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सत्यमेव जयते

भारत में बाढ़ प्रबंधन- एक सांख्यिकीय रिपोर्ट-२०२३

Flood Management in India - A Statistical Report-2023

भारत सरकार
जल शक्ति मंत्रालय
जल संसाधन, नदी विकास
एवं गंगा संरक्षण विभाग
केन्द्रीय जल आयोग
सूचना प्रणाली संगठन
जुलाई, 2024

GOVERNMENT OF INDIA
MINISTRY OF JAL SHAKTI
DEPARTMENT OF WATER RESOURCES
RIVER DEVELOPMENT & GANGA REJUVENATION
CENTRAL WATER COMMISSION
INFORMATION SYSTEM ORGANISATION
July, 2024

भारत में बाढ़ प्रबंधन - एक सांख्यिकीय रिपोर्ट-२०२३

Flood Management in India - A Statistical Report-2023

जल विज्ञानिकीय आंकड़ा निदेशालय

HYDROLOGICAL DATA DIRECTORATE

सूचना प्रणाली संगठन

INFORMATION SYSTEM ORGANISATION

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RIVER MANAGEMENT WING

केन्द्रीय जल आयोग, नई दिल्ली

CENTRAL WATER COMMISSION, NEW DELHI

जुलाई, 2024 **July, 2024**

FOREWORD

It gives me immense pleasure to present this report on "Flood Management in India – A Statistical Report-2023". Central and State Governments are making concerted efforts continuously since independence for execution of a large number of projects in the water sector to protect people and land from the adverse effects of flood, soil erosion and inadequate drainage system. The publication is intended to serve and provide documentation of available data on comprehensive flood management in India. The basic source of data for publication is the Finance and Revenue Accounts of the Union Government and State Governments, brought out by the Comptroller and Auditor General of India (CAG) and Central Water Commission (CWC).

The changing scenario has made it compulsory to think of presenting the publication in more comprehensive form. To accomplish this aim, a Committee was constituted in CWC to suggest improvements in the publication. I am happy to note that the current publication has improved substantially by including additional aspects like approaches towards flood management, constitutional provisions for flood management and institutional framework for flood management, outcome of flood management measures and efforts of the Central Government for Flood Management in the Country, Flood Management Programme (FMP), Flood Management and Border Areas Programme (FMBAP)

The contribution of Shri Bijoy Kumar Karjee, Chief Engineer (Flood Management Organisation) as the Chairman of the Committee for improvement of this publication and Ms. Ratna Chaudhuri, Advisor (ISO), as Member Secretary of the Committee and their team is highly appreciable.

I would like to express my deep gratitude to Shri P. M. Scott, Member (River Management), CWC for their guidance and encouragement to bring out this publication in time.

I hope this publication would be useful for research scholars, planners, policy makers and various stakeholders at large. I look forward to suggestions and feedback for improvement in content and quality of this publication.

New Delhi
July, 2024

(Kushvinder Vohra)
Chairman, CWC

MESSAGE

Several projects relating to flood control, soil erosion and drainage development are being implemented in our country involving huge investments with the objective for maintaining food security as well for minimizing losses/damages caused by them. The Financial Performance from such investments made in these projects is pertinent for assessment of economic viability vis-à-vis accrued benefits. Such an analysis is well worth for justification of huge public investments being made in the execution of these projects.

Central Water Commission being an apex nodal Agency and a premier technical Organization in the water resources sector, with overall responsibility for its development, has been paying due attention to this aspect. Documentation of available data is of immense utility for assessment of levels, trends and inter-state variability of expenditure component and correlating them with the physical achievements made over time.

The basic source of data for publication is the Finance and Revenue Accounts of the Union and State Governments, Comptroller and Auditor General of India and Central Water Commission. This publication is intended to provide documentation of available data in the given format for the benefit of researchers and analysts.

I would like to place on record my deep appreciation to the CWC Officers comprising of Shri Bijoy Kumar Karjee, Chief Engineer (FMO), Ms. Ratna Chaudhuri, Advisor (ISO), Sh. Rishi Srivastava, Chief Engineer (EMO), Sh. Piyush Kumar, Director (FMP), Sh. Rakesh Toteja, Director (FFM), Sh. Jag Ram Meena, Director (ISO) and their teams for the untiring efforts in bringing out this publication.

I hope this publication will be useful for all who read it, particularly to those who have a flair for the subject. Suggestions, if any, are always welcome for improvement of the publication.

New Delhi
July, 2024

(P. Manroi Scott)
Member (RM), CWC

PREFACE

Water resource challenges faced by India are considerable and can only be addressed by adopting an integrated approach that considers all uses and sources of water (surface water, ground water, etc) from the river basin/ hydrological perspective. This requires sound information and knowledge on the water resource base and its uses, coupled with the availability of appropriate tools for collection, compilation, analysis and decision making. Hydro-meteorological observations and statistical analysis thereon are the basis for efficient and sustainable water management. Central Water Commission is the nodal agency in water resources sector. It has been mandated to promote integrated and sustainable development and management of India's water resources by using state-of-the-art technology and competency. To cater to the ever-growing needs of data on water resources and related aspects, ISO brings out various publications at regular intervals.

The present publication "Flood Management in India – A Statistical Report-2023" covers description of the head of accounts utilized for the analysis, yearly revenue and capital expenditure on flood control, anti-sea erosion and drainage projects, performance of States/UTs by revenue and capital expenditure, area and population affected by flood, state-wise area benefitted, length of embankment, town protected, raised platforms under Flood Management Programme, to strengthen the structural measures for flood management in the country, Central Assistance under FMP component of FMBAP has been released to States/UTs since the start of XI Plan till FY 2023-24. The quantum of damage due to Floods during 1953-2021 has been incorporated in the report.

I would like to express my deep gratitude to Shri Kushvinder Vohra, Chairman, CWC and Shri P. Manroi Scott, Member, (River Management), CWC for their continuous support, guidance and encouragement to bring out this publication in time.

The publication has been prepared through the combined efforts of the officers and officials of the Information System Organisation (ISO). The efforts made by Mr. Jag Ram Meena, Director; Ms. Rachna Singh, Deputy Director; Mr. Ashwani Kumar, Senior Statistical Officer; and Ms. Jasmeet Kaur, Junior Statistical Officer are commendable. I would like to extend a deep gratitude to Sh. Bijoy Kumar Karjee, Chief Engineer, Flood Management Organization (FMO) and his team for their efforts and whole-hearted support to bring out this publication.

I hope the publication will prove to be a useful document to policymakers, planners, academicians and researchers. It shall be an endeavour on part of ISO to continuously improve the publication both in content and design with the help of users' feedback.

New Delhi
July, 2024

(Ms. Ratna Chaudhuri)
Advisor (ISO), CWC

Composition of the Committee for Improvement of Publication

Chief Engineer (FMO)----------Chairman

Chief Engineer (EMO)----------Member

Director (FFM)----------Member

Advisor (ISO)----------Member Secretary

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Team of Officers Associated with the Publication

In supervision of

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Mr. J. R. Meena	Director
Ms. Rachna Singh	Deputy Director
Mr. Ashwani Kumar	Senior Statistical Officer
Ms. Jasmeet Kaur	Junior Statistical Officer

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Contents

ABBREVIATIONS		
BCM	:	Billion Cubic Meter
BEB	:	Beach Erosion Board
CAG	:	Comptroller & Auditor General of India
CE	:	Chief Engineer
CMIS	:	Coastal Management Information System
CPDAC	:	Coastal Protection Development Advisory Committee
Cr.	:	Crore
CWC	:	Central Water Commission
DoWR, RD& GR	:	Department of Water Resources, River Development & Ganga Rejuvenation
DRIP	:	Dam Rehabilitation and Improvement Project
EMO	:	Environmental Monitoring Organisation
Exp.	:	Expenditure
FFM	:	Flood Forecasting Management
FMBAP	:	Flood Management and Border Areas Programme
FMO	:	Flood Management Organisation
FMP	:	Flood Management Programme
FM-II Dte.	:	Flood Management-II Directorate
FRL	:	Full Reservoir Level
GFCC	:	Ganga Flood Control Commission
ISO	:	Information System Organisation
Km	:	Kilometer
Mha	:	Million Hectares
MoJS	:	Ministry of Jal Shakti
NCDS	:	National Committee of Dam Safety
NDMA	:	National Disaster Management Authority
Nos.	:	Numbers
RBA	:	Rashtriya Barh Ayog
RBO	:	River Basin Organisations
RM	:	River Management
RMBA	:	River Management Activities & Works related to Boarder Areas
SCDS	:	State Committee on Dam Safety
SDSO	:	State Dam Safety Organisation
WIMS	:	Water Information Management System
%	:	Percentage

Executive Summary

Floods may cause innumerable problems like soil erosion. In order to protect crops, agricultural land and human lives, a sound flood management measures and financial performance of investments in such projects are required which has been presented in the current publication of "Flood Management in India – A Statistical Report-2023". The publication on "Flood Management in India – A Statistical Report-2023" has 5 chapters, namely: Introduction, Constitutional Provisions for Flood Management, and Approaches towards Flood Management, Flood Management Programme and Outcome of Flood Management Measures in the Country.

Chapter-1: Introduction briefly covers causes of flood, history of damage due to floods, various structural & non-structural flood management measures and list of accounting codes on flood and drainage.

Chapter-2: Constitutional provisions for flood management mentions Statutory provisions of entry 56 of List I (Union list), entry 17 & 18 of List II (State list), entry 42 of List III (Concurrent List) and various Laws and Acts enacted by the Central Government i.e. Inter-State River Disputes Act, 1956 (As modified up to 6th August, 2002), Damodar Valley Corporation Act, 1948 (As Amendment Act, 2011), Betwa River Board Act, 1976, Brahmaputra Board Act, 1980, The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and Dam Safety Act, 2021

Chapter-3: Approaches towards Flood Management covers details of the **Structural Measures** (Reservoirs, Detention basins, Embankments, Channelization of rivers, Channel improvement, Drainage improvement, Diversion of flood waters, Watershed Management, Anti-Erosion Works, Coastal Erosion) and **Non-Structural Measures** (Flood plain zoning**,** Flood Forecasting**,** Reservoir Operation, Integrated Reservoir Operation(IRO)**,** Dam Safety and Emergency Action Plan(EAP)**,** Application of Space Technology, Adherence to Coastal Zone Regulations) to meet the challenges posed by flood.

Chapter-4: This chapter talks about Flood Management Programme (FMP) which strengthens the structural measures for flood management in the country. In continuation of flood management programme, a comprehensive scheme titled "Flood Management and Border Areas Programme (FMBAP) was approved by Union Cabinet on 07th March, 2019. State/UT's-wise approved schemes and completed/foreclosed/ ongoing schemes & funds released under Flood Management Programme (FMP) since start of XI Plan till FY 2023-24.

Chapter-5: Outcome of Flood Management Measures analyses revenue and capital expenditure incurred on flood control, drainage and anti-sea erosion projects by Union and State/UT Governments as well as over time and their Physical Performance. It also covers the extent of damage due to flood during 1953-2021 with respect to population affected, area affected, crop area affected, number of houses damaged, quantum of loss of human lives & cattle and total cost of damages.

Appendix covers Tables, namely: Distribution of revenue expenditure by minor head of accounts and States/UTs, Distribution of capital expenditure by minor head of accounts and States/UTs, Distribution of total expenditure (revenue + capital) by minor head of accounts and States/UTs from 2005-06 to 2019-20 and the Quantum of Damage due to Floods/Heavy Rains during 1953 to 2021.

Chapter-1

INTRODUCTION

1.1 Definition of Floods

1.1.1 Flood is the most prevalent and costliest disaster, be it natural or manmade, which devastates life and economy to a large extent. It is defined as, “High-water stages in which water over-flows its natural or artificial banks onto normally dry land, such as a river inundating its floodplain.” India receives major rainfall in four months spanning from June to September. Distribution of rain across the country is dissimilar as some areas receive heavy rainfall while some are at deficit. The variation also varies time to time; the areas which are not traditionally prone to floods now experience severe inundation due to downpour and cloud-burst. Nowadays, urban flood has become a major problem, seeing the recent floods in Kerala, Uttarakhand and in metropolitan cities like Delhi, Mumbai, Kolkata. This points towards the need for proper management of floods and drainage system.

1.1.2 The Rashtriya Barh Ayog (RBA) estimated the total area liable to floods in the country as 40 Million Hectare (Mha). The extent of maximum area affected by floods in any year during the period 1953-2010 as per the Report of Working Group on Flood Management and Region-Specific Issues for XII Plan is 49.815 Mha[1]. Out of it, nearly 21 Mha can be provided protection to a reasonable degree. Based on the statistical details available so far (1953-2021), it has been estimated that on an average, annually 7.38 Mha of area is affected with floods of which 4.1 Mha is cropped area. On an average, floods claim 1666 human lives and 90540 nos. cattle annually. Around 1.2 million houses are damaged by floods and the average annual losses in monetary terms came to the tune of ₹ 6972 crore[2].

1.1.3 India faces floods regularly, though in varying degrees of magnitude. Frequent occurrence of floods can be attributed to factors such as wide variations in rainfall both in time and space with frequent departures from the normal pattern, inadequate carrying capacities of rivers, river bank erosion, degradation of hilly catchment and silting of river beds, landslides, poor natural drainage in flood prone areas, glacial lake outbursts, cloud-burst, etc. The country suffers huge economic loss annually besides the loss of precious human lives due to floods. There are evidences of increasing number of high intensity rainfall event in recent years varying non-uniformly in space and time. Such events lead to flash-floods. Urban flooding due to storm water drainage congestion (pluvial in nature) has also become common in towns/cities due to such extreme meteorological events. The devastation caused by floods in the past has drawn attention of the planners of the country towards comprehensive flood management plans, policies and implementation thereof.

