from the Ganga basin States is an important activity of GFCC. As per revised guidelines issued by the Planning Commission on 29<sup>th</sup> June 2012, schemes estimated to cost between Rs. 12.5 crore (earlier Rs. 7.5 crore) and Rs.25 crore (earlier Rs. 15 crore) are examined by GFCC for their techno-economic viability and, if found acceptable, are cleared by GFCC itself. After clearance by GFCC, the schemes are sent to the Ministry of Water Resources, River Development and Ganga Rejuvenation with recommendation for investment clearance.

Schemes costing less than Rs. 12.5 crore are cleared at the State level by the State Flood Control Boards.

Schemes costing above Rs. 25 crore, if found acceptable after appraising them for their techno-economic viability, are recommended by GFCC to the Advisory Committee of the Ministry of Water Resources for Irrigation, Flood Control and Multi Purpose Projects for clearance.

Normally, GFCC does not examine schemes costing less than Rs. 12.5 crore. However, in special cases, such as schemes on emergent flood protection works in the Eastern Sector on common / border rivers with Bangladesh, Ministry of Water Resources, Government of India issued an instruction that GFCC would scrutinize such schemes on the common / border rivers with Bangladesh and make recommendations to MoWR for release of funds. In addition, all Central sector schemes in Ganga Basin irrespective of cost are, however, examined from techno-economic aspect in GFCC.

## 5.2 Appraisal of schemes during 2016-17

The details of schemes appraised during 2016-17 and their status are given below in Table 5.1:-

**Table 5.1**

<b>Sl No.</b>	<b>Name of Scheme</b>	<b>Estimated Cost in Rs. Crore</b>	<b>Status</b>
	<b>Bihar</b>		
1	Construction of Earthen Bund from Ahraulidan (UP) Bund to Guide Bund of Bettiah-Gopalganj bridge under FcdnThakaraha Camp, Gopalganj	50.7001	Cleared by GFCC on 13.06.2016 for an estimated cost of Rs.53.859 crore.
2	Protection work for village patther Tola to Kamla Kani near U/S of spur no. 12.	112.2547	Cleared by GFCC on 19.05.2016 for an estimated cost of Rs.57.952 crore
3	Anti erosion work from Hardeo Tola to Khatti	113.9567	Cleared by GFCC on 13.06.2016 for an estimated cost of Rs.65.66 crore
4	Revised Project Estimate for construction of Bituminous road and Restoration of structure of Eastern Kosi Embankment (Km. 1.00 to Km. 125.00) & Western Kosi Embankment.	578.42	Cleared by GFCC on 11.04.2016 for an estimated cost Rs. 535.487 crore.
5	A.E. Work in b/w km 0.00 km to 7.80 km of left bank of river Ganga near Mathar Diara (Munger Ghat to Tikarampur)	61.8935	Cleared by GFCC on 14.09.2016.
6	Construcyion of Ring Bund for protection work of Sitab Diara village (Birth place of Loknayak Jay Prakash Narayan)	90.9759	Cleared by GFCC on 15.11.2016 for an estimated cost of Rs.92.3123 crore

Sl No.	Name of Scheme	Estimated Cost in Rs. Crore	Status
7	Construction of embankment from Jahanwi chowk to Ismailpur on the left bank of river Ganga in Bhagalpur district	57.5283	Cleared by GFCC on 07.03.2017
8	Bagmati Flood Management Scheme Phase- III (b)	720.84	Under Examination in GFCC
9	DPR for Anti-Erosion works at various places on left bank of right channel and right and left bank of left channel of River Ganga in Raghapur Diyara being executed before Flood 2017.	42.6825	Under Examination in GFCC
10	Protection of left edge of river Ganga from Kewala village to Baghmara village in the length of 5200m.	66.4581	Under Examination in GFCC
11	Construction of new embankments along left & right bank of Mahananda river, Ratwa river & right bank of Nagar river(Mahananda Flood Control Scheme Phase-II)	791.066	Under Examination in GFCC
12	River bank development work on the left bank of the Mahananda River near Agriculture College, Kisanganj (Mahananda Phase IIIA)	59.4391	Under Examination in GFCC
13	Gap closure of B.K.G. Right Embankment from Km. 69.24 to KM. 74.63 & Km. 86.30 to Km. 87.37 with construction of Five Nos. Sluices between Km 69.240 to Km. 90.530 with protection work at the junction of Right Embankment of Western Gangi River and B.K.G. Right Embankment	40.585	Under Examination in GFCC
14	Anti-erosion work from Khatti Tola to Janjali Tola ( upto West Bengal border)	28.0262	Under Examination in GFCC
15	Anti Erosion work from 72.07 km to 74.51 km of Buxar Koilwar Ganga Embankment at near villages Piperpanti, Balua and Kewatia	14.9983	Under Examination in GFCC