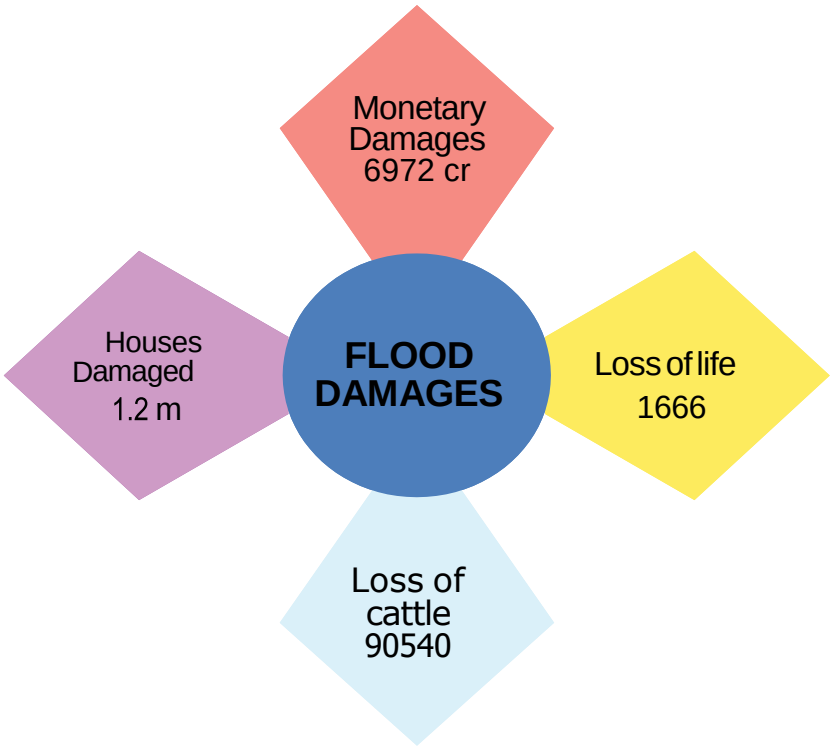
Source Code: 1. Report of Working Group on Flood Management and Region-Specific Issues for XII Plan.
2. CWC Database

Table 1: Flood Prone Areas in India

S. No.	Particulars	Area
1.	Flood Prone Area by Rashtriya Barh Ayog (RBA, 1980)	40 Mha[1]
2.	The extent of maximum area affected by floods in any year during 1953-2010 as per the Report of Working Group on Flood Management and Region-Specific Issues for XII Plan	49.815 Mha[1]
3.	Annually affected Area	7.38 Mha[2]
4.	Annually affected Cropped Area	4.1 Mha[2]
5.	Area provided reasonable degree of protection upto XII Plan	20.54 Mha[1]

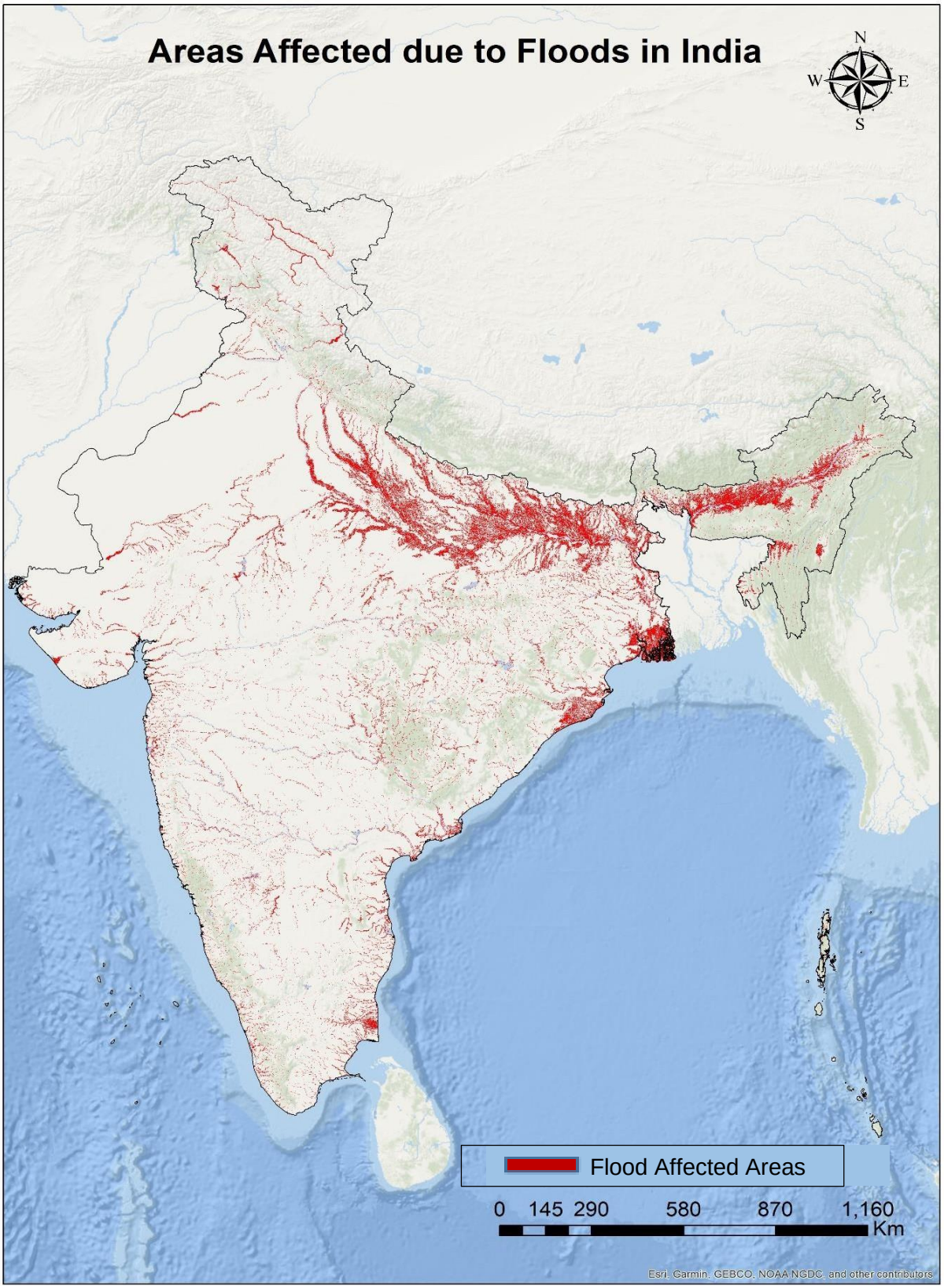
Source: 1. Report of Working Group on Flood Management and Region-Specific Issues for XII Plan.
2. CWC Database.

Figure: 1



Source: *Average Annual Damage due to flood (1953-2021) FM-II Dte, Central Water Commission*

Map: Areas affected by floods in India



Source: Draft report on "Assessment of Areas Affected due to Floods in India-2023" by FM-II, CWC.

Table 2: State-wise Flood Forecasting Stations as on December 2023

S. No.	Name of State/UT	Flood Forecasting Stations (Nos.)		
		Level	Inflow	Total
1	Andhra Pradesh	10	10	20
2	Arunachal Pradesh	3	1	4
3	Assam	30	0	30
4	Bihar	40	3	43
5	Chhattisgarh	1	2	3
6	Goa	0	0	0
7	Gujarat	6	8	14
8	Haryana	1	1	2
9	Himachal Pradesh	1	0	1
10	Jammu & Kashmir (incl. Ladakh)	3	0	3
11	Jharkhand	2	15	17
12	Karnataka	1	14	15
13	Kerala	4	2	6
14	Madhya Pradesh	2	12	14
15	Maharashtra	8	14	22
16	Manipur	0	0	0
17	Meghalaya	0	0	0
18	Mizoram	0	0	0
19	Nagaland	0	0	0
20	Odisha	12	7	19
21	Puducherry	0	0	0
22	Punjab	0	0	0
23	Rajasthan	4	11	15
24	Sikkim	3	5	8
25	Tamil Nadu	4	11	15
26	Telangana	5	9	14
27	Tripura	2	0	2
28	Uttar Pradesh	39	5	44
29	Uttarakhand	4	4	8
30	West Bengal	12	4	16
31	Daman & Diu	1	0	1
32	Dadar & Nagar Haveli	0	0	0
33	NCT of Delhi	2	0	2
	Total	**200**	**138**	**338**

Source: FFM Directorate, Central Water Commission, M/o Jal Shakti

Table 3: Flood Forecasting Performance from 2000 to 2023

Sl. No.	Year	Level Forecasts Issued (Nos)			Inflow Forecasts Issued (Nos)			Total Flood Forecasts Issued (Nos)		
		Total	Within +/-15 cm of Deviation from Actual	Accu-racy (%)	Total	Within +/-20% cumecs of Deviation from Actual	Accu-racy(%)	Total	Within +/-15 cm or +/-20% cumecs of Deviation from Actual	Accu-racy (%)
1	2000	5622	5504	97.90	821	747	90.99	6443	6251	97.02
2	2001	4606	4533	98.42	857	809	94.40	5463	5342	97.79
3	2002	3618	3549	98.09	623	602	96.63	4241	4151	97.88
4	2003	5989	5789	96.66	611	586	95.91	6600	6375	96.59
5	2004	4184	4042	96.61	705	654	92.77	4889	4696	96.05
6	2005	4323	4162	96.28	1295	1261	97.37	5618	5423	96.53
7	2006	5070	4827	95.21	1593	1550	97.30	6663	6377	95.71
8	2007	6516	6339	97.28	1707	1651	96.72	8223	7990	97.17
9	2008	5670	5551	97.90	1021	1003	98.24	6691	6554	97.95
10	2009	3343	3298	98.65	667	629	94.30	4010	3927	97.93
11	2010	6491	6390	98.44	1028	988	96.11	7519	7378	98.12
12	2011	4848	4795	98.91	1143	1109	97.03	5991	5904	98.55
13	2012	4200	4136	98.48	831	803	96.63	5031	4939	98.17
14	2013	5741	5471	95.30	1319	1289	97.73	7060	6760	95.75
15	2014	3884	3804	97.94	888	863	97.18	4772	4667	97.80
16	2015	3500	3429	97.97	572	562	98.25	4072	3991	98.01
17	2016	4969	4891	98.43	1270	1057	83.23	6239	5948	95.34
18	2017	5085	4975	97.84	1212	926	76.40	6297	5901	93.71
19	2018	4969	4871	98.03	1882	1624	86.29	6851	6495	94.80
20	2019	6004	5773	96.15	3750	2678	71.41	9754	8451	86.64
21	2020	8243	8133	98.67	3478	3065	88.13	11721	11198	95.54
22	2021	6670	6456	96.79	3947	3520	89.18	10617	9976	93.96
23	2022	6779	6476	95.53	4779	4369	91.42	11558	10845	93.83
24	2023	4567	4336	94.94	1772	1616	91.20	6339	5952	93.89
Average		**5204**	**5064**	**97.31**	**1574**	**1415**	**89.90**	**6778**	**6479**	**95.59**

Source: FFM Directorate, Central Water Commission, M/o Jal Shakti

1.2.2 Floods affect lives of people and livestock in the flood affected area in different ways. Several projects have been initiated in the country and are in operation to achieve the objective of flood management involving huge investment. The financial and physical analysis assumes particular importance in this context. The chapter "Outcome of Flood Management Measures" concentrate on the economic and physical aspects of the flood which briefly describe the expenditure pattern on different heads of the flood control, anti- sea erosion & drainage projects and physical damage due to flood. The financial and physical analysis assumes particular importance in this context.

1.2.3 Keeping in view the requirements of detailed data needs of planners, researchers and analysts interested in review and analysis of investment in the projects and further in order to present the related financial data for specific projects at one place, the Information System Organisation (ISO) continuously collects, compiles and presents the data on water and related activities in the form of different publications. This publication presents financial aspects of flood control, anti-sea erosion and drainage projects as available in the annual report of Combined Finance & Revenue Accounts of the Union and States/UTs Governments brought out by the Comptroller & Auditor General of India (CAG). The list of codes alongwith their description is given below:

Table A: List of accounting codes

Code	Description
	Major Head
2711	Revenue Expenditure on Flood control and drainage
4711	Capital Expenditure on Flood Control & Drainage
	Sub Major Head
1	Flood Control
2	Anti-Sea Erosion
3	Drainage
80	General
99	Total
	Sub Minor Head
1	Direction & Administration
2	Data Collection
3	Training
4	Research
5	Survey & Investigation
50	Land

Table A: List of accounting codes

Code	Description
51	Construction
52	Machinery & Equipment
103	Civil work
104	Drainage in industrial Estates
106	Original works
190	Investment in Public Sector & other Undertakings
192	Assistance to Municipalities/Municipal Councils
196	Assistance to Zilla Parishads
198	Assistance to Gram Panchayats
201	Drainage & Flood Control
202	Ujjain Diversion Drain scheme
203	Anti Water-Logging Scheme
204	Minor irrigation Scheme
205	Jagadhari Tube wells Projects
206	Installation of Tube wells in western Yamuna canal Tract
207	Gurugram Canal project
208	Drainage project
209	Investigation and Research Scheme
210	Massani Barrage Project
299	Other Schemes each costing ₹One crore and less
789	Special Component Plan for SC
796	Tribal area sub Plan
797	Transfer to Reserve funds& Deposit Accounts
799	Suspense
800	Other Expenditure
901	Deduct receipt & Revenue on Capital Account
902	Deduct Amount met from reserve
911	Deduct receipt & Revenue on Capital Account

1.2.4 These reports provide audited receipts and expenditure of various economic activities of the Central and State Governments. The figures are approved by Comptroller & Auditor General of India (CAG). As per system of accounts maintained by Comptroller & Auditor General, the revenue and capital expenditure of all economic activities are classified into 4-digit codes. These codes are known as major head. For Flood Control and Drainage, these are 2711 and 4711 respectively. The former refers to revenue expenditure (2711) and the latter to capital expenditure (4711). Each major head is classified into sub- major head and in turn sub-major head into minor heads. Some of the above minor heads are names of projects/schemes. Any expenditure reported against these heads does not pertain to any specific activity under sub-major head of account.

1.2.5 The first issue of this publication containing data for the period 1974-75 to 1989-90 had been brought out in the year 1995, second issue containing data for the period 1990-91 to 1998-99 was brought out in 2002 and the third issue from 1998-1999 to 2010-11 was brought out in 2010. The last issue (4th edition) for the period 2000-2016 was brought out in 2018. The present issue of the publication is based on the data for the year 2005-06 to 2019-20 sourced from Annual Reports of Combined Finance & Revenue Accounts of the Union and State/UT Governments, Comptroller & Auditor General of India (CAG) and also updated data/information of flood activities from Flood Management Organization (FMO), CWC upto 2023.

Chapter-2

Constitutional Provisions for Flood Management

2.1 Constitutional Provisions for Flood Management

2.1.1 As per constitutional provisions, the subject of Flood Management including erosion control falls within the purview of the States. The flood management & anti-erosion schemes are planned, investigated and implemented by the State Governments with their own resources as per priority within the State. The Union Government only renders assistance to States which is technical, advisory, catalytic and promotional in nature.

2.1.2 The subject of flood control, unlike irrigation, does not figure as such in any of the three legislative lists included in the Constitution of India. However, Drainage and Embankments are two of the measures specifically mentioned in entry 17 of List II (State List), reproduced below:

> "Water, that is to say, water supplies, irrigation and canals, drainage and embankments, water storage and water power subject to the provision of entry 56 of List I (Union List)."
>
> Entry 56 of List I (Union List) reads as follows: -
>
> "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."

2.1.3 It may thus be seen that the primary responsibility for flood control lies with the States. A number of States have already enacted laws with provisions to deal with matters connected with flood control works. Therefore, the subject "flood management" falls within the purview of the States. The schemes for flood control are planned, investigated and implemented by the States as per priorities within the State with their own resources and the role of central government is technical, advisory, catalytic and promotional in nature.

2.1.4 Notwithstanding the legislative power being enjoyed by the Centre and the States as explained above, the Union Government can legislate on matters in the State List in two special situations viz., (1) under Article 249 the Council of States can declare by a Resolution supported by two-thirds of the Members present and voting that it is necessary or expedient in the National Interest that Parliament should legislate on matters in the State List and specify in the Resolution, then Parliament can enact laws for the whole of the country or any specific part of the country with respect to that matter as long as that Resolution stand. The Resolution lapses after a year and can be renewed as many times as necessary, but not exceeding one year at a time. It may be seen that for one thing, the provision

enables only temporary legislation, and for the other, the Rajya Sabha has to be satisfied that the problem of flood control has assumed such a magnitude that a National effort on an all-India level has become necessary under Article 252. Two or more States can empower the Parliament to make laws on matters included in the State List if the State legislatures of those States pass a Resolution to that effect. Such laws will apply to the State whose legislatures have already consented or which subsequently adopt the law. Once the law comes into force, one of the States can amend or repeal the same.

2.2 Existing Flood Management Mechanisms in India

2.2.1 As mentioned in the constitutional provisions, flood management including erosion control, are planned, investigated and implemented by the state governments with their own resources with technical assistance by union government. Therefore, two-tier system of flood management exists in India as briefly described below:

1. **State Government Mechanism**

   The State Level Mechanism includes the Water Resources Departments, State Technical Advisory Committee and Flood Control Board. In some States, the Irrigation Departments and Public Works Departments look after flood matters.

2. **Central Government Mechanism**

   The Union Government has set up following organizations and various expert committees to enable the State Governments in addressing flood problems in a comprehensive manner:

   a) Central Water Commission
   b) Brahmaputra Board
   c) Ganga Flood Control Commission
   d) Farakka Barrage Project Authority
   e) National Disaster Management Authority

a) Central Water Commission (CWC) – The Government of India set up Central Water Commission, as presently named, in 1945 for achieving the goal of furthering and promoting measures of flood control, conservation and utilization of water resources throughout the country in the areas of beneficial uses, irrigation and hydropower generation, flood management and river conservation. As a national apex engineering Organisation in the field of water resources development, the CWC with its vast experience gained in its strides towards progress in more than seven decades, has developed considerable know-how in planning, investigation, management and design of water resources development schemes and made valuable contribution in the country's remarkable progress in this field besides sharing the expertise with developing nations of the world.

b) Brahmaputra Board – The Government of India set up Brahmaputra Board under Brahmaputra Board Act, 1980 (46 of 1980) under the Ministry of Jal Shakti (DoWR, RD & GR) (erstwhile Ministry of Irrigation). The jurisdiction of Brahmaputra Board now covers all the North Eastern States including Sikkim and North Bengal as notified by Government of India vide S.O. 2313 dated 18.12.2005. The original functions of Brahmaputra Board were:

- Survey and investigations in Brahmaputra and Barak valley.
- Preparation of master plans to control floods, bank erosion, improvement of drainage system.
- Preparation of DPRs for dams and other projects
- Standard specifications for construction operation and maintenance of dams.
- Construction of multipurpose dams and maintenance thereof.
- Any other function for implementation of Brahmaputra Board Act-1980.

Brahmaputra Board prepared Master Plans for flood management for rivers Brahmaputra and Barak. Besides this, the Board has undertaken survey and investigations for preparation of other master plans for tackling the problems of flood, erosion and drainage congestion including DPRs for multipurpose projects.

A High Power Review Board was appointed by Government of India in 1982 to oversee the work of Brahmaputra Board with Union Minister of Water Resources as its Chairman and 14 Members who are Chief Ministers or Cabinet Ministers/Ministers of State for Finance, Energy, Agriculture, Surface Transport, Minister of State for Jal Shakti, Secretary (DoWR, RD & GR) and Chairman, CWC. Chairman, Brahmaputra Board is the Member-Secretary.

c) Ganga Flood Control Commission - Ganga Flood Control Commission (GFCC) was set up by Government of India in 1972 for preparation of comprehensive plan of flood control for Ganga Basin and to draw out a phased coordinated programme of implementation of works and monitoring & appraisal of flood management schemes of Ganga Basin States. The GFCC has prepared comprehensive plans of flood management of the 23 sub-basins in the Ganga Basin besides drawing out a phased programme of implementation of these works to proper standards, examination and monitoring of various flood management schemes in the Ganga Basin States.

d) Farakka Barrage Project Authority – Farakka Barrage Project with headquarters at Farakka in Murshidabad district of West Bengal is a subordinate office under Ministry of Jal Shakti (DoWR, RD & GR).

- The Farakka Barrage Project Authority was set up in 1961 with the mandate to execute and thereafter operate and maintain the Farakka Barrage Project System comprising of Farakka Barrage, Jangipur Barrage, Feeder Canal, Navigation Lock and associated structures.
- The Barrage comprises of 112 Gates (108 main Gates and 4 Fish-lock Gates) and 11 Head Regulator Gates for diversion of around 40,000 cusec (1035 cumec) discharge into the Feeder Canal.
- The project, whose construction commenced in 1961 was commissioned and dedicated to the Nation in May 1975.

e) National Disaster Management Authority (NDMA) - For prevention and mitigation effects of disasters including flood disasters and for undertaking a holistic, coordinated and prompt response to any disaster situation, the Government of India has set up a National Disaster Management Authority(NDMA) in 2005 under the Chairmanship of Hon'ble Prime Minister of India. The functions of the NDMA are:

(i) Lay down policies on disaster management;
(ii) Approve national Plan;
(iii) Approve plans prepared by the Ministries or departments of the Government of India in accordance with the National Plan;
(iv) Lay down guidelines to be followed by the State Authorities in drawing up the State Plan;
(v) Lay down guidelines to be followed by the different Ministries or departments of the government of India for the purpose of integrating the measures for prevention of disaster or the mitigation of its effects in their development plans and projects;
(vi) Coordinate the enforcement and implementation of the policy and plan for disaster management;
(vii) Recommend provision of funds for the purpose of mitigation;
(viii) Provide such support to other countries affected by major disasters as may be determined by the central Government;
(ix) Take such other measures for the prevention of disaster, or the mitigation, or preparedness and capacity building for dealing with the threatening disaster situation or disaster as it may consider necessary;
(x) Lay down broad policies and guidelines for the functioning of the National Institute of Disaster Management.

NDMA Guidelines (January, 2008) specifies preparation of flood mitigation plans and taking relief measures during flood disasters for management of floods and the roles of various Central and State agencies have been.

(f) Damodar Valley Corporation

The Damodar Valley Project was conceived towards the end of the World War II amidst famine, flood and frustration. Damodar Valley Corporation was set up under

an Act of Parliament in 1948 for the development of the Damodar Valley. The project drew inspiration from the Tennessee Valley Authority in the United States of America. According to the Act, the functions of the Corporation were: -

(i) The promotion and operation of schemes for irrigation, water supply and drainage;
(ii) The promotion and operation of schemes for the generation, transmission and distribution of electrical energy, both hydro and thermal;
(iii) The promotion and operation of schemes for flood control in the Damodar River and its tributaries and the channels, if any, excavated by the Corporation in connection with the scheme and for improvement of flow conditions in the Hooghly River;
(iv) The promotion and control of navigation in the Damodar River and its tributaries and channels, if any;
(v) The promotion and afforestation and control of soil erosion in the Damodar Valley; and
(vi) The promotion of public health and the agricultural, industrial, economic and general well-being in the Damodar Valley and its area of operation.

(g) Other Organisations concerned with Flood Management

In addition to the above mentioned, other Organisations also deal with flood management/erosion control as one of their activities in the country including the states covered by the Task Force. Some of these Organisations are enlisted below:

- Central Water & Power Research Station (CWPRS), Pune under MoJS.
- Central Soil & Material Research Stations (CSMRS), New Delhi under MoJS.
- National Remote Sensing Agency (NRSA), Hyderabad under Indian Space Research Organisation (ISRO)
- National Institute of Hydrology (NIH), Roorkee and its regional centres at Patna and Guwahati under MoJS.
- Regional Remote Sensing Service Centre (RRSSC), Kharagpur (West Bengal) under ISRO
- State Remote Sensing Application Centres.
- North-Eastern Hydraulic & Allied Research Institute (NEHARI), Guwahati under Brahmaputra Board.
- North-Eastern Regional Institute of Water and Land Management (NERIWALM), Tezpur (Assam) under MoJS.
- North-Eastern Electric Power Corporation (NEEPCO), Shillong, Meghalaya under Ministry of Power.
- National Hydro-electric Power Corporation (NHPC), Faridabad, Haryana under Ministry of Power.

2.3 Laws and Acts Enacted by the Central Government

Inter-state River Disputes Act 1956 (As modified up to 6th August, 2002)

2.3.1 For settling inter-state river disputes, provision was made under Article 262 of the Constitution of India for the Parliament to make laws for the adjudication of disputes. It reads as follows: -

> *(1)* "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.
>
> *(2)* 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)."

By virtue of these powers vested in Parliament by Article 262, it enacted the Inter State Water Disputes Act, 1956 for the adjudication of disputes relating to waters of Inter- State Rivers and River Valleys. The salient features of the Act as amended till 6th August, 2002 are as follows:

Clause 3: If it appears to the Government of any State that a water dispute with the Government of another State has arisen or is likely to arise by reason of the fact that the interests of the State, or of any of the inhabitants thereof, in the waters of an Inter-State River or River Valley have been, or are likely to be affected prejudicially by-

a) any executive action or legislation taken or passed, or proposed to be taken or passed, by the other State; or
b) the failure of the other State or any authority therein to exercise any of their powers with respect to the use, distribution or control of such waters; or
c) the failure of the other State to implement the terms of any agreement relating to the use, distribution or control of such waters,

the State Government may, in such form and manner as may be prescribed, request the Central Government to refer the water dispute to a Tribunal for adjudication.

Clause 4: (1) When any request under Clause 3 is received from any State Government in respect of any water dispute and the Central Government is of opinion that the water dispute cannot be settled by negotiations, the Central Government shall, within a period not exceeding one year from the date of receipt of such request, by notification in the official Gazette, constitute a Water Disputes Tribunal for the adjudication of the water dispute.

(2) The Tribunal shall consist of a Chairman and two other members nominated in this behalf by the Chief Justice of India from among persons who at the time of such nomination are Judges of the Supreme

Court or of a High Court.

Clause 5: (1) When a Tribunal has been constituted under Clause 4, the Central Government, subject to the prohibition contained in clause 8, refers the water dispute and any matter appearing to be connected with, or relevant to, the water dispute to the Tribunal for adjudication.

(2) The Tribunal shall investigate the matters referred to it and forward to the Central Government a report setting out the facts as found by it and giving its decision on the matters referred to it within a period of three years;

Clause 6: (1) The Central Government shall publish the decision of the Tribunal in the Official Gazette and the decision shall be final and binding on the parties to the dispute and shall be given effect to by them.
(2) The decision of the Tribunal, after its publication in the Official Gazette by the Central Government under Clause (1), shall have the same force as an order or decree of the Supreme Court.

Clause 9A: (1) The Central Government shall maintain a data bank and information system at the national level for each river basin which shall include data regarding water resources, land, agriculture, and matters relating thereto, as the Central Government may prescribe from time to time. The State Government shall supply the data to the Central Government or to an agency appointed by the Central Government for the purpose, as and when required.

(2) The Central Government shall have powers to verify the data supplied by the State Government, and appoint any person or persons for the purpose and take such measures as it may consider necessary. The person or persons so appointed shall have the powers to summon such records and information from the concerned State Government as are considered necessary to discharge their functions under this section.

Clause 11: Notwithstanding anything contained in any other law, neither the Supreme Court nor any other court shall have or exercise jurisdiction in respect of any water dispute which may be referred to a Tribunal under Act."

Though there have been many disputes on account of the ever increasing demands for water and power in different areas of the country, all these disputes have not been referred for adjudication and have been mostly settled through active participation of the Union Government. Tribunals have been set up so far to adjudicate water disputes relating Krishna, Godavari, Narmada and Cauvery rivers. There has been no Inter-State dispute specifically with regard to flood control & management issues.

2.3.2 The River Boards Act, 1956

Under Entry 56 of List 1, Parliament has enacted the River Boards Act of 1956 which authorizes the Union Government to establish a River Board for advising the Governments interested in relation to such matters concerning the regulation or development of an inter-state river or river valley or any specific part thereof for performing such other functions as may be specified in the notification. As notification for the setting up of a River Board should be issued only after consultation with the interested State Governments, generally most of the States did not agree to the setting-up of the Boards and no Board under this Act has been established so far.

2.3.3 Damodar Valley Corporation Act, 1948

This Act enacted by the Central Government in 1948 provides for the establishment and regulation of a corporation for the development of the Damodar Valley in the States of Bihar (now Jharkhand) and West Bengal. The Damodar Valley Corporation was accordingly established in July 1948. Out of the 7 dams originally planned for the purpose of irrigation, flood control and power, only 4 have been constructed so far. Conflicts of the interests among the States have been largely responsible for such partial realization of the benefits envisaged in the Act.

The Act further to amend the Damodar Valley Corporation (Amendment), Act, 2011, vide Gazette of India (No. 1 of Part II- Section-1 dated January 09, 2012). This Act may be called the Damodar Valley Corporation Act, 2011 in Section 4 of Damodar Valley Corporation Act, 1948. The Corporation shall consist of— (a) a Chairman; (b) a Member (Technical) and a Member (Finance); (c) One representative from the Central Government; (d) Two representatives one each from the State Government of Jharkhand and West Bengal; (e) Three independent experts one each from the field of irrigation, water supply and generation or transmission or distribution of electricity; and (f) a Member-Secretary.

2.3.4 The Betwa River Board Act, 1976

The Act provides for the establishment of a Board for the creation of a reservoir at Rajghat by construction, on behalf of the Government of Madhya Pradesh and Uttar Pradesh, of a dam on the Betwa River at Rajghat and for the regulation of such reservoir.

Functions of the Board

a. Carry out the survey and investigation in the Betwa Inter-State River Valley and prepare a comprehensive project report for the construction of Rajghat Dam and appurtenant works including the construction of Power House & Construct Rajghat Dam and Power House and the common carrier from the dam to irrigate areas in Madhya Pradesh and Uttar Pradesh.
b. Prepare detailed reports and estimates in respect of the project and allocate the cost among the government of Madhya Paradesh and Utter Pradesh.

c. Draw up standards and specifications for implementation of the project and for the maintenance thereof;
d. Construct the Rajghat Dam 2 [and the Rajghat Power House] and the common carrier from the dam to irrigate areas in Madhya Pradesh and Uttar Pradesh;
e. Lay down rules of operation and management of Rajghat Dam;
f. Perform any other function which is supplemental, incidental, or consequential to all or any of the functions specified in clauses (a) to (e).

The Act further to amend the Betwa River Board Act, 1976 (Act No. 49 of 1993)

This Act may be called the Betwa River Board (Amendment) Act,1993.

- Amendment in Section 3 of in Clause(g) and 12 of in Sub-section (2) Clause (b). — for the words “Rajghat Reservoir”, the words “Rani Laxmibai Sagar” shall be substituted.
- Reference to Rajghat Reservoir to be construed as reference to Rani Laxmibai Sagar. —Any reference to Rajghat Reservoir in any other law or in any rule, regulation, instrument or other document or in any proceeding shall be construed as a reference to Rani Laxmibai Sagar.

2.3.5 Brahmaputra Board Act, 1980

The Act provides for an establishment of a Board for the planning and integrated implementation of measures for the control of floods and bank erosion in the Brahmaputra valley and for matters connected therewith.