Sl No.	Name of Scheme	Estimated Cost in Rs. Crore	Status
16	1. Strengthening of Ismailpur Bindtoli embankment between spur no. 1 to 3. 2. Raising & strengthening of Ismailpur Bindtoli embankment between spur no. 5 to 9. 3. Revetment work between spur no. 5 to 5N1, spur no. 6N to 7 and spur no. 7 to 8 from Ismailpur Bindtoli. 4. Restoration of spur no. 7 and 8 of Ismailpur Bindtoli. 5. Removal of shoal in front of spur no. 7 up to 1m below LWL. 6. Restoration of revetment d/s of spur no. 1 and revetment work between spur no. 5N1 to 5N2.	51.899	Under Examination in GFCC
17	A. E work on the left bank of Ganga left channel at Bishunpur-Chaksingar Village of Raghapur Diara	18.9272	Under Examination in GFCC
18	Activation of natural channel 4.00Km downstream of Kosi Barrage	35.4619	Under Examination in GFCC
19	Flood protection work near proposed Aligarh Muslim University and Police-line in Kishanganj Block of Kishanganj District	33.2379	Under Examination in GFCC
20	A.E. Work in b/w ward no 3 to 13 village Kalamatihiniya panchayat.	15.3088	Under Examination in GFCC
21	Anti erosion work in between 0.00km to 4.90 km of Patahara Charki & in between 0.00km to 4.60 km of Bishunpur Charki and river training works between pier 13-15, 17-18 of Gopalganj bettiah bridge including existing pilot channel.	69.326	Under Examination in GFCC
22	Protection work in upstream of Gandak Barrage on left bank of river Gandak in front of I.B. and dormitory at Vamikinagar in a length of 1080 m (Mecafferri Concept) in West Champaran District of Bihar	24.8149	Under Examination in GFCC
23	Flood Control and Drainage Improvement Project in Mokama Tal Areas	188.5	Under Examination in GFCC
24	Bagaha town protection Work phase-IV	23.9608	The scheme has been dropped on 02.01.2017.
25	Revised Detailed Project Report for Raising, Strengthening & Extension of Exiswting left/right embankment in Chandan River System in Bhagalpur & Banka district.	366.676	The scheme has been dropped on 06.01.2017.

Sl No.	Name of Scheme	Estimated Cost in Rs. Crore	Status
	<b>Jharkhand</b>		
1	DPR to make the entire right bank of river Ganga in Sahebganj Dist. Erosion free	241.27	The scheme has been dropped on 17.02.2017.
	<b>West Bengal</b>		
1	Bank Protection Work on the Left bank of River Ganga at village- Janjalitola under Mauja- Gadai, Maharajpur, Block-Ratua 1, PS- Ratua, Distt-Malda (Length=3600 m)	39.1935	Scheme under examination in GFCC
	<b>Uttar Pradesh</b>		
1	Project for Anti erosion work in protection of river edge by launching apron and porcupine stud in length of 1990 m at group of villages pipri etc. on Left Bank of Gomti river in Distt Sultanpur(U.P.).	15.4314	Scheme cleared on 28.06.2016
2	Techno- Economic Appraisal of Project estimate for raising and strengthening of Kharagpur-Shahpur-Sopai Bund on the Left Bank of river Ghaghra & Right bank of river Kuwano in Distt-Gorakhpur(U.P)	37.4956	Scheme cleared on 06.10.2016.
3	Scheme for construction of Marginal Bundh on Left Bank of River Ganga from Jajmau Bridge to Shuklaganj old Bridge Distt Unnao from Km. 0.000 to Km. 5.000	134.601	Scheme cleared on 20.03.2017.
4	Project for construction of proposed spur no. 03, 04, 05, 06 from km. 2.075 to Km. 2.720 & repairing of existing spur no. 02 at Km. 1.900 of Khara power channel Distt Saharanpur(Uttarakhand).	24.9378	Scheme cleared on 12.08.2016.
5	Project estimate for protection of Gaura-Saifabad embankment between Km. 3.000 to km 4.400 on left bank of river Ghaghra in Tehsil-Harraiya, Distt-Basti.	33.9885	Scheme cleared on 04.08.2016
6	Project estimate for construction of 7 nos. Spurs at km. 12.500, 13.200, 14.200, 15.100, 15.750, 16.200, 16.600 of Kalwari-Rampur bund of left bank of river Ghaghara in District-Basti.	29.5997	Scheme cleared on 04.08.2016.
7	Project estimate for restoration of drainage capacity and section of Farren Drain from Km. 0.000 to 61.200 in district-Gorakhpur.	16.2468	Scheme cleared on 19.09.2016.

Sl No.	Name of Scheme	Estimated Cost in Rs. Crore	Status
8	Project estimate for construction of Ring Bund for protection of Village Sitabdiyara(Birth place of Lok Nayak Jay Prakash) and village group of Ibrahima- bad Naubarar on left bank of river Ganga & Right bank of river Ghaghara Distt. Ballia (U.P.).	40.4976	Scheme cleared on 30.11.2016.
9	Project estimate for construction of bund on both banks for protecting from flood of villages Ravanpur Buzurg, Ravanpur khurd, Bahadara & Dandauli Khera on river Gangro in block Sasawa in Dist.Saharanpur(U.P.)	13.9177	Scheme cleared on 30.03.2017.
10	Project Estimate for flood protection work at Km. 9.00 to Km 15.00 of damaged Elgin Bridge- Charsari bund on left bank of river Ghaghra in district Gonda, U.P.	97.3499	Scheme cleared on 24.03.2017.
11	Project estimate for restoration and protection of Dubey Chapra Tengrahi ring bund between Km. 0.650 to Km 1.400 on left bank of river Ganga in district Ballia, U.P.	21.3481	Under Examination in GFCC.
12	Project Estimate for constructing marginal embankment Basantpur-Khajuri on right bank of Ghaghara river District-Barabanki	60.1711	Under Examination in GFCC.
13	Re-Revised project estimate of Raipura Ring Bund from Km 0.000 to Km 7.800 on left bank of river Ganga in Distt. Balia (U.P)	13.3626	Under Examination in GFCC.
14	Revised Project estimate for construction of Khajhua - Jhunjhunia Andhrapurwa marginal bund on left bank of river Rapti in district Shrawasti (U.P.)	23.5468	Under Examination in GFCC.
15	Revised Project estimate for construction of Parsa Dehria-Tilakpur in district Shrawasti (U.P.)	18.9457	Under Examination in GFCC.
16	Project estimate for protection of Elerin Bridge- Charsari Bund by laying Geo tube between km 10.000 to km. 13.100 in distt-Gonda/Barabanki (U.P.)	38.2469	Scheme dropped on 05.01.2017.
17	Project estimate for widening of M.G. Bund and Restoration of Regulator in Km. 48.400 at right bank of Ghaghra river in Azamgarh distt.	239.5	Scheme dropped on 05.01.2017.
18	Project estimate for construction of Pucca road on Rampur Makboompur and Madaraha Beharadandi Bund situated on left bank of river Ghaghra in Distt-Sant Kabir Nagar.	22.4097	Scheme dropped on 10.05.2016.
19	Project estimate for flood protection works at village Barhimuslim, Belhera and Pather on left Bank of river Yamuna in Dist. Shamli (U.P.)	18.7871	Scheme dropped on 30.06.2016

Sl No.	Name of Scheme	Estimated Cost in Rs. Crore	Status
20	Revised Project Estimate for Construction of Lalpur Roohela Bund (Phase-III) from Km. 8.700 to NH-24 (Km. 18.650) for protection from Flood of village Pranpur, Bejaina, Ghatampur and Mansurpur at left bank of river Kosi in Distt-Rampur.	16.927	Scheme dropped on 05.01.2017.
21	Scheme for estimate for extension of flood protection work of Hirdayapur-Ludhia and milak at right bank of River Ramganga in district Moradabad (UP).	14.7188	Scheme dropped on 30.03.2017.
22	Project of proposed Parallel left Marginal Bund and Associated works for Modern City Project (To be developed by K.D.A.) through land Reclamation. Distt- Kanpur.	487.91	Scheme dropped on 30.03.2017.
23	Project estimate for construction spurs for protection of village Kunda Kala district-chandauli, Uttar Pradesh.	23.5061	Scheme dropped on 30.03.2017.
	<b>Uttarakhand</b>		
1	Shri Kot Phase-2 in Shrinagar, Distt. Pawri flood protection scheme from river Alaknanda	21.24	Dropped on 15.12.2016
2	Project for flood protection works on left bank of Ganga river for protection of Ganga Bhogpur and Kunao village of Distt. Pauri Garhwal	17.56	Dropped on 30.11.2016
3	Project for flood protection and anti erosion work along both banks of Dhela, Phika and Levra rivers (tributaries of Ramganga river) in Ramnagar, Kashipur, Jaspur, and Bazpur blocks, District- Nainital and Udham Singh Nagar	88.56	Dropped on 3.1.2017
4	Flood Protection scheme Uttarakhand State Reconstruction Distt. Almora, Block- Chaukhutia and Syalde from River Ramganga and tributaries	23.45	Dropped on 3.1.2017
	<b>Rajasthan</b>		
1	Flood Protection Scheme for Baran City	125.16	Dropped on 29.11.2016
2	Flood Protection Scheme for Bharatpur district under Flood Management Programme 2012-17	67.68	Dropped on 29.11.2016

### 5.3 Summary of status of Appraisal of Schemes (State-wise)

State-wise status of appraisal of schemes is given in table below:

**Table 5.2**

<b>State</b>	<b>Scheme received</b>	<b>Schemes cleared</b>	<b>Schemes under examination</b>	<b>Schemes Dropped</b>
Bihar	25	7	16	2
Jharkhand	1	-	-	1
West Bengal	1	-	1	-
Uttar Pradesh	23	10	5	8
Uttarakhand	4	-	-	4
Rajasthan	2	-	-	2
<b>Total</b>	<b>56</b>	<b>17</b>	<b>22</b>	<b>17</b>

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# 6

## Monitoring of Ongoing Flood Management and Anti-Erosion Schemes

### 6.1 Monitoring of Schemes by GFCC - Scope

GFCC monitors flood management and anti-erosion schemes under Central funding for their physical and financial progress and monitoring reports are sent to the Ministry of Water Resources, RD &GR regularly.

### 6.2 Monitoring of Schemes during 2016-17

During the year 2016-17, FMP schemes as per the details given below were monitored by GFCC & Central assistance released under it:

**Table 6.1**

Sl. No.	Scheme Code	Name of Scheme	Amount released in cr
<b>Uttar Pradesh</b>			
1.	UP-24	Scheme for flood protection works on right/left bank of river Gurra in district Deoria	-
2.	UP-27	Construction of Marginal Embankment upstream of Elgin Bridge along right bank of river Ghaghra in district Barabanki, Uttar Pradesh	-
<b>Uttarakhand</b>			
1.	UK-18	Project for construction of Studs and marginal bund for protection of population and agricultural land of villages situated at banks of river Ganga in District Haridwar	-
2.	UK-19	Project for Anti Erosion Scheme of nearby village at Right bank of Sukhi river in Block Haldwani, District Nainital	-

Sl. No.	Scheme Code	Name of Scheme	Amount released in cr
3.	UK-20	Anti Erosion Scheme for villages Jogipura, Gobra and Bainthkeri along left bank of river Kosi and its tributaries Dabka in Distt. Udham Singh Nagar of Uttarakhand	-
4.	UK-21	Flood Protection scheme for protection of Ramnagar city alongwith Pucchari village in Distt. Nainital	-
<b>West Bengal</b>			
1.	WB-18	Improvement of embankment and ancillary works in Kandi and other adjoining area in the district of Murshidabad	12.6096

### 6.3 Release of Funds during 2016-17 under Flood Management Programme

Based on the monitoring reports and recommendation of GFCC, the Ministry of Water Resources released a total amount of Rs. 12.61 crore to the State Governments of West Bengal during 2016-17. The total fund released up to 2016-17 under the Flood Management Programme is Rs. 2159.06 crore. The break up is given below:

**Table 6.2**

(Amount in Rs Crore)