The Brahmaputra Board was set up under the Ministry of Irrigation (now renamed as Department of Water Resources, RD&GR, Ministry of Jal Shakti) by the Government of India under an Act of Parliament called ‘The Brahmaputra Board Act, 1980 (46 of 1980)’ for the planning and integrated implementation of measures for the control of floods and bank erosion in the Brahmaputra Valley and for matters connected therewith. The Board office started functioning with Headquarters at Guwahati with effect from 11th January 1982. The jurisdiction of Brahmaputra Board covers all the North Eastern States including Sikkim and North Bengal notified by Government of India vide S.O. 2313 dated 18.12.2005.

2.3.6 The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013

The Act may be quoted as: “An Act to ensure, in consultation with institutions of local self-government and Gram Sabhas established under the Constitution, a humane, participative, informed and transparent process for land acquisition for industrialisation, development of essential infrastructural facilities and urbanisation with the least disturbance to the owners of the land and other affected families and provide just and fair compensation to the affected families whose land has been acquired or proposed to be acquired or are affected by such acquisition and make adequate provisions for such affected persons for their rehabilitation and resettlement and for ensuring that the cumulative outcome of compulsory acquisition

should be that affected persons become partners in development leading to an improvement in their post-acquisition social and economic status and for matters connected therewith or incidental thereto."

This Act may be called the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013. It was extended to the whole of India except the State of Jammu and Kashmir. But after Jammu and Kashmir Reorganisation Act, 2019, the Right to Fair Compensation and in sub-section (2) of section 1, words, "except the State of Jammu and Kashmir" shall be omitted. The provisions of this Act relating to land acquisition, compensation, rehabilitation and resettlement, shall apply, when the appropriate Government acquires land for its own use, hold and control, including for Public Sector Undertakings and for public purpose.

2.3.7 The Dam Safety Act, 2021

"An Act to provide for surveillance, inspection, operation and maintenance of the specified dam for prevention of dam failure related disasters and to provide for institutional mechanism to ensure their safe functioning and for matters connected therewith or incidental thereto."

The Ministry of Jal Shakti has notified in the Gazette of India the constitution of National Committee of Dam Safety (NCDS) and established the National Dam Safety Authority (NDSA) along with the rules. Both the Committee and Authority shall come into force w.e.f. 18th February 2022. On similar lines, as per the provisions in the Dam Safety Act 2021, the State Governments also have to constitute a State Committee on Dam Safety (SCDS) & State Dam Safety Organisation (SDSO) within a period of 180 days from the date of commencement of this Act.
Salient features of the Act are as follows:

- States and UTs to adopt uniform dam safety procedures to provide for mechanism for prevention of dam failure related disasters.
- Establishment of National Dam Safety Authority to implement the policy & guidelines.
- Mandatory surveillance operation & maintenance of all specified dams to ensure safe functioning.
- Constitution of State Committee on Dam Safety by respective States.

2.4 Government's Initiatives and Policies on Floods

A brief account of the recommendations of some of the important expert committees are as follows:

(i) Policy Statement – 1954

Following the unprecedented floods of 1954, the Union Minister for Planning, Irrigation and Power, placed before the Parliament on 3rd September, 1954, two statements, namely, "Floods in India - Problems and remedies" and "The Floods in the country". The objective unequivocally set, in the policy statements, was to rid the

country from the menace of floods by containing and managing floods and thus solving the problem.

In the Supplementary Statement placed before the Parliament on the 27th July, 1956, the above optimistic note changed a little, stating "We shall, however, be able to curb and confine the floods, more and more and do all that is possible to save ourselves from the harm and the devastation that they bring". Simultaneously, a statement on the flood situation and flood control programme was laid before the Parliament. In this Statement, it was, pointed out that absolute immunity from flood damage was not physically possible even in the distant future.

(ii) High Level Committee on Floods – 1957, & Policy Statement, 1958

A High Level Committee on floods submitted its report in December, 1957, and this was considered by the Central Flood Control Board in its 7th meeting held in May, 1958. Some of their important recommendations are:

i. Absolute or permanent immunity from flood damage is not physically attainable by known methods of flood control. Flood plain zoning, flood forecasting and warning, and like measures should, therefore, be given due importance, particularly as these do not require large capital investment.
ii. Flood control schemes should fit in with other water related plans to the extent feasible.
iii. Future multi-purpose project should consider flood control aspects simultaneously.
iv. Effects of embankments on river regime be considered, before approving such proposals.
v. In general, embankments are satisfactory means of flood protection when properly designed, executed and maintained, but a suitable combination of this method with other methods such as storage dams, detention basins, etc. is usually more efficient and should be adopted as resources permit.
vi. Priorities for soil conservation work relating to flood control should be as under:
    (a) Catchment areas of multi-purpose dams.
    (b) Himalayas with their foothills.
    (c) Indo-Gangetic plain and
    (d) Deccan plateau.
vii. Works relating to watershed management prioritized. Work commenced in a catchment should not be left incomplete to take up work in other catchments
viii. The following order of priority in general is recommended: -
    (a) Emergent schemes,
    (b) Continuing schemes,
    (c) Schemes for the protection of important urban and industrial communities,
    (d) Schemes which would help in augmenting flood protection in the country, and
    (e) Schemes which combine other beneficial utilization of waters

Another policy statement placed in Parliament in 1958 also emphasises that while substantial diminution of flood related distress is possible, immunity against flood is impracticable.

(iii) National Flood Commission (Rashtriya Barh Ayog), 1980.

The National Flood Commission (R.B.A.) submitted its comprehensive report in March,1980. This contained a total of 207 recommendations covering the entire gamut of flood problem in the country. Some of the important recommendations are given below.

- Data collection for providing information on their long term performance and their impact on various socio-economic factors.
- Legislation and enforcement by States to prevent unauthorized river bed cultivation and encroachments into drains etc.
- Separate reporting of flood damage for (i) Unprotected areas (ii) Protected areas and (iii) Areas situated between the embankments.
- Legislation for management of flood plains.
- A comprehensive dynamic and flexible approach to the problem of floods as a part of a comprehensive approach for the utilization of land and water resources.
- Priority for measures to modify the susceptibility of life and property to flood damage.
- Priority for completion of continuing schemes.
- Adequate funds for maintenance.
- States to enact legislation amending section 17 (II) of land acquisition act, to make the existing provisions for emergent situations, as applicable for flood control works.
- Intensifying studies on sedimentation of reservoirs.
- Forming a national council for mitigating disaster.

(iv) Expert Committee to Review the Implementation of the Recommendations of National Flood Commission, 2003 (R. Rangachari Committee)

An Experts Committee under the Chairmanship of Shri R Rangachari was set up by Ministry of Water Resources, Government of India in October 2001 to review the implementation of recommendation of National Flood Commission.

The Committee suggested emphasis on 25 recommendations out of 207 and summed up its views as follows:

- Flood damage assessment, from year to year, is not done realistically or on scientific basis as per RBA recommendations, due to collateral reasons, which are surmised but not expressed. This needs corrective steps.
- Lack of representative, scientific and credible post-project performance

evaluations of past flood management works is a serious handicap.

- Unabated and unplanned intrusion into the flood plains and river beds, sometimes with the approval or acquiescence of Government has now reached alarming dimensions. If this is not managed, flood losses will continue to mount.
- RBA has made a number of recommendations on the future approach and the planning and implementation thereof. Most of these have not been implemented or at the best partially implemented. They will have to be kept in view as part of future approach.
- The international dimensions of flood management as an integral part of Water resource development and management must be pro-actively addressed.
- A number of other issues of importance like adequate funds, legislation, research and people's involvement at all important stages, etc. are very important to effectively manage floods. However, the inter-state issues in multi-state river basins is a very important matter waiting to be effectively addressed.

(V) National Water Policy, 2012

The National Water Policy, first adopted in the year 1987, states that the Policy may be reviewed and revised periodically as and when the need arises. The National Water Policy was subsequently revised in 2002 and 2012. The "National Water Policy– 2012" was adopted by the National Water Resources Council in its 6th meeting held in December 2012.

Later a Committee was constituted by the MoWR for suggesting roadmap for implementation of National Water Policy - 2012 under the Chairmanship of Dr. S. R. Hashim, former Chairman, UPSC & Former Member, and Planning Commission. The Committee has submitted its report in September, 2013.

Further, in view of the latest issues in water sector, revision of the NWP (2012) has been envisaged by Ministry of Jal Shakti and a committee has been constituted, on 05.11.2019 under the chairmanship of Dr. Mihir Shah, to draft the National Water Policy. The Committee undertook a process of wide-ranging consultations to ensure that the process of drafting the policy is as inclusive as possible and the best possible policy emerges from this process of co-creation.

10 meetings and 5 consultation meetings of the Drafting Committee for revision of National Water Policy were conducted (November, 2019 - October, 2020), in which the consultations were held with the State Governments/ UTs, Central Ministries, Non-Governmental Organisations, Academia and Water Experts from all over the country.

Based on the consultations and deliberations, the Drafting Committee submitted 3 drafts of National Water Policy on 17.08.2020, 17.10.2020 and 01.11.2020 respectively. The final draft of National Water Policy dated 07.11.2020 has been submitted by the Drafting Committee to the Ministry of Jal Shakti.

Chapter-3

3.1 APPROACHES TOWARDS FLOOD MANAGEMENT

3.1.1 To meet the challenges posed by flood, Government of India has taken up various Flood Management Measures viz- Structural and Non-structural Measures:

Structural Measures:

(i) Reservoirs
(ii) Detention basins
(iii) Embankments
(iv) Channelization of rivers
(v) Channel improvement
(vi) Drainage improvement
(vii) Diversion of flood waters
(viii) Watershed Management
(ix) Anti-Erosion Works
(x) Coastal Erosion

Non-Structural Measures:

(i) Flood Plain Zoning
(ii) Flood Forecasting
(iii) Reservoir Operation:
(iv) Integrated Reservoir Operation (IRO)
(v) Dam Safety and Emergency Action Plan (EAP)
(vi) Application of Space Technology
(vii) Adherence to Coastal Zone Regulations

3.2 Structural Approach

The traditional approach to flood management is to decrease the intensity of flood peak by holding or diverting a part of inflows or increasing the capacity of stream to enable passage of flood peak without spilling. Structural measures of flood management are aimed to keep the floods away from the people and several structural approaches for flood management are discussed in the paragraphs post.

(i) Reservoirs: Reservoirs can moderate the intensity and timing of the incoming floods. They store water during periods of high discharges in the river and release it after the critical high flow condition ceases, so as to be ready to accommodate the next wave of floods. Their effectiveness in moderating floods would depend on the reservoir capacity available at that time for absorbing the flood runoff and their proximity to the likely damage centres. They are operated with a carefully planned regulation schedule which takes into account both safety of the dam and related structures and the safe carrying capacity of the lower reaches of the river in their present condition. Reservoirs are more effective for flood

management if, apart from the incidental moderation available for any type of storage on a river, specific flood cushion is earmarked, as in the case of DVC dams across the Damodar and its tributaries. A solution to floods lies in construction of large storage reservoirs which moderate flood peaks by adopting appropriate reservoir operation schedule. However, the construction of large reservoir have many challenges and constraints, namely, topographic, geological, geographical, environmental, submergence, interstate & international issues, long gestation period, water sharing etc.

Government of India has been regularly interacting with the Government of Nepal for construction of dams on the cross border rivers flowing from Nepal to India for mutual benefit of the two countries which includes flood control. Survey and investigation including preparation of DPRs of Sapta Kosi High Dam Project and Sun Kosi Storage cum Diversion scheme proposed in the Sapta Kosi basin in Nepal along with Kamla (tributary of Kosi) and Bagmati (tributary of Kosi) has been undertaken jointly by India and Nepal. Pancheshwar Development Authority (PDA) has been set up jointly by India and Nepal for execution, operation and maintenance of the Pancheshwar Multipurpose Project on river Sharda. The proposed projects are to provide significant flood control benefits to the states of Uttar Pradesh and Bihar and their implementation need to be fast tracked. In order to mitigate floods on Brahmaputra, flood storage is essential in Subansiri, Siang, Dibang and Lohit sub basins. Several projects have been identified in these sub-basins. However, except for Lower Subansiri Project, not much progress has been achieved on ground in respect of identified projects. As per CWC, in order to mitigate flood of Brahmaputra at Pandu, Guwahati, from 22 lakh cusec to 14-15.5 lakh cusec (reduction in level by 1.25 to 1.6 m) aggregate flood storage of the order of 13.30 BCM would be required in many sub-basins. Similarly, to mitigate flood in Barak river, flood storage is also essential in Barak basin. There is an urgent need to expedite implementation of the identified projects. The National Water Policy (2012) emphasize that all water resources projects, including hydro power projects, should be planned to the extent feasible as multipurpose projects with provision of storage to derive maximum benefit from available topology and water resources.

(ii) Detention Basins/ Wet Lands: Detention basins are usually formed by utilizing natural depressions/ swamps and lakes by improving their capacity by constructing encircling embankments and providing suitable devices for regulating the release of stored waters. Since, the land under the marshes or low depression may hardly require much compensation and rehabilitation measures, this method is relatively inexpensive. The Ghaggar detention basin in Rajasthan is a good example. Depressions available upstream of Srinagar City, on the left bank of river Jhelum, the Mokama Tal area in Bihar and Ottu, Bhindawas, Kotla lakes in Haryana and various beels / haors of Barak basin are examples of natural basins. It has been observed that in view of growing pressure on land resources, particularly in and around urban areas, there are cases where naturally occurring detention have been encroached upon or their path obstructed. To get benefit of flood control, it is

essential that such tendencies are curbed and the basins are restored to their natural state. Integration of such Detention basins/Wetlands with other structural measures in form of embankments, cross drainage works in form of sluices etc. may be beneficial for managing floods in an efficient manner.

(iii) Embankments: Embankments (including ring bunds and town protection works) confine the flood flows and prevent spilling, thereby reducing the damage. These are generally cheap, quick and the most popular means of flood protection which have been constructed extensively in the past. These are reported to have accorded considerable protection at comparatively low costs, particularly in the lower reaches of large rivers. The raising and strengthening of existing embankments have also been taken up in many of the flood prone States. In order that this work is done adequately, it is necessary to adopt the flood frequency approach in their redesign, taking into account the data of historical floods, which is now available. Efforts of the State Governments have so far been concentrated mostly on undertaking these measures like raising & strengthening of the existing embankments, and also construction of new embankments. During XI and XII Plan period, with Central assistance under Flood Management Programme (FMP) of Ministry of Jal Shakti, State Governments have taken up several projects for construction of embankments. So far State Governments have built 37,073 km length of embankments in the country which includes projects undertaken from their own resources till March, 2017. The efforts in this regard may need to be further continued, as per site specific requirement.

iv) Channelization of Rivers: Some States are proposing channelization of rivers, at least in certain reaches, in the context of tackling the extensive meandering problems of the rivers, activating navigational channels and training these rivers into their original courses by means of constructing embankments on both banks. As the river Brahmaputra and some of its tributaries are very much braided in nature, the Government of Assam is taking up river channelization and dredging measures for training the oblique channels for preventing severe erosion. While venturing to channelize rivers, adequate thought must be given in allowing the river certain freedom to flow and maintain its right of way to pass its flood waters and silt load within its natural waterway. The dynamic nature of the rivers should be appreciated and preventive measures planned accordingly instead of throttling the river by channelizing it.

v) Channel Improvement: The method of improving channel carrying capacity by tweaking the hydraulic conditions of the river channels through de-silting, dredging, lining etc., to enable the river to carry its discharges at lower levels or within its banks has been often advocated, but occasionally adopted because of its high cost and other associated problems. Dredging operations of the Brahmaputra, which were undertaken in the early seventies of the last century on an experimental basis, were discontinued because of their prohibitive cost and very insignificant benefits. The issue of dredging/de-silting of rivers has been studied by various experts/ Committees and it has been opined that de-silting/dredging in general is

not feasible technically, due to several reasons of non-sustainability, cost in-effectiveness, non-availability of vast land areas necessary for disposal/dumping of dredged material, etc. Dredging at selected locations may perhaps be considered as a component of a package of measures for channel improvement to check river bank erosion subject to techno-economic justification. It may be economically justifiable as a method for channel improvement for navigation purposes, where regular maintenance may be involved. Dredging is sometimes advocated for clearing the mouth of rivers or narrow constrictions.

vi) Drainage Improvement: Surface water drainage congestion due to inadequacy of natural or artificial drainage channels to carry the storm water discharge within a reasonable period causes inundation and damages. It is often difficult to distinguish between flood and drainage congestion situations. This problem is rather acute in Andhra Pradesh, Bihar, Haryana, Punjab, Odisha, Uttar Pradesh, Assam and West Bengal. Therefore, improvement of drainage by construction of new channels or improvement in the discharge capacity of the existing drainage system is recommended as an integral part of the flood management programme. The adequacy and efficiency of existing sluices and drainage channels should be reviewed in areas suffering from drainage congestion. If the capacities of existing sluices in embankments and drainage channels are inadequate, this should be improved by increasing the vents and improving outfall conditions. Drainage improvement and embankment together have resulted in securing an area of about 20.54 Mha from floods.

Figure 3: Various Structural Measures for Flood Control

Embankment using Geo-tubes and Geo-mattress at Matmara, Assam

Bank revetment using geo bags at Rohmaria, Assam

RCC Porcupine Screens at Morigaon District, Assam

Protection with boulder Spurs at Dibrugarh, Assam

Bio-Engineering Measures

Pilot Bio-engineering measures on a river outfalling into Brahmaputra, Majuli Island, Assam

vii) Diversion of Flood Waters/ Interlinking of Rivers: Diversion of flood waters as a flood control measure involves transfer of a part of the flood discharge to another basin or to the same basin downstream of the problem area or to a depression where it could be stored for subsequent release. This measure can be used to manage unusual floods around cities as in the case of flood spill channel near Srinagar and also in the lower reaches of a river near the sea as in the case of Krishna Godavari drainage scheme. The projects for interlinking of rivers for diversion of flood water to water scarce areas may be taken up in a time bound manner. Large dams and canal systems are proposed to be constructed for storage and transfer flood waters of the surplus river in inter basin water transfer proposals. NWDA has identified 30 inter-basin transfer links (16 under Peninsular component and 14 under Himalayan component).

viii) Watershed Management: Watershed management measures include developing and conserving the vegetative and soil covers (Catchment Area Treatment) and also to undertake structural works like check-dams, detention basins, diversion channels, etc. In the watershed management of upper catchment, land treatment through afforestation and grass land development practices should be supplemented by structural works for retarding the water velocity and arresting silt. By proper management of watershed, silt carried and deposited in the lower reaches of rivers can be reduced, leading to better carrying capacity of the channel and thus serves as an effective flood control measure. Catchment Area Treatment measure

may be termed as Green Measures for flood management. The treatment involves understanding of the erosion characteristics of the terrain and identifying/ suggesting remedial measures to reduce the erosion rate. It is also considered as soft engineering measures for reducing the silt load in river thereby increasing the discharge carrying capacity of the river and hence protection against flood. Generally, it deals with vegetation growth in catchment area to hold soil from erosion. Watershed management works in the hilly catchments of the rivers originating in Nepal, Bhutan etc, as well as in hilly areas of India should be selectively chosen and funded through central assistance. Nodal Ministry viz Ministry of Rural Development, Department of Land Resources for the watershed management works may work out a detailed programme in consultation with Ministry of Jal Shakti, other stake holders and State Governments.

ix) Anti-Erosion Works: Alluvial rivers are characterized by meandering from one bank to another. They erode constantly materials from concave bends and deposit between two successive bends or deposit along the convex banks of successive bends. The flow pattern along a river's path changes considerably after every flood. River bank erosion leads to loss of valuable land and related socio-economic issues. Rivers in a flood plain can be aggrading, degrading or stable depending upon silt deposition or erosion. A variety of factors play a major role in causing bank erosion.

These parameters among others include river curvature, reverse / cross flows, composition of bed / bed material etc. Anti-erosion works in the form of bank revetment, spurs, porcupines (RCC or bamboo porcupines) etc. are provided to manage/control the floods, to check bank erosion. Measures in form of bamboo porcupines may be termed as green structural measures. Presently, new innovative materials like Geo-textile in the form of Geo- textile bags, Geo-textile tubes, Sand filled Geo-mattress, Neo-web, submerged vanes and RCC porcupines are being increasingly used in construction of revetments, spurs, groynes, embankments etc. These materials are used due to their unique characteristics such as durability, resistance to chemical waste, environment friendly nature, easiness in installation etc. Recent developments have found that riparian vegetation interacts with a range of geomorphological, geotechnical, hydrological and hydraulic factors to affect the type and extent of riverbank erosion. In this regard, special vegetation like Vetiver grass on river banks have been found to be helpful in checking erosion. These measures may be termed as Green Measures for bank protection. Vetiver is a special type of grass having longer roots length with high tensile strength and is thus resistant to the high velocity streams and checks the erosion. However, such type of grass needs replacement after flood season, in case of silt deposition over the grass. The enhanced lateral channel stability offered by well-vegetated riparian zones can also reduce the need for engineered stabilization and heavy maintenance.

x) Coastal Erosion: Total length of coastline of country extending from West Bengal to Tamil Nadu in the Bay of Bengal and Kerala to Gujarat in the Arabian Sea is perpetually exposed to erosion of Sea. Indian Coastline has been experiencing

erosion problem and around 45.5% percent of coastline is affected by it in varying magnitude. There have been several measures adopted in India to counter the problem of erosion in the form of structural measures such as Sea Wall, revetments, Groynes etc. Their suitability and adverse effects are debatable however it is now increasingly felt world over that soft measures and non- structural measures such as beach nourishment etc, should be employed in conjunction with traditional structural measures while dealing with coastal erosion problem. Coastal Erosion problem is complex effect of various natural processes working in coastal zone and sometimes beyond it. Any intervention to combat erosion requires adequate data in terms of quality and quantity on various processes such as wave, tide, current, wind etc. along with other factors such as bathymetry, beach profile/material etc. Places where rivers are joining sea, poses further challenges in terms of data requirements to account for discharge, silt load etc. In India, data on above aspects are collected by different agencies as per their mandate and requirement and hence coordinated approach is lacking. The issue of Coastal Erosion has been in the focus of Government of India and Beach Erosion Board (BEB) was constituted as early as in 1966 to study the problem along the Kerala Coast which was having severe problem. Later on, it was realized that same program and attention is required for the entire coastline of India and scope of BEB was extended to cover the entire coast. With the objective of the development in the protected coastal zone and the pressure of population in the densely populated areas in the coastal zone, the Beach Erosion Board was reconstituted and rechristened as Coastal Protection and Development Advisory Committee (CPDAC) in April, 1995 with the major objective to identify and develop the various resource potentials available behind the protected areas. Since then, various initiatives have been taken at national level as well as state level to address the issues in a more scientific manner. Coastal Protection and Development Advisory Committee provides a common platform to all concerned maritime States/UTs to discuss issues related to coastal protection and development. The Committee has given its recommendations in the past on various coastal related issues. Government of India has initiated setting up of Coastal Management Information System (CMIS) with an objective to create an integrated data bank to tackle coastal erosion in a scientific manner keeping in view the long-term perspective and collection of data on coastal processes relevant for evolving long term plans and coastal protection measures. The activities related to control of coastal erosion in an integrated manner to provide environmentally and economically acceptable coastal protection system need to be promoted.

3.2 Integrated River Basin Management Approach

Integrated flood management calls for a paradigm shift from the traditional, fragmented and localized approach, and encourages the use of the resources of a river basin as a whole. Therefore, there is a need for an approach backed by latest technologies and implemented in a most effective manner. In order to have integrated basin development including flood management in a holistic manner, setting up of River Basin Organisations (RBO) may be expedited by the Central/ State Governments. The River Basin Organizations shall have the mandate to

implement flood control measures encompassing immediate, short-term and long-term solutions in an effective manner apart from overall water resources development of the basin

3.3 Non-Structural Approach

Integrated flood approach aims at adopting well judicious mix of structural and non-structural measures. Another dimension to this approach is that flood management works should not be limited to critical reaches only. Rather, the planning should be done at hydrological unit (Basin) level. Also, a coordinated effort among different central ministries/ department, state Governments and public is needed as part of integrated flood management.

i) Flood Plain Zoning:

Flood-plain zoning is a concept central to flood plain management. This concept recognizes the basic fact that the flood plain of a river is essentially its domain and any intrusion into or developmental activity therein must recognize the river's 'right of way'. Flood-plain zoning measures aim at demarcating zones or areas likely to be affected by floods of different magnitudes or frequencies and probability levels, and specify the types of permissible developments in these zones, so that whenever floods actually occur, the damage can be minimized, if not avoided. Although, this approach is generally endorsed by all in principle, scant attention is given to it in actual practice, leading to increased flood damages. Ministry of Jal Shakti has continuously impressed upon the states about the need to take action to implement the flood plain zoning approach. CWC prepared a Model Bill on Flood Plain Zoning and circulated it to all States in 1975 for guidance to enact legislation. The status of flood plain zoning is given as under:

i. Manipur: Enacted in 1978, Demarcation of flood zones is to be done.
ii. Rajasthan: Enacted 1997; Enforcement thereof is to be done.
iii. Uttarakhand: Enacted in 2012 & Notification of limit of Flood Plain Area being done in phases.
iv. Erstwhile J&K: Enacted in 2005, Demarcation of flood zones is to be done

Some States like Bihar have stated difficulties in implementation of the Bill due to large expanse of flood affected areas. Uttar Pradesh (UP) has demarcated the flood plain zone of river Ganga from Haridwar to Unnao on the orders of NGT. Govt of Uttar Pradesh has approached CWC for delineation of Flood Plain Zoning (FPZ) of river Yamuna from Asgarpur to Prayagraj, which is under process in CWC. Other States have not yet taken any action for enactment of legislation. Moreover, Draft Guidelines on Flood Plain Zoning prepared by CWC has also been circulated to various central ministries & organizations.

ii) Flood Forecasting: Flood forecasting is considered as one of the most cost effective non-structural measures for flood management. The work of flood forecasting and warning in India is entrusted to the CWC. Flood Forecasting and flood warning in India commenced in a small way in the year 1958 with the

establishment of a unit in the CWC, New Delhi, for flood forecasting for the river Yamuna at Delhi. Presently, there are around 1600 Hydro-meteorological sites being operated by CWC across the country covering 20 river basins for gauge, discharge, sediment & water quality observations. Many of these stations are used as flood monitoring stations for formulating flood forecasts. The activity of flood forecasting comprises of Level Forecasting and Inflow Forecasting. The level forecasts help the User Agencies in deciding mitigating measures such as evacuation of people and shifting people and their movable property to safer locations. Inflow Forecasting is used by various dam authorities for optimum operation of reservoirs for safe passage of flood downstream as well as to ensure adequate storage in the reservoirs for meeting demand during non-monsoon period. Presently, Flood forecasts are issued by CWC at 338 stations (138 Inflow Forecast Stations+200 Level Forecast Stations) as per Standard Operating Procedure. Annually, about 7000 flood forecasts are issued by CWC during floods. Various activities being carried out by CWC in the field of flood forecasting currently and in past are as under;

a) Modernisation of Data Collection and Transmission System: CWC had planned for installation of real-time data acquisition system for 1088 stations in various river basins. Installation of 1054 stations has been completed and additional 34 stations is under progress. Total automatic sensor- based data acquisition and satellite-based stations is around 1190 including real time reservoir monitoring system and automatic snow parameters measurement. In addition to this, IMD is also planning to expand its Automatic Weather Station (AWS)/ Automatic Rain Gauge (ARG) Network which can also install automatic telemetry-based water level/reservoir level and rain gauge sensors in various river basins within their State. These data are also available through Water Information Management System (WIMS)/National Water Information Centre (NWIC) portal. All these stations can be utilised on real-time basis for use in mathematical modelling for flood forecasting. This will increase the coverage of Hydro-meteorological data network significantly in the country for real-time use in flood forecasting.

b) Advancements in Flood Forecast Formulation: During the early period of flood forecasting activity from 1958 to 1990s, conventional flood forecasting models using Statistical correlation and regression equations were used to formulate flood forecast. During the 1990s, the data entry systems were modernized using data processing software such as spreadsheets and Tables. Spreadsheets were also used to generate correlation and regression equations. During the X Plan period, tools like Mike-11 software were adopted for telemetry modelling centers established. During XII Plan, all the new flood forecasting stations which were operationalized were also brought under mathematical modelling. MIKE-11 software was utilised during XII Plan. 3-day advance advisories for flood were started from 2017 onwards and are now available for all the 338 flood forecasting stations with lead time of 7 Days. In this regard CWC has entered into an understanding with IMD for securing their data seamlessly. IMD has started sharing Numerical Weather Prediction (NWP) model outputs and

is also providing map based sub-basin-wise Quantitative Precipitation Forecasts (QPFs) from 2017 onwards. In view of several instances of flash floods being faced in recent times in the country, there is a need to develop flash flood forecasting and early warning system. Flash floods are attributed to favorable combination of meteorological and hydrologic conditions along with characteristics of catchment area. Focus on scientific research in development of Model based system to forecast flash flood with sufficient lead time will provide a much-needed relief from menace of flash floods.

c) Modernisation of Forecast Dissemination: CWC has been maintaining flood forecasting website since 2006 which got upgraded and became more user friendly from 2014 onwards. This is further being upgraded using Water Information Management System (WIMS) through which better data entry system, report generation and user-friendly web functions are envisaged. CWC is also working in collaboration with M/s Google for generating Common Alerting Protocol (CAP) for sending CWC's Flood Forecasting information to general populace in the affected areas through Google enabled android smart phones or through various Google platforms from 2015 onwards. National Disaster Management Authority through Centre for Development of Telematics (C-DoT) under MoCIT is also developing its own CAP alert systems through which priority call routing will be given from the concerned mobile towers. Radio and TV broadcast of alerts are also being envisaged. The system is being tested on pilot basis in Tamil Nadu since March 2020 onwards.