Sl. No	State	Approved Central Share	Amount Released in 2016-17	Total amount released upto March 2017
1.	Bihar	1392.42	-	856.30
2.	Uttarakhand	247.03	-	126.09
3.	Uttar Pradesh	568.89	-	348.50
4.	West Bengal	1671.26	12.61	788.22
5.	Jharkhand	29.48	-	21.34
6.	Himachal Pradesh	41.27	-	18.61
	<b>TOTAL</b>	<b>3950.35</b>	<b>12.61</b>	<b>2159.06</b>

## GLIMPSES



Bank Protection in Deoria, U.P.-24 Scheme



Bank Protection in Deoria, U.P.-24 Scheme

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# 7

## River Management Activities & Works related to Border Areas

### 7.1 Background

During the XI Plan period, Ministry of Water Resources has undertaken a plan scheme titled “River Management Activities and Works related to Border Areas” for water resources development and flood management activities. The scheme includes provision for taking up maintenance of flood protection works of Kosi and Gandak projects and bank protection works on common/border rivers between India and Bangladesh.

### 7.2 Maintenance of Flood Protection Works on Kosi and Gandak Projects

#### 7.2.1 Kosi High Level Committee & Protection Works on Kosi

The Kosi High Level Committee (KHLC) was constituted by the then Irrigation Department, Government of Bihar in the year 1978 under the Chairmanship of Chairman, GFCC to review/examine the protection works already executed on the river and recommend protection measures to be taken up and completed before the next flood season. Since then, the Committee is inspecting every year the protection works on the river and is making recommendations regarding protection work to be executed on the river before the next flood season. The State Government executes the schemes on the basis of the recommendations of the Committee.

The Composition of the Committee is given below:

- |   |          |
|---|----------|
| 1. Chairman, GFCC, Patna.   | Chairman |
| 2. Member (River Management), Central Water Commission, New Delhi or his representative | Member   |
| 3. Director, CWPRS, Pune or his representative.   | Member   |
| 4. Engineer-in-Chief (North), Water Resources Deptt., Government of Bihar.              | Member   |
| 5. Chief Engineer, Water Resources Deptt., Government of Bihar, Darbhanga.              | Member   |

6.	Chief Engineer (Research), Water Resources Deptt., Government of Bihar, Khagaul.	Member
7.	Chief Engineer (Hydrology & Project Planning), Water Resources Deptt., Government of Bihar.	Member
8.	Director, Eastern Region, Water Resources Deptt., Government of Nepal, Biratnagar.	Member
9.	Dy. Director General, Water Resources Deptt., Government of Nepal, Kathmandu.	Member
10	Member (Coord), GFCC, Patna	Member
11.	Chief Engineer, Water Resources Deptt., Government of Bihar, Birpur.	Member-Secretary

Like previous years, the KHLC inspected the protection works from 7<sup>th</sup> November, 2016 to 9<sup>th</sup> Nov, 2016 and recommended works to be carried out before the floods of 2017.

### **7.2.2 Protection work in Nepal Portion**

The expenditure incurred by Government of Bihar on protection works in Nepal, has been reimbursed by Government of India under a central scheme. The reimbursement is made based on the expenditure statement received from the Government of Bihar for the amount spent on carrying out protection works on river Kosi in the Nepal portion.

### **7.3 Gandak High Level Standing Committee & Protection Works on Gandak**

A Committee for the river Gandak namely Gandak High Level Committee (GHLSC) was initially constituted by the then Ministry of Irrigation, Government of India vide office memorandum No.10/12/80-FC dated 12<sup>th</sup> November, 1981 to evaluate the performance of flood protection works on the right bank of the river Gandak in the States of Uttar Pradesh and Bihar during the floods of 1981, to guide and advise construction activities in the two States and to suggest programme of works for the year 1981-82. The term of the committee was extended from time to time. This Committee has now been renamed as Gandak High Level Standing Committee (GHLSC) vide Ministry of Water Resources letter No. 5/15/2002-ER/Ganga /1219-27 dated 21.03.2006.

The terms of reference of the Committee are:

- To review the flood control and anti-erosion works so far executed by the State Governments of U.P and Bihar and evaluate their performance during the floods.
- To recommend a programme of works, which could be executed by the two States in a coordinated manner.
- To guide the construction activities in the States and advise on the steps to be taken to get over any difficulties that may arise with a view to ensure that all the necessary works are completed by the States latest by June each year.

The Chairman, GFCC is the Chairman of the Committee. The composition of the GHLSC is given below:

1. Chairman, GFCC, Patna	Chairman
2. Engineer-in-Chief, Water Resources Deptt., Government of Bihar.	Member
3. Engineer-in-Chief, Irrigation Department, Government of U.P.	Member
4. A Representative from Central Water and Power Research Station, Pune.	Member
5. Chief Engineer (Research), Irrigation Research Institute, Government of Bihar, Patna.	Member
6. Director, Irrigation Research Institute, Government of Uttarakhand (Roorkee).	Member
7. Director(Co-ordination), GFCC, Patna.	Member-Secretary

Since its constitution, 49 meetings of the GHLSC have been held up to March, 2017 and recommendations were made for protection works to be executed before the next floods. The respective State Govts. executed the works as per recommendations of the Committee.

### **7.3.1 Inspection during 2016-17**

During the year 2016-17, the meeting / site inspection by the Committee was held in between 17<sup>th</sup> to 19<sup>nd</sup> October, 2016 and recommendations were made for the works to be carried out before the floods of 2017.

### **7.3.2 Protection Works in Nepal Portion**

The expenditure incurred by Government of Uttar Pradesh in Nepal portion for maintaining the flood protection works on the right bank of the river Gandak is being reimbursed by the Government of India. The reimbursement is made based on the expenditure statement received from the Government of Uttar Pradesh for the amount spent on carrying out protection works on river Gandak in the Nepal portion.