d) A mobile application, "Flood Watch India" launched on 17th August, 2023 by CWC utilizes advanced technologies such as satellite data analysis, mathematical modelling, and real-time monitoring to deliver accurate and timely flood forecasts. The information is available in 2 languages, viz. English and Hindi. A key feature of the app includes real-time flood monitoring where users can check up-to-date flood situation throughout the country. The App utilizes near real-time river flow data from various sources and also provides flood forecast at the nearest location where users can check the flood advisory at the station nearest to them on the Home Page itself. The app is available free of charge from Google Play Store and iOS.

iii) Reservoir Operation: Dams in our country are not dedicated for single purpose of flood moderation whose requirement is conflicting in nature to conservational purposes. Most of the large dams in the country are multipurpose with competing demands. Even in the reservoirs having no dedicated flood cushion, incidental benefits of flood moderation can be derived by providing dynamic flood cushion. To meet the objective set forth in planning a reservoir or a group of reservoirs and to achieve maximum benefits out of the storage created, it is imperative to evolve guidelines for operation of reservoirs. Without proper regulation schedules, the reservoir may not meet the full objective for which it was planned and may also pose danger to the structure itself and to the people. Filling of reservoir should generally be slow during initial period of flood season and aggressive filling

should be done near the end of flood season. Inflow forecast should also be utilized for real time operation of reservoirs. It helps in pre-emptying the reservoir to avoid flooding like situation downstream. In last few years, dam releases has become an issue as far as flooding in downstream reaches is concerned such as, the Chennai Floods of 2015, Ganga floods in UP and Bihar during 2016, the Ranganadi floods of Assam in 2008 and 2017, Doyang floods of Assam in 2018, Kerala Floods in 2018 and the Krishna Floods in the States of Maharashtra and Karnataka, Chambal Floods in the States of Madhya Pradesh and Rajasthan during 2019. Control of flood is better achieved if the reservoir level is kept low in the early stages of the monsoon season. However, at a later stage, if the anticipated inflows are not realized, the reservoir may not reach Full Reservoir Level (FRL) even towards end of monsoon. On the contrary, if the reservoir is kept at high levels initially to avoid the risk of reservoir remaining unfilled at later stage, there may arise the issue of space for accommodating high floods occurring at later stage. Rule curves of major reservoirs, where flood cushion is not in-built, need to be reviewed to have some dynamic flood cushion for major part of the flood season. In case of an extreme meteorological event, safety of the dam is of paramount importance and releases will become mandatory. For reservoirs in cascade with intermediate inflows and storage serving solely for flood control downstream, it is optimal to regulate floods by filling the upper reservoirs first and emptying the lower reservoirs first. The operation of reservoirs in parallel requires simulation with optimization approach. Some of the essential required actions are:

a) Rule curve/ level for all reservoirs should be prepared & updated accounting change in rainfall trend and changing demand over the years due to rapid increase of population, urbanisation and industrialisation. Rule curves of major reservoirs, where flood cushion is not in-built, need to be reviewed to have some dynamic flood cushion for major part of the flood season.

b) Inflow forecasting and SoP for water release should be made mandatory for all reservoirs.

c) Emergency Action Plan (EAP) for dam break/extreme flood situations should be ready. It will include flood inundation maps and flood waves & time analysis. The list of dams which has prepared the EAPs is attached in Annexure IV of the report.

d) Release information for downstream areas should be provided with adequate response time.

e) Channel encroachment in downstream stretches of a dam should be removed.

iv) Integrated Reservoir Operation (IRO): The Crisis Management Plan (CMP) of Department of Water Resources, River Development & Ganga Rejuvenation (DoWR, RD&GR) includes the provision on Integrated Reservoir Operation (IRO) for flood management. The plan for implementation of IRO for flood management included in CMP involves entry of data by reservoir owners in the State in Water Management

Information System (WIMS). The data from reservoirs along with hydro-meteorological data available with CWC as well as those received from IMD including rainfall forecast will be used for running mathematical models for formulating inflow forecast at least 72 hours in advance for the various reservoirs identified in various basins in the plan. Based on the inflow forecast provided and the availability of flood cushion in the reservoir, release advisories shall be issued by Flood Crisis Management Team (FCMT) to be formed in various basins. The FCMT may be headed by the Chief Engineer of the respective Basin Organization of CWC with members from all co-basin States and the Superintending Engineer of CWC Basin Organization will be the Member – Secretary. The FCMT may meet frequently during Flood Crisis and advise the Project authorities within the system of reservoirs regarding the quantum of release so that flood inundation in the downstream areas shall be minimized. However, there is no mandate to the project authorities to follow the release advisory of FCMT as the release of water from project is in the purview of State Governments. In order to operationalize the concept, mandate in the form of an executive order or a parliamentary act may be needed. This can be brought as an executive order under Disaster Management Act 2005 or as a part of the proposed Dam Safety Bill which has since been passed by Lok Sabha and is to be passed by the Rajya Sabha. Based on the type of system, there are single and multi- reservoir systems. Multi-reservoir systems can be treated as cluster and connected both in series and as parallel units. Furthermore, reservoirs can be classified according to their function as the reservoirs may be for single purpose or multi-purpose reservoirs. Multi- purpose reservoirs serve a combination of functions, including irrigation, hydropower, flood management, fisheries, recreation and tourism. The operation of multi-purpose reservoirs also involves various interactions between these different functions that can lead to conflicting interests. Dam Safety Bill provides for surveillance, inspection, operation and maintenance of the specified dam for prevention of dam failure related disasters and to provide for institutional mechanism to ensure their safe functioning and for matters connected therewith or incidental thereto. The Bill has exclusive provision regarding coordinated reservoir operations of cascading dams.

v) Dam Safety and Emergency Action Plan (EAP): Under the Dam Rehabilitation and Improvement Project (DRIP), 2 relevant and comprehensive Guidelines for dam operation related aspect viz., Guidelines for Preparing Operation and Maintenance Manuals for dams and Guidelines for Developing Emergency Action Plan for dams have been published for guidance of country's dam owners. The Guidelines for Preparing Operation and Maintenance Manuals, CWC, 2018 for dams contain various aspects of project operation including normal operation and emergency operation. These serve as guidance for dam owners on various protocols and responsibilities for managing water releases during a year including flood seasons. Details for preparation of operational rule curve (both for reservoir filling and release) are also part of the guidelines. The Guidelines for Developing Emergency Action Plan for Dams, CWC, 2016 describes all elements of an Emergency Action Plan (EAP) and comprehensively covers requirements for notification flow charts,

emergency conditions, inundation maps, emergency detection, evaluation and classification, emergency preparedness and implementation methodologies. The EAP is one of the most important documents to mitigate the associated risks and consequences in case of a dam failure and any other major exigency. Under the Project, this document is being prepared for all DRIP dams, and at the same time Stakeholders Consultation Meetings are being conducted to disseminate provision of this document with all stakeholders and sensitize all concerned agencies as well as public in order to develop more resilience in handling such disasters. So far under the ongoing DRIP project, 176 nos of draft EAPs prepared, and 132 EAPs have been published and 42 nos. of Stakeholder Consultation Meetings conducted. These two protocols will ensure safety and operational performance of dams, will mitigate the associated risks with dam failure through stakeholder's sensitization about consequences and contribute in making more disaster resilience society.

vi) Application of Space Technology: Satellite remote sensing has an enormous potential in providing inputs to disaster management. Remote sensing provides a means of quickly visualizing the impact of a natural disaster like floods and make an assessment for prioritizing and taking necessary relief measures in time and space. In addition, space-based communications play vital role in disaster management. Earth observation satellites provide comprehensive, synoptic and multi temporal coverage of large areas in near real-time. The technology can be adopted to provide real-time information on major disasters like floods and cyclones in the following areas; - Near real-time flood mapping due to riverine and cyclonic floods - Damage assessment due to floods and cyclones - Flood progression, recession, and duration studies- River morphometric studies - Spatial flood early warning studies- Preparation of flood hazard maps - Embankment breach studies - River bank erosion studies and efficacy of anti-erosion measures taken up in the river banks. Considering the potential use of space technology in terms of satellite remote sensing and communication in disaster management, Indian Space Research Organization has embarked upon the Disaster Management Support Programme (DMSP) addressing all three disaster phases of preparedness, response and mitigation for Disaster Risk Reduction in the country by through space-based inputs.

a) Spatial Flood Early Warning Development of spatial flood early warning models using very high-resolution Digital Terrain Models is gaining momentum for giving spatial flood alarm prior to the event. Space based inputs provide very vital information on topography and climate that can be used in developing long range flood early warning models. Considering the requirements at national level and its importance, National Remote Sensing Centre has developed spatial flood forecast models for Godavari and Mahanadi Rivers in association with CWC using space- based inputs. Web-enabled semi-automated Spatial flood early warning models for major floodplains of these two rivers have been developed using high resolution digital terrain models (ALTM DTM) and land use land cover and being run on experimental mode in real-time with other data support from CWC and IMD, and the results are being disseminated. The pilot studies led to the development of fully automated operational spatial flood early

warning systems for Godavari and Tapi river basins under National Hydrology Project (NHP).

b) Near Real-Time Monitoring and Mapping of Floods Space technology has been providing accurate and near real-time information on riverine and cyclonic flooding using its large area and frequent temporal coverage. This Report of information is an important input for near real-time relief and rescue operations and flood management on the ground. Duration of spatial flooding, flood progression and recession are the other products provided using temporal remote sensing data. Flood damage can be assessed using very high-resolution optical data acquired immediately after the flood events. NRSC works in close coordination with the concerned Central and State Disaster Management authorities including MHA, NDMA, SDMAs, etc and disseminates the satellite and aerial based disaster products for disaster risk reduction in the country.

c) State Level Flood Hazard Atlases using Historic Satellite Data Preparing flood hazard maps is one of the best inputs for non-structural methods of flood damage risk reduction. These maps are useful in planning developmental activities in floodplains, construction of relief, rescue, and health centers, planning flood tolerant crops in floodplains. Satellites provide synoptic observations of the natural disasters at regular intervals that help in disaster risk reduction in the country. As part of disaster mitigation phase, NRSC has taken up major responsibility on the behest of NDMA in preparing State Level Flood Hazard Atlases using historic satellite data coupled with ground validation. Flood Hazard Atlases of Assam, Bihar, and Odisha were prepared and released by the concerned States. Preparation of Flood Hazard Atlases of Andhra Pradesh, West Bengal, Uttar Pradesh, and updation of Bihar Atlas are taken up on top priority.

d) Glacial Lake Outburst Floods (GLOF): Glacial Lake Outburst Floods (GLOF) pose a significant and growing threat in regions with glaciers and high – attitude lakes. As climate change accelerates glacier melt and increases the volume of glacial lakes (GLs), the risk of GLOFs becomes more pronounced, depending on factors including the total drainable volume, exposure to potential mass-movement impacts, and structural integrity of the frontal moraine (in case of moraine-dammed lakes).

e) NDMA has published Guidelines on Management of Glacial Lake Outburst Floods (GLOFs) in October, 2020 and recommended Ministry of Jal Shakti (MoJS) as nodal Ministry and CWC as nodal agency for GLOF and Landslide Lake Outburst Flood (LLOF). MoJS has been notified by Cabinet Secretariat to include the subjects in its allocation of business rules. Further CWC has been declared as the nodel agency with NIH as its technical partner for GLOF related activities.

Further, a National Glacial Lake Outburst Floods (GLOF) Risk Mitigation Programme (NGRMP), proposed by NDMA is an advanced stage of approval. CWC is expected to play an active role in a time-bound manner at every stage of the programme viz., formulation of scheme, appraisal of scheme, monitoring of project implementation and O&M of the system. As per the proposed National Programme, CWC has to provide guidance to States on the monitoring mechanism of glacial lakes, conceptualisation and installation of early warning systems, mitigation measures, hazard risk mapping, geotechnical analysis etc. in a time-bound manner. Accordingly, CWC is now with added responsibility relating to the subject and needs action plans to respond to the GLOF related incidents proactively to save lives and properties.

The inventory of GLs/WBs was published in June, 2011 in association with National Remote Sensing Centre (NRSC). Hyderabad based on the satellite imageries data of Advanced Wide Field Sensor (AWIFS) of the Indian Remote Sensing Satellite, Resourcesat-2 collected from May-Nov, 2009. As per this inventory, there are 2028 GLS/WBs with size greater than 10 ha in Himalayan Region of Indian River Basins.

The monitoring of 477 GLs/WBs with size greater than 50 ha for change in water spread area during monsoon season (June to October) every year started in 2011 in NRSC and continued till 2015. The monitoring activity was taken up by CWC thereafter from 2016. From 2022, monitoring of additional 425 GLs with sizes 10 ha to 50ha was also included. Currently, CWC is monitoring 902 GLs/WBs.

vii) Adherence to Coastal Zone Regulations: The regulations stipulated under Coastal Regulations Zone notification 2019, though primarily intended to protect ecologically sensitive coastal stretches, serve the purpose of reducing impact of floods. The prohibition of activities in mangrove areas and in area between High and Low tide lines conveys the clear direction to stay from flood prone belts. Certain ecologically sensitive coastal area of the country is identified as Critically Vulnerable Coastal Area and an Integrated Management Plan (IMP) have to be prepared for such areas. Specific provision restricting new construction within 20 meters from High Tide Line in backwater islands and islands along the main land coast is also included in the notification. Enforcement of the notification using the powers under Environment (Protection) Act 1986 will definitely save a larger community from the wrath of flooding.

Chapter-4

Flood Management Programme (FMP)

4.1 Flood Management Programme (FMP)

To strengthen the structural measures for flood management in the country, Flood Management Programme (FMP), a State Sector scheme amounting to ₹ 8,000 crore under Central Plan proposed by erstwhile MoWR, RD&GR was approved by Government of India during XI Plan (Nov. 2007). The continuation of flood Management Programme was approved by the Government of India during XII Plan with an outlay of ₹10,000 crore.

Total 522 schemes costing ₹13238.36 crore were approved during XI Plan (420 projects costing ₹7857.08 crore) and XII Plan (102 projects costing ₹ 5381.28 crore). Out of these 522 schemes, 427 schemes have been completed; 64 schemes are foreclosed, dropped and shifted (47-foreclosed; 16-dropped & 1 shifted to RMBA component) and 31 schemes are ongoing. These 427 completed schemes have given protection to an area of around 4.99 Mha and protected a population of about 53.57 million.

Total Central Assistance of ₹4873.07 crore (₹3566.00 crore during XI Plan & ₹ 1307.07 crore during XII Plan) was released to States/UTs under the Flood Management Programme (FMP) scheme.

4.2 River Management Activities & Works related to Border Areas (RMBA)

This started as a Central Sector Scheme with an outlay of ₹820 crore in XI plan for taking up non-structural measures such as Hydrological Observation and Flood Forecasting works on common border rivers, payment to neighbouring countries (China) for supplying HO data on common rivers, investigation of WR projects in neighbouring Countries, activities of GFCC and Pancheshwar Development Authority (PDA) was funded through this scheme. In addition to above activities, 100% Central Assistance was also provided for taking up structural measures such as Anti Erosion/Flood Management schemes on rivers on international borders and Union Territories. The continuation of River Management Activities & Works related to Border Areas (RMBA was approved by the Government of India during XII Plan with an outlay of ₹740 crore.

Total Central Assistance (as Grant-in-Aid) of ₹563.61 crore (₹340.41 crore during XI Plan & ₹223.20 crore during XII Plan) was released during XI Plan and XII Plan.

4.3 Flood Management and Border Areas Programme (FMBAP)

FMBAP 2017-21: In continuation of Flood Management Programme (FMP), a comprehensive scheme titled "Flood Management and Border Areas Programme (FMBAP) for period 2017-20" with an outlay of ₹3342.00 crore (FMP- ₹2642 crore & RMBA- ₹700 crore) with merged components from the existing Flood Management Programme (FMP) and River Management Activities & Works related to Border Areas (RMBA) schemes during XII Five Year Plan was approved by the Union Cabinet on 07-Mar-2019 with aim for completion of the on-going projects, which were already approved under FMP scheme. The scheme was extended till March, 2021.

FMBAP 2021-26: Approval of FMBAP 2021-2026 vide Cabinet decision dated 19.01.2022 was up to September, 2022 with limited outlay of ₹450 crore. The continuation of Flood Management and Border Areas Programme (FMBAP) 2021-26 has been approved by the Union Cabinet of Government of India vide Cabinet Secretariat's no. 6/CM/2024 (i) dated 26th February, 2024 with an outlay of ₹4100 crore (FMP-₹2930 Cr & RMBA-₹1160 Cr). Funding ratio has been kept as 90:10 (for special category States) and 60:40 (for general States) under Flood Management Programme (FMP) component of FMBAP scheme.

7 schemes (2 schemes from Arunachal Pradesh and 1 scheme each from J&K, Himachal Pradesh, Assam, Manipur and Bihar) have been included under FMP component of FMBAP: 2021-26.

Total Central Assistance of ₹7113.5 crore has been released to States/UTs under FMP component of FMBAP scheme since XI Plan to till FY 2023-24.

Total Central Assistance (as Grant-in-Aid) of ₹1258.73 crore has been released under RMBA component of FMBAP scheme since XI Plan to till FY 2023-24.

The summary in tabular format of State-wise approved schemes and completed/foreclosed/ongoing schemes& funds released under Flood Management Programme (FMP) since start of XI Plan is given at **Table-I.**

Table I

State-Wise Approved Schemes and completed/foreclosed/ongoing schemes & funds released under Flood Management Programme (FMP) Since start of XI Plan till FY 2023-24

Sl. No.	States/UTs	XI Plan (Schemes Approved)	XII Plan (Schemes Approved)	Total (XI + XII Plan) (Nos.)				FMBAP 2017-21 (Nos.)	Total schemes approved since XI Plan	Total central fund released since XI Plan
		(Nos.)	(Nos.)	Schemes Approved	Schemes completed	Schemes shifted/foreclosed	Schemes ongoing	Schemes Approved	(Nos.)	(₹ in crore)
1	Arunachal Pradesh	21	0	21	21	0	0	2	23	190.78
2	Assam	100	41	141	111	30	0	1	142	1557.04
3	Bihar	43	4	47	42	1	4	1	48	924.40
4	Chhattisgarh	3	0	3	3	0	0		3	19.32
5	Goa	2	0	2	2	0	0		2	11.98
6	Gujarat	2	0	2	2	0	0		2	2.00
7	Haryana	1	0	1	1	0	0		1	46.91
8	Himachal Pradesh	3	4	7	6	1	0	1	8	862.73
9	Jammu & Kashmir (incl. Ladakh)	28	15	43	24	3	16	1	44	805.28
10	Jharkhand	3	0	3	3		0		3	22.71
11	Karnataka	3	0	3	2	1	0		3	23.80
12	Kerala	4	0	4	2	2	0		4	137.95
13	Manipur	22	0	22	22		0	1	23	281.71

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State-Wise Approved Schemes and completed/foreclosed/ongoing schemes & funds released under Flood Management Programme (FMP) Since start of XI Plan till FY 2023-24

Sl. No.	States/UTs	XI Plan (Schemes Approved)	XII Plan (Schemes Approved)	Total (XI + XII Plan) (Nos)				FMBAP 2017-21	Total schemes approved since XI Plan	Total central fund released since XI Plan
		(Nos.)	(Nos.)	Schemes Approved	Schemes completed	Schemes shifted/foreclosed	Schemes ongoing	Schemes Approved (Nos.)	(Nos.)	(₹ in crore)
14	**Meghalaya**	0	0	0	0		0		0	3.81
15	**Mizoram**	2	0	2	1	1	0		2	16.88
16	**Nagaland**	11	6	17	14		3		17	94.83
17	**Odisha**	67	1	68	66	2	0		68	119.42
18	**Puducherry***	1	0	1	0	1	0		1	7.50
19	**Punjab**	5	0	5	4	1	0		5	40.43
20	**Sikkim**	28	17	45	28	17	0		45	91.84
21	**Tamil Nadu**	5	0	5	5		0		5	59.82
22	**Tripura**	11	0	11	11		0		11	23.62
23	**Uttar Pradesh**	26	3	29	24	2	3		29	470.19
24	**Uttarakhand**	12	10	22	18	2	2		22	246.59
25	**West Bengal**	17	1	18	15		3		18	1051.96
	Total	**420**	**102**	**522**	**427**	**64**	**31**	**7**	**529**	**7113.50**

***The scheme has been shifted to be funded under RMBA component.

Source: FMP Directorate, Central Water Commission

Chapter- 5

Outcome of Flood Management Measures

This Chapter has been prepared based upon the data from Annual Report of "Combined Finance and Revenue Accounts of the Union & State Governments" for the year 2005-2020, Comptroller and Auditor General of India (CAG). The data mainly covers expenditure on revenue and capital expenditure related to the flood management measures where mainly structural measures applied for flood management.

Further the chapter also provides details of physical performance of Flood. It covers data on Area Affected by Floods during 1953-2021 and Flood Damages during 1953-2021. The data for the physical performance has been taken from Flood Management Organization, CWC, MoJS.

5.1 Financial Performance of Flood Control and Drainage Projects

This Chapter deals with financial performance of flood control and drainage projects. Under the major head "flood control and drainage", there are three activities: Flood control, Anti-sea erosion and Improvement of drainage system. While classifying expenditure under these categories, as may be seen the **Table A in Chapter-I.** As these activities are geographically location specific, all the three activities are not relevant to all the States and UTs of the country. The projects relating to these activities were carried out by State and Union Government especially in case of Union Territories.

As it is a fact that flood control is relevant in flood prone areas and anti-sea erosion is relevant in coastal areas, developing drainage is warranted in water logged areas. The anti-sea erosion projects are expected to be implemented in coastal areas. However, its scope has been broadened to include any other type of soil erosion also e.g. anti-river erosion.

The projects under the activities of this publication are not spread over all the States and UTs. But, the projects are fairly distributed over the country. **Table-1** gives a summary indicating the States/UTs where these projects were carried out during 2005-2020. It shows that expenditure incurred under anti-sea erosion projects were implemented in 10 States/UTs and Union Government. Expenditure incurred under drainage project were implemented in 18 States/UTs while flood control projects were implemented in 29 States/UTs and Union Government.

Table-1: States/UTs and Union Government incurring expenditure by type of project during 2005-2020

Project Type	States/UTs
Flood control	All States/UTs and Union Government except Mizoram and Nagaland
Anti-sea erosion	Goa, Jammu & Kashmir, Karnataka, Kerala, Maharashtra, Mizoram, Odisha, Puducherry, Tamil Nadu, Union Government and West Bengal
Drainage	Andhra Pradesh, Bihar, Delhi, Goa, Gujarat, Jammu & Kashmir, Maharashtra, Manipur, Odisha, Puducherry, Punjab, Rajasthan, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh, Uttarakhand and West Bengal

Table-2 presents yearly expenditure (Capital + Revenue) incurred during 2005-2020 by sub-major head of accounts. Here yearly expenditures are inclusive of both capital and revenue expenditure. Its penultimate row gives average yearly expenditure under the sub-major head of accounts during the reference period 2005-2020. And, the last row gives the percentage distribution of expenditure over the sub-major heads during this period. The table reveals that a yearly expenditure of ₹4670.51 crore was spent for flood control, ₹167.08 crore for anti-sea erosion and ₹712.65 crore for drainage projects on an average in the country during 2005-2020. Overall, the expenditure incurred under head “General‟ was only about ₹0.79 crore. A close look of the bar diagram reveals that there is an increasing trend of expenditure during 2005-2012. However, the requirement of these protection measures are not uniform over the States of the country and all are not relevant to all States and UTs. The expenditure levels indicate the relative need/coverage of the type of the projects. The major expenditure is incurred under flood control projects followed by projects on drainage control. Thereafter the data have slight fluctuation for flood control but no such conclusion can be drawn for anti-sea erosion or drainage projects.

Table-2: Yearly Total Expenditure (Capital + Revenue) incurred by Sub-Major Head of Accounts during 2005-2020

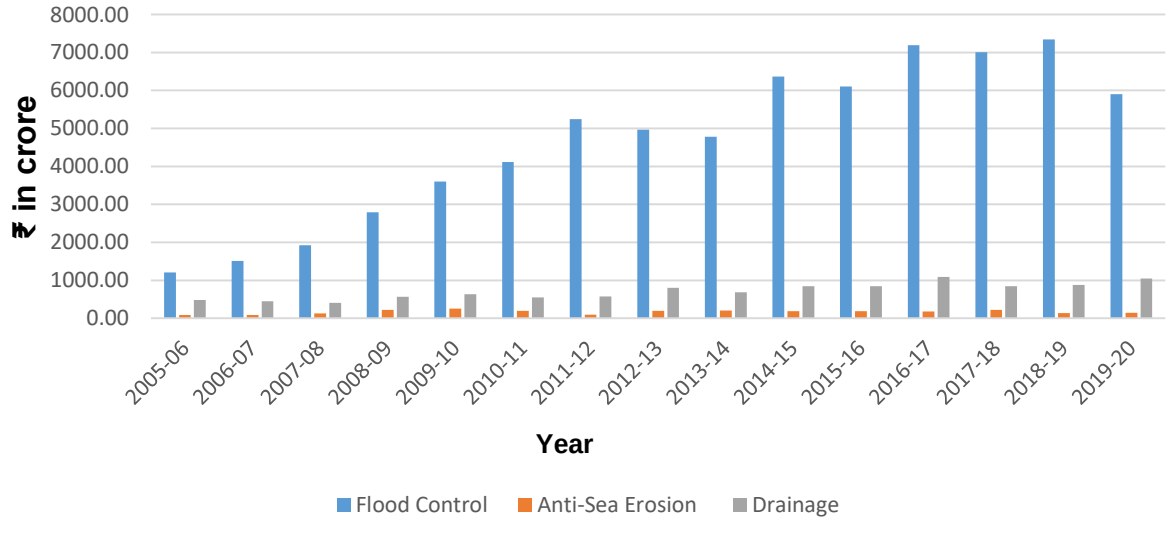
(₹ in crore)

Sl. No.	Year	Flood Control (01)	Anti-Sea Erosion (02)	Drainage (03)	General (80)	Total (99)
1	2005-06	1207.03	81.51	481.57	2.11	1772.22
2	2006-07	1512.02	83.78	443.96	3.05	2042.80
3	2007-08	1922.93	129.73	409.20	0.52	2462.38
4	2008-09	2788.85	216.54	567.71	0.41	3573.51
5	2009-10	3600.54	253.12	630.56	0.32	4484.54
6	2010-11	4118.23	192.43	547.86	0.37	4858.89
7	2011-12	5245.93	93.29	574.46	0.88	5914.56
8	2012-13	4962.18	197.97	800.63	0.60	5961.37
9	2013-14	4783.23	203.36	684.93	1.86	5673.39
10	2014-15	6369.12	185.85	845.30	0.78	7401.04
11	2015-16	6100.33	186.55	845.11	0.59	7132.58
12	2016-17	7192.92	181.24	1087.64	0.00	8461.80
13	2017-18	7003.91	222.74	844.34	0.35	8071.33
14	2018-19	7346.32	134.17	876.67	0.00	8357.16
15	2019-20	5904.06	143.90	1049.85	0.00	7097.81
	Total	**70057.60**	**2506.17**	**10689.77**	**11.84**	**83265.37**
	Average (Over the above years)	4670.51	167.08	712.65	0.79	5551.02
	Percentage of expenditure	84.14	3.01	12.84	0.01	100.00

Source: Annual Report of "Combined Finance and Revenue Accounts of the Union & State Governments" for the year 2005-2020, Comptroller and Auditor General of India (CAG)

Note:- Total is round off figure upto two decimals

Figure 1: Yearly total expenditure (Capital+Revenue) incurred by Sub-major head of accounts during 2005-2020



The expenditure given in figure 2 has been split into capital expenditure and revenue expenditure and presented in Tables 3 and 4 respectively. In general, capital expenditure is much higher than the corresponding revenue expenditure in a State. These are in about 73:27 ratios. (see Figure 2).