#### 7.4 Schemes on Common/Border rivers in West Bengal

India shares 54 rivers with Bangladesh. At many places, these rivers have a tendency to shift their course by eroding the banks on either side. Sites of active erosion are identified by both the countries and the bank protection works for such sites are finalized by consultation among the two countries.

Twenty four (24) such sites have been identified in Ganga Basin, which lie on seven rivers, namely, Mahananda, Nagar, Punarbhaba, Atrai, Kulik, Karatowa and Tangon. Irrigation and Waterways Department, Government West Bengal is taking up bank protection works for such sites under the above plan scheme.

A total of 13 schemes for bank protection works at the above 24 sites on common/border rivers have been taken up by the State Government with funding under the Central Plan scheme "River Management Activities and work related to Border rivers". All aforementioned 13 schemes have been completed in 2012-13

In addition, a scheme for de-silting of river Ichamati along the Indo-Bangladesh Border has also been taken up and completed.

However, in the technical level meeting of Joint River Commission between India and Bangladesh which was held at Kolkata on 10<sup>th</sup> February 2012, some bank protection works (Indian side) were identified to be executed during XII Plan. The Government of West Bengal has submitted twenty five nos. of proposals to GFCC for their techno-economic appraisal. Out of 25 nos. of proposals, GFCC has cleared 19 and rest 6 are under examination, as per list shown below:

The Government of West Bengal has started execution of works on 19 Bank protection schemes cleared by GFCC.

**Table 7.1**  
**Status of Appraisal of schemes for common border rivers in West Bengal during XII Plan**

S. No.	Name of scheme	Estimated cost (Rs in lakh)	Remarks
1	Protection to the left bank of river Atrai at downstream of Samjhia B.O.P. camp in P.S. Kumarganj, District- Dakshin Dinajpur (Phase- II) (Length- 240 m)	143.54	Cleared

S. No.	Name of scheme	Estimated cost (Rs in lakh)	Remarks
2	Protection to the left bank of river Atrai near Rasulpur B.O.P. camp in P.S. Kumarganj, District- Dakshin Dinajpur (Length- 1295 m)	873.19	Cleared
3	Protection to the left bank of river Tulai near Purbasil B.O.P. camp in P.S. Kushmandi, District Dakshin Dinajpur (Length- 550 m)	218.63	Cleared
4	Protection to the right bank of river Punarbhava near Mallickpur, B.O.P. camp in P.S. Gangarampur, District Dakshin Dinajpur (Length- 525m)	265.67	Cleared
5	Protection to the left bank of river Tangon upstream and downstream of Iron bridge No. 1 near Kholtor B.O.P. camp in P.S. Kushmandi, district Dakshin Dinajpur (Length- 320 m)	153.81	Cleared
6	Bank protection work along the right bank of river Mahananda from 445/10-S to 448/3-S under Phansidewa B.O.P. camp (Indian side) in P.S. Phansidewa, District Darjeeling (Length-450 m)	194.52	Cleared
7	Bank protection work along the right bank of river Mahananda from 443/1-S to 445/10-S under Murikhewa B.O.P. camp (Indian side) in P.S. Phansidewa, District-Darjeeling (Length- 1250 m)	749.24	Cleared
8	Bank protection work along the right bank of river Mahananda from 448/12-S to 730/M under Phansidewa B.O.P. camp (Indian side) in P.S. Phansidewa, District-Darjeeling (Length- 750 m)	321.62	Cleared
9	Bank protection work along the right bank of river Mahananda from 731/M to 731/24-R Laldasjote B.O.P. camp in P.S. Phansidewa, District- Darjeeling (Length-2200 m)	1061.03	Cleared
10	Bank protection work along the left bank of river Mahananda at village Asrafpur in Mouza-Asrafpur in block and P.S. Habibpur, District- Malda (Length- 1100 m)	1095.61	Cleared
11	Bank protection work along the left bank of river Mahananda at village Asrafpur in Mouza-Asrafpur (from Plot No. 609 to 777, near Border Gate No. 43) in block and P.S. Habibpur, District- Malda (Length- 950 m)	957.46	Cleared

S. No.	Name of scheme	Estimated cost (Rs in lakh)	Remarks
12	Bank protection work along the right bank of river Punarbhaba at Mouza-mahadebpur in B.O.P. Battali in block and P.S. Bamangola, District- Malda (Length- 300 m)	323.29	Cleared
13	Bank protection work along the left bank of river Mahananda at village Jadavnagar and Chandra Para in B.O.P. Sukhnagar in block and P.S. Habibpur, District- Malda (Length- 250 m)	263.22	Cleared
14	Bank protection work along the right bank of river Punarbhaba at Mouza-Nasratpur Pathar Mahadevbatl within block and P.S. Habibpur, District- Malda under Anuradhapur B.O.P. (Length- 100 m)	710.75	Cleared
15	Bank protection work along the left bank of river Mahananda in B.O.P. Asrafpur in Mouza-Asrafpur (from plot no. 785 to 1015) in block and P.S. Habibpur, district Malda (Length- 950 m)	968.60	Cleared
16	Bank protection work along the right bank of river Punarbhaba at Mouza-Pathar Nasratpur and Dhaka Pathar within block and P.S. Habibpur, district Malda under Kaliabari B.O.P. (Length 1000 m)	709.27	Cleared
17	Bank protection work along the left bank of river Punarbhaba at village- Kalibari within Mouza- Anuradhapur (Ananda Pathar) in block and P.S. Habibpur, district Malda under Kalibari B.O.P. (Length- 400 m)	283.11	Cleared
18	Protection to the right bank of river Nagar from erosion near Khunti B.O.P. camp and border fencing along the Indo-Bangladesh border in P.S. Jamalpur, district- Uttar Dinajpur (Length- 575 m)	220.84	Under examination
19	Protection to the left bank of river Kulik from erosion near Makorhat B.O.P. camp in P.S. Hemtabad, district- Uttar Dinajpur (Length- 350 m)	149.39	Cleared
20	Protection to the right bank of river Nagar from erosion near Morageti B.O.P. camp and border fencing along the Indo-Bangladesh border in P.S. Islampur, district- Uttar Dinajpur (Length- 520 m)	200.81	Under examination

S. No.	Name of scheme	Estimated cost (Rs in lakh)	Remarks
21	Protection to the right bank of river Nagar from erosion near Hatkhola B.O.P. camp and border fencing along the Indo-Bangladesh border in P.S. Islampur, district- Uttar Dinajpur (Length- 480 m)	212.34	Under examination
22	Protection to the right bank of river Nagar from erosion near Fatepur B.O.P. camp and border fencing along the Indo- Bangladesh border in P.S. Islampur, district- Uttar Dinajpur (Length- 450 m)	200.567	Under examination
23	Protection to the right bank of river Nagar from erosion near Sonamati B.O.P. camp and border fencing along the Indo-Bangladesh border in P.S. Islampur, district- Uttar Dinajpur (Length- 500 m)	202.87	Under examination
24	Protection to the left bank of river Tangon from erosion near Padmakumari and Chandgaon B.O.P. in P.S. Kalianganj, district- Uttar Dinajpur (Length- 900 m)	415.07	Under Examination
25	Protection to the right bank of river Korotoya from erosion near Barmanbasti B.O.P. camp and border fencing along the Indo-Bangladesh border in P.S. Chopra, district Uttar Dinajpur (Length- 460 m)	224.02	Cleared

The year-wise status of funding under the above mentioned Plan scheme to West Bengal is as under:

**Table 7.2**

Sl. No.	State	Amount Released( Rs. in Crore)							
		2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
1	West Bengal	17.51	71.31	39.49	NIL	1.60	NIL	25.34	NIL
<b>Total</b>								<b>155.25</b>	

## GLIMPSES



Protection Work in Gandak River, Nawalparasi, Nepal



Protection Work in Gandak River, Nawalparasi, Nepal

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# 8 Cooperation with Neighbouring Countries

## 8.1 India-Nepal Cooperation

Several rivers like the Gandak, the Bagmati, the Kamla, the Kosi etc. originate in Nepal and flow through the hilly tracts of Nepal before entering the plains of India. Heavy rains in the upper reaches not only bring floods of large magnitude but also carry huge quantities of sediment to the plain reaches of India. Hence any measures to be taken up to alleviate the flood and silting problems are to be done in an integrated manner with proper co-ordination between the two countries. GFCC is playing a vital role in this context by providing all the technical know-how and guidance.

As floods in Bihar and part of Uttar Pradesh generally caused by the rivers coming from Nepal, long term solution to the problem of flood lies in the construction of multi-purpose projects with flood cushion in the upper reaches to achieve flood moderation. Since suitable sites to locate reservoir/dams to control the floods lie in Nepal, the construction of the dams/reservoirs on these rivers is subject to agreement with Government of Nepal.

### 8.1.1 India Nepal Joint Ministerial Committee on Water Resources (JMCWR)

Government of India is having continuous dialogue with the Government of Nepal to mitigate the devastation caused by the flood from the rivers coming from Nepal. In order to have interaction at highest level pertaining to the cooperation in the field of water resources, an India-Nepal Joint Ministerial Committee on Water Resources (JMCWR) with Indian side headed by Hon'ble Union Minister of Water Resources has been constituted. So far only one meeting of JMCWR has taken place. The first meeting of JMCWR was held on 15.2.2012.

For implementation of existing arrangement and better understanding, India-Nepal Joint Committee on Water Resources (JCWR) headed by the Water Resources Secretaries of both the countries is functioning with the mandate to act as umbrella committee for all other sub-committees and groups under it. So far seven meetings of the JCWR have been held which covered the entire gamut of bilateral cooperation in the water resources sector including flood management aspects and issues regarding multi-purpose projects on rivers coming from Nepal like the Sapta Kosi, the Sun Kosi, the Pancheshwar multi-purpose projects and other related matters. The last meeting of JCWR was held in January 2013.

### 8.1.2 Joint Standing Technical Committee (JSTC)

This Committee was constituted during the 3<sup>rd</sup> meeting of India-Nepal Joint Committee on Water Resources (JCWR) held from 29.09.08 to 01.10.08 at

Kathmandu (Nepal). The function of JSTC is to coordinate the work of existing committees and sub-committees under the JCWR. The Constitution (Indian side) and terms of reference of the Committee are as under:

Sl.No.	Composition-Indian side	
1	Chairman, GFCC, Patna	Team Leader
2	Commissioner (Ganga), MOWR	Member
3	Joint Secretary (Hydro), Ministry of Power	Member
4	Chief Engineer (UGBO), CWC, Lucknow	Member
5	Chief Engineer (HP & I), CEA	Member
6	Director (North), MEA, New Delhi	Member
7	Representative from Embassy of India, Kathmandu	Member
8	Engineer-in-Chief (North), WRD, Government of Bihar	Member
9	Representative of Government of U.P	Member
10	Representative from Government of West Bengal	Member
11	Representative from Government of Uttarakhand	Member
12	Sr.Joint Commissioner, MOWR	Member-Secretary

### Terms of Reference of JSTC

- (i) To coordinate all existing Committees and Sub Committees under the JCWR

So far five meetings of JSTC have been held. The last meeting was held in New Delhi on 26<sup>th</sup> May, 2016 in which various issues of bilateral concern were discussed and decisions taken.

### 8.1.3 Joint Committee on Inundation and Flood Management (JCIFM)

This Committee was constituted in the 4<sup>th</sup> meeting of India-Nepal Joint Committee on Water Resources (JCWR) held on 12-13, March, 2009 in New Delhi. This Committee replaces the earlier bilateral committees namely SCIP, HLTC, JCFM, SCEC and SCFF. The Constitution (Indian side) and terms of reference of the committee are as under:

Sl.No.	Composition-Indian side	
1	Member (Coordination), GFCC, Patna	Team Leader

2	Chief Engineer, CWC	Member
3	Chief Engineer (WRD), Government of Bihar/Chief Engineer, Irrigation Department, Government of Uttar Pradesh / Chairman, North Bengal Flood Control Commission, Government of West Bengal	Member
4	Director (North), MEA, New Delhi	Member
5	Sr. Joint Commissioner, MOWR	Member
6	Representative of EOI, Kathmandu	Member
7	Director (P&C), GFCC, Patna	Member-Secretary
8	Director (Finance), MEA/MOWR, New Delhi	Invitee

### Terms of Reference of JCIFM

- (i) The JCIFM shall be an umbrella Committee to implement the decisions of JSTC on inundation and flood management issues.
- (ii) The JCIFM shall address the issues related to flood management and inundation and can form Task Group(s), if required.
- (iii) The JCIFM shall monitor the progress of works and provide guidance to task group(s) and report to JSTC.

So far ten meetings of JCIFM have been held. The last inspection / meeting was held on 06-11December, 2015 in Kathmandu, Nepal in which various issues relating to inundation and flood management were discussed. During 10<sup>th</sup> meeting of JCIFM, the committee could not undertake site visit of new work packages proposed as per revised DPR of Bagmati, Lalbakeya and Kamla rivers. Therefore no new works could be recommended.

#### 8.1.4 Extension of Embankment on River Bagmati, Kamla, and Lalbakeya rivers

In order to prevent spilling of flood water from the Bagmati, the Kamla, and the Lalbakeya rivers from Nepal side in the protected area in Bihar, both sides have agreed to extend the embankments along these rivers from the India-Nepal border to high grounds in Nepal with corresponding strengthening of embankments on the Indian side. The amount released to Nepalese side is given in Table 8.1:

Table 8.1

Year	Released Amount (NPR Crore)
Before 2007-08	18.200
2008-09	16.500
2009-10	53.151
2010-11	59.978
2011-12	89.108

2012-13	9.771
2013-14	63.163
2014-15	36.672
2015-16	77.252
2016-17	61.963
<b>Total</b>	<b>485.758</b>

## **8.2 India-Bangladesh Cooperation**

### **8.2.1 Indo-Bangladesh Joint River Commission**

The Indo-Bangladesh Joint Rivers Commission (JRC) was set up in November 1972 to discuss and sort out the issues related to common/border rivers between India and Bangladesh. The setup provides a platform for resolution of common problems related to developments works on common/border rivers, causing no harm to either side.

Under the aegis of above Commission, meetings are held at regular interval at various levels to discuss related issues. The decisions taken in such meetings are finally ratified by the Commission.

Various issues related to management of floods in common/border rivers have been discussed. The issues in respect of Ganga Basin under deliberations are summarized as under:

### **8.2.2 Bank Protection Works**

Most of common/border rivers between India and Bangladesh traverse through alluvial plains and they keep on changing their course due to meandering and erode banks on either side. Bank protection works are thus required to arrest erosion at vulnerable points.

The matter was discussed in the 36<sup>th</sup> meeting of JRC held in 2005 and at various subsequent occasions. Later in the Secretary (Water Resources) level meeting between India and Bangladesh held in August 2007, it was decided that bank protection works on identified sites could be taken up simultaneously on both sides within a time frame of three successive working sessions with similar specifications of works. The specifications of works to be undertaken were finalized in a technical level meeting held in December, 2009. As per the list exchanged between the countries, the bank protection works were proposed on 41 sites in India and 28 sites in Bangladesh. It was also agreed to add more sites as per requirement.

In 2016-17, nineteen Bank Protection Projects Schemes are being implemented by Government of West Bengal.

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# 9

## Promotion of Use of Hindi

### 9.1 Progressive Use of Hindi

An Official Language Implementation Committee headed by the Chairman, GFCC is functioning in Ganga Flood Control Commission. Both Members of GFCC and various Directors, Deputy Directors, Administrative Officer, P.S. to Chairman, Assistant Director (Gr.-II), Hindi Translator and Branch heads from GFCC besides Dy. Director (Implementation), Official Language, Ministry of Home Affairs and one officer from Hindi Teaching Scheme are its members. Assistant Director (Gr.-II) of the Commission is Member-Secretary of this Committee.

The said Committee holds its meetings once in every quarter. In these meetings, detailed discussions are held on the quarterly progress reports as per in the annual programme. The Committee makes an assessment of position of progressive use of Hindi in day to day work of the Commission and suggests measures for removing the difficulties experienced at the working levels. During the year 2016-17, four meetings of the Committee were held.

Chairman, GFCC is a Member of Hindi Salahkar Samiti, Ministry of Water Resources, River Development & Ganga Rejuvenation and “Nagar Rajbhasa Karyanvayan Samiti”, Patna. Chairman or a senior officer of the Commission participates in the meetings of above Committee regularly.

### 9.2 Achievements

#### 9.2.1 Achievements during 2016-17

During the year 2016-17 generally all office orders were issued in both languages i.e. Hindi and English. During the year 2016-17, out of total 6168 letters issued by GFCC, 5379 were in Hindi. The region-wise break up is given below:

**Table 9.1**

S. No.	Region	Total letters issued	Letters issued in Hindi
1	A	6095	5320
2	B	09	09
3	C	64	50
	<b>Total</b>	<b>6168</b>	<b>5379</b>

To increase the awareness of use of Hindi language, Hindi fortnight was organized from 14.9.2016 to 28.9.2016. Competition for Hindi Essay, Noting/ Drafting and General Hindi/ Knowledge was also organized among officials of the commission during this period. After evaluation, prizes were distributed among the winners.

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# 10 Participation in Trainings, Workshops and Seminars

During the year 2016-17, officers and staff of GFCC participated in various training programmes, workshops and seminars as per the details given below:

**Table 10.1**

Sl. No.	Training Course/ Workshop/ Seminar	Dates	Name of Officers
1.	4th India Water week 2016 with the theme “Water for all: Striving Together”	04.04.2016 to 08.04.2016	1. Sh. A.K. Sinha, Member (P) 2. Sh. G. Thakur, Member(C) 3. Sh. M. Kumar, Director (MP-I)
2.	Training program on arc-GIS and ERDAS-Imagine software.	16.05.2016 to 20.05.2016	1. Sh. M. Kumar, Director(MP-I) 2. Sh. S. Kumar, DD (P) 3. Sh. Kr. Kushal, AD, MP-I 4. Sh. Kr. Vaibahv, AD, MP-I
3.	Workshop on noting & Drafting for section officer/Dealing Assistant at ISTM, New Delhi.	04.07.2016 to 05.07.2016	1. Sh. Satish Kumar, LDC 2. Sh. V. K. Verma, LDC
4.	29 <sup>th</sup> Induction Training at NWA, Pune	03.10.2016 to 31.03.2017	1. Sh. A. Kataria, A.D 2. Sh. Kumar Vaibhav, A.D
5.	One day conference on sediment management in Indian river at CSMRS auditorium, New Delhi.	17.03.2017	1. Sh. A.K. Sinha, Member (P) 2. Sh. A.K.Jha, Director (Admn.) 3. Sh. S.P. Singh, Director (P&C) 4. Sh. M. Kumar, Director (MP-I) 5. Sh. Vivek Pal, Director (U.P.)

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# 11 Representation of Ganga Flood Control Commission in Various Committees

Chairman and other senior officers of GFCC represent GFCC on various technical committees either as Chairman, Member-Secretary or as Members. The list of such Committees is as under

**Table 11.1**

Sl. No.	Name of Committee/ Board/ Experts/ Technical Group etc.	Representation of GFCC	
		Officer	Position
1	Ganga Flood Control Board	Chairman, GFCC	Member-Secretary
2	Ganga Flood Control Commission	Chairman, GFCC	Chairman
3	Gandak High Level Standing Committee	Chairman, GFCC	Chairman
4	Kosi High Level Committee	Chairman, GFCC	Chairman
5	India-Nepal Joint Ministerial Commission on Water Resources (JMCWR)	Chairman, GFCC	Member
6	India-Nepal Joint Committee on Water Resources (JCWR)	Chairman, GFCC	Member
7	India-Nepal Joint Standing Technical Committee	Chairman, GFCC	Indian Team Leader
8	National Institute of Hydrology Society	Chairman, GFCC	Member
9	NNRMS Standing Committee on Water Resources (SC-WR)	Chairman, GFCC	Member
10	Technical Advisory Committee of Farakka Barrage Project	Chairman, GFCC Alternate: Member(P), GFCC	Member
11	Water Resources Division Council of Bureau of Indian Standards	Chairman, GFCC Alternate Member-Member(C), GFCC	Member
12	Farakka Barrage Project Advisory Committee	Member(P), GFCC	Member
13	Tender Committee of Farakka Barrage Project	Member(P), GFCC	Member

Sl. No.	Name of Committee/ Board/ Experts/ Technical Group etc.	Representation of GFCC	
		Officer	Position
14	Yamuna Standing Committee	Member(P), GFCC	Member
15	Coastal Protection And Development Advisory Committee	Member(P), GFCC	Member
16	IndiaNepal Joint Committee on Inundation & Flood Management (JCIFM)	Member(C), GFCC	Team Leader
17	Indian-Nepal Joint Committee on Kosi & Gandak Projects	Member(P), GFCC	Member
18	Uttar Pradesh State Committee of Engineers	Director, GFCC	Member
19	BiharState Committee of Engineers	Director, GFCC	Member
20	WestBengalState Committee of Engineers	Director, GFCC	Member
21	M.P.State Committee of Engineers	Director, GFCC	Member
22	Technical Advisory Committee of Bihar	Director, GFCC	Member
23	Technical Advisory Committee of Uttar Pradesh	Director, GFCC	Member
24	Technical Advisory Committee of Himachal Pradesh	Director, GFCC	Member
25	Technical Advisory Committee of Haryana	Director, GFCC	Member
26	Technical Advisory Committee of Rajasthan	Director, GFCC	Member
27	Technical Committee of WestBengalState Flood Control Board	Director, GFCC	Member
28	Technical Advisory Committee of Jharkhand	Director, GFCC	Member
29	Technical Advisory Committee of Uttarakhand	Director, GFCC	Member
30	Technical Advisory Committee of Chhattisgarh	Director, GFCC	Member
31	Technical Advisory Committee of Madhya Pradesh	Director, GFCC	Member
32	NIH Regional Coordination Committee for Ganga Plain North Regional Centre	Director, GFCC	Member
33	River Training & Diversion Works Sectional Committee (WRD-22) of Bureau of Indian Standards	Director (MP-II), GFCC Alternate Member-Director (P), GFCC	Member

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