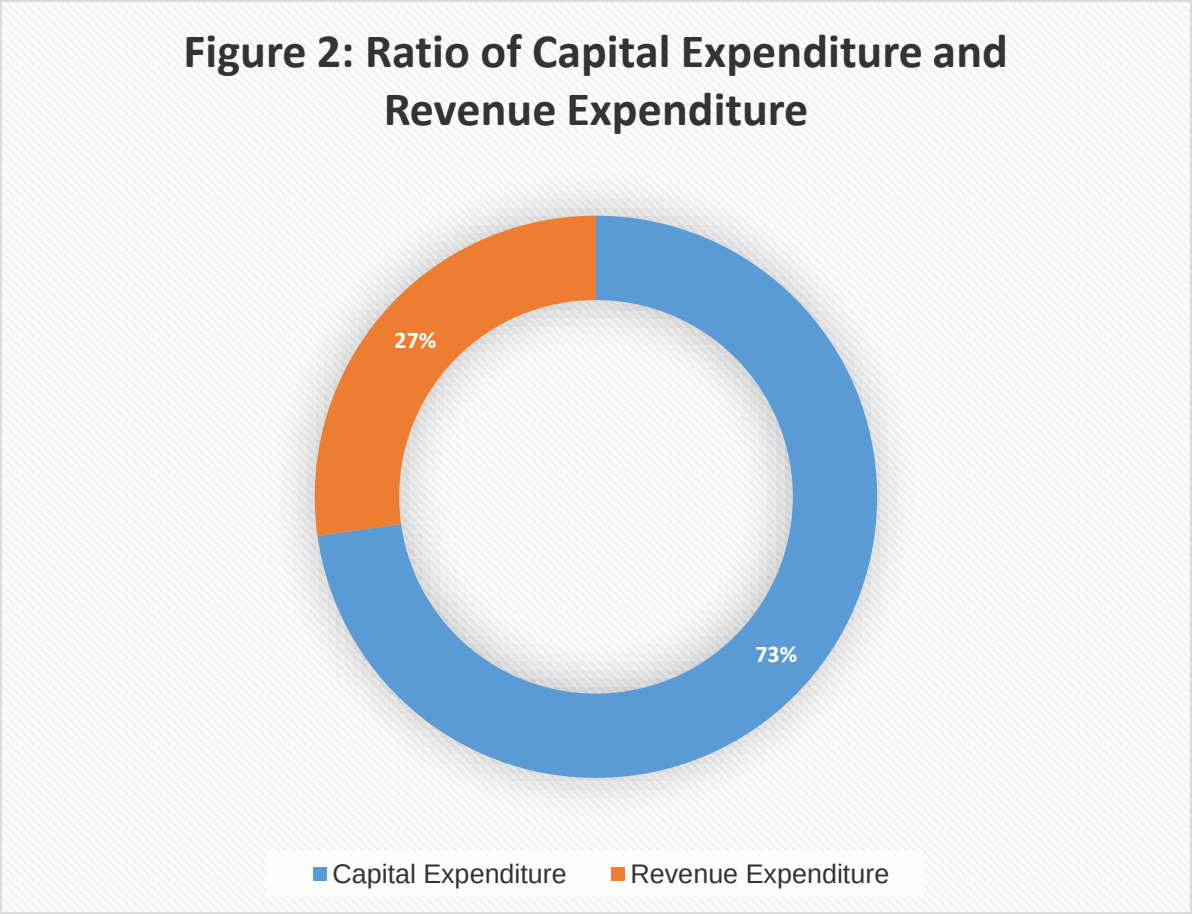


Table-3 shows yearly capital expenditure on an average is about ₹3398.99 crore for flood control projects, ₹125.62 crores for anti-sea erosion project and ₹446.09 crores for drainage projects during 2005-2020, 85.60% of total expenditure in these projects were incurred for flood control. The minimum expenditure was occurred ₹727.52 in 2005-06, while maximum expenditure of ₹5480.82 crore occurred in 2016-17. Under Anti-Sea Erosion projects with few fluctuations in figures are constantly increasing for capital expenditure during 2005-2020. For drainage projects an increasing trend has been seen in the year 2005-20. The trend of total capital expenditure is found similar to that of flood control i.e. increasing as it constitutes the major share of the total capital expenditure. For flood control schemes, capital expenditure accounts 72.78% of total expenditure while for anti-sea erosion, it was only 75.18% of total expenditure and about 62.60% for drainage projects.

Table-3: Yearly Capital Expenditure incurred by Sub-Major Head of Accounts during 2005-2020

(₹ in crore)

Sl. No.	Year	Flood Control (01)	Anti-Sea Erosion (02)	Drainage (03)	General (80)	Total (99)
1	2005-06	727.52	62.87	288.42	-	1078.81
2	2006-07	976.33	71.80	247.62	-	1295.75
3	2007-08	1369.46	107.80	264.38	-	1741.63
4	2008-09	2007.18	188.99	313.39	-	2509.56
5	2009-10	2760.21	224.23	338.82	-	3323.26
6	2010-11	3161.58	160.97	234.41	-	3556.96
7	2011-12	3995.36	48.24	286.52	-	4330.12
8	2012-13	3623.44	114.92	431.91	-	4170.27
9	2013-14	3309.24	148.98	369.21	-	3827.43
10	2014-15	4781.12	131.35	510.95	-	5423.43
11	2015-16	4535.14	129.62	616.72	-	5281.49
12	2016-17	5480.82	127.22	855.17	-	6463.21
13	2017-18	4912.64	168.50	629.12	-	5710.26
14	2018-19	5297.92	94.84	619.48	-	6012.24
15	2019-20	4046.91	103.90	685.20	-	4836.02
	Total	**50984.87**	**1884.24**	**6691.32**	**0.00**	**59560.42**
	Average (Over the above years)	3398.99	125.62	446.09	0.00	3970.69
	Percentage of expenditure	85.60	3.16	11.23	0.00	100.00
	% Share of Capital expenditure out of total expenditure	72.78	75.18	62.60	0.00	71.53

Source: Annual Report of "Combined Finance and Revenue Accounts of the Union & State Governments" for the year 2005-2020, Comptroller and Auditor General of India (CAG)

Note:- Total is round off figure upto two decimals

Figure 3: Yearly capital expenditure incurred by sub-major head of accounts during 2005-2020

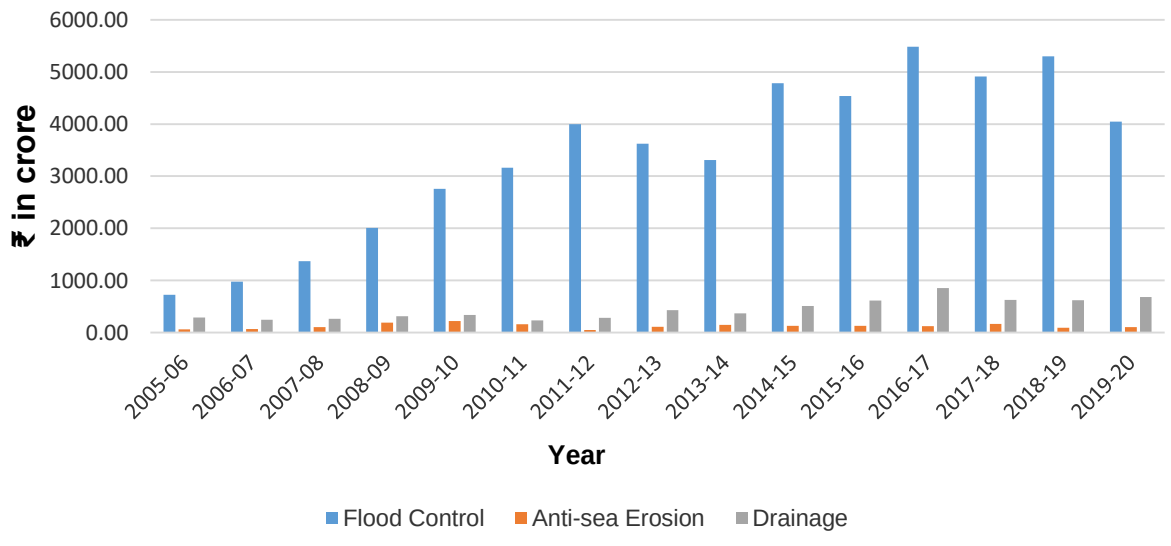


Table-4 gives clear-cut pattern discerned by revenue expenditure for total. However, overall there is an increasing trend in revenue expenditure for flood control during 2005-06 to 2014-2015. All the figures presented are at current prices unless otherwise mentioned. For flood control schemes, capital expenditure accounts 27.22% of total expenditure while for anti-sea erosion, it was only 24.82% of total expenditure and 37.38% for drainage projects.

Table-4: Yearly Revenue Expenditure incurred by Sub-Major Head of Accounts during 2005-2020

(₹ in crore)

Sl. No.	Year	Flood Control (01)	Anti-Sea Erosion (02)	Drainage (03)	General (80)	Total (99)
1	2005-06	479.51	18.64	193.15	2.11	693.41
2	2006-07	535.69	11.98	196.34	3.05	747.05
3	2007-08	553.47	21.93	144.82	0.52	720.74
4	2008-09	781.67	27.55	254.32	0.41	1063.95
5	2009-10	840.33	28.89	291.74	0.32	1161.28
6	2010-11	956.65	31.46	313.45	0.37	1301.93
7	2011-12	1250.57	45.05	287.94	0.88	1584.44
8	2012-13	1338.74	83.05	368.72	0.60	1791.10
9	2013-14	1473.99	54.39	315.72	1.86	1845.97
10	2014-15	1587.99	54.50	334.34	0.78	1977.61
11	2015-16	1565.19	56.93	228.38	0.59	1851.09
12	2016-17	1712.11	54.02	232.46	-	1998.59
13	2017-18	2091.27	54.23	215.22	0.35	2361.07
14	2018-19	2048.40	39.33	257.19	-	2344.92
15	2019-20	1857.14	40.00	364.65	0.00	2261.79
	Total	**19072.73**	**621.93**	**3998.45**	**11.84**	**23704.95**
Average (Over the above years)		1271.52	41.46	266.56	0.79	1580.33
Percentage of expenditure		80.46	2.62	16.87	0.05	100.00
% Share of Revenue expenditure out of total expenditure		27.22	24.82	37.38	100.00	28.47

Source: Annual Report of "Combined Finance and Revenue Accounts of the Union & State Governments" for the year 2005-2020, Comptroller and Auditor General of India (CAG)

Note:- Total is round off figure upto two decimals

Figure 4: Yearly Revenue expenditure incurred by sub-major head of accounts during 2005-2020

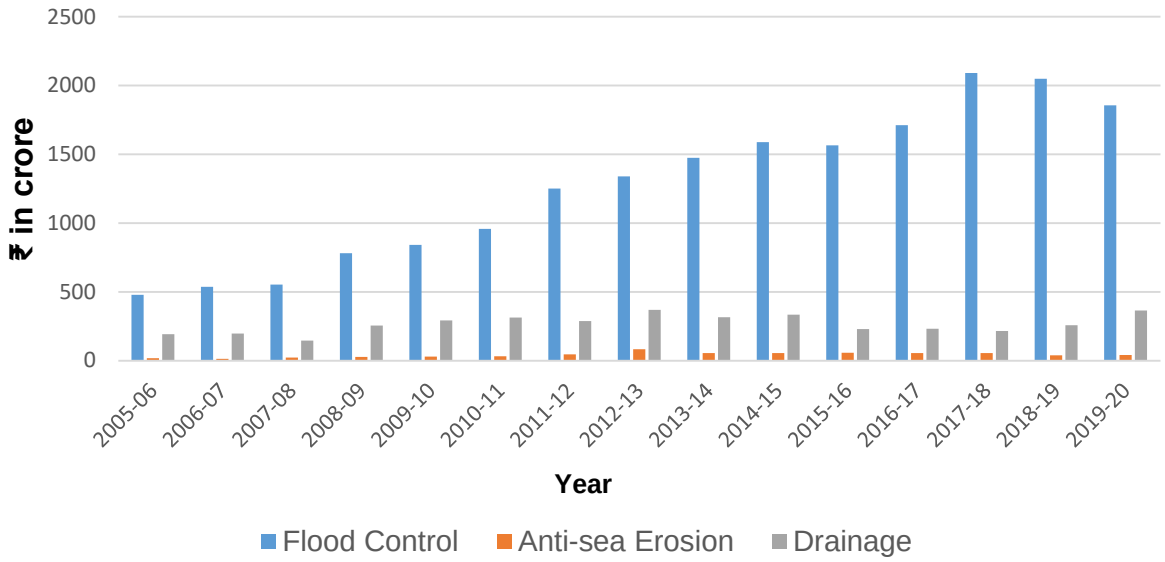


Table-5 presents the total expenditure (Capital + Revenue) of the States/UTs-wise incurred during 2005-2020 by sub-major heads of accounts namely Flood Control, Anti-Sea Erosion and Drainage.

Table-5: Distribution of total Expenditure (Capital + Revenue) by Sub-Major Head of Accounts of the Union and State/UT Governments during 2005-2020

(₹ in crore)

Sl. No.	Name of States/UTs	Flood Control (01)		Anti-Sea Erosion (02)		Drainage (03)		Total (99)	
		Exp.	%	Exp.	%	Exp.	%	Exp.	%
1	Andhra Pradesh	2546.63	3.64	0.00	0.00	1458.75	13.65	4005.38	4.81
2	Arunachal Pradesh	969.17	1.38	0.00	0.00	0.00	0.00	969.17	1.16
3	Assam	7587.30	10.83	0.00	0.00	0.00	0.00	7587.30	9.11
4	Bihar	12834.40	18.32	0.00	0.00	233.86	2.19	13068.27	15.70
5	Chhattisgarh	148.70	0.21	0.00	0.00	0.00	0.00	148.70	0.18
6	Delhi	537.29	0.77	0.00	0.00	1930.62	18.06	2467.91	2.96
7	Goa	474.40	0.68	170.98	6.82	186.28	1.74	831.66	1.00
8	Gujarat	1012.49	1.45	0.00	0.00	673.33	6.30	1685.82	2.02
9	Haryana	2309.10	3.30	0.00	0.00	0.00	0.00	2309.10	2.77
10	Himachal Pradesh	1489.13	2.13	0.00	0.00	0.00	0.00	1489.13	1.79

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Table-5: Distribution of total Expenditure (Capital + Revenue) by Sub-Major Head of Accounts of the Union and State/UT Governments during 2005-2020

(₹ in crore)

Sl. No.	Name of States/UTs	Flood Control (01)		Anti-Sea Erosion (02)		Drainage (03)		Total (99)	
		Exp.	%	Exp.	%	Exp.	%	Exp.	%
11	Jammu & Kashmir (incl. Ladakh)	2323.06	3.32	0.40	0.02	0.16	0.00	2323.62	2.79
12	Jharkhand	197.05	0.28	0.00	0.00	0.00	0.00	197.05	0.24
13	Karnataka	407.92	0.58	269.33	10.75	0.00	0.00	677.25	0.81
14	Kerala	1240.58	1.77	762.15	30.41	0.00	0.00	2002.73	2.41
15	Madhya Pradesh	117.33	0.17	0.00	0.00	0.00	0.00	117.33	0.14
16	Maharashtra	533.95	0.76	347.15	13.85	225.38	2.11	1106.49	1.33
17	Manipur	971.31	1.39	0.00	0.00	3.98	0.04	975.29	1.17
18	Meghalaya	77.72	0.11	0.00	0.00	0.00	0.00	77.72	0.09
19	Mizoram	0.00	0.00	21.03	0.84	0.00	0.00	21.03	0.03
20	Nagaland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	Odisha	6477.78	9.25	445.70	17.78	1702.81	15.93	8626.29	10.36
22	Puducherry	77.23	0.11	3.03	0.12	288.10	2.70	368.37	0.44
23	Punjab	2159.45	3.08	0.00	0.00	1299.24	12.15	3458.69	4.15
24	Rajasthan	224.17	0.32	0.00	0.00	0.00	0.00	224.17	0.27
25	Sikkim	170.41	0.24	0.00	0.00	14.85	0.14	185.26	0.22
26	Tamil Nadu	3375.36	4.82	281.24	11.22	15.42	0.14	3672.02	4.41
27	Telangana	282.33	0.40	0.00	0.00	0.32	0.00	282.65	0.34
28	Tripura	306.50	0.44	0.00	0.00	0.00	0.00	306.50	0.37
29	Union Government	2927.78	4.18	184.08	7.35	0.00	0.00	3111.86	3.74
30	Uttar Pradesh	7882.00	11.25	0.00	0.00	951.23	8.90	8833.23	10.61
31	Uttarakhand	1478.84	2.11	0.00	0.00	0.99	0.01	1479.83	1.78
32	West Bengal	8918.22	12.73	21.07	0.84	1704.44	15.94	10643.73	12.78
	Total (99)	**70057.60**	**100.00**	**2506.17**	**100.00**	**10689.77**	**100.00**	**83253.53**	**100.00**

Source: Annual Report of "Combined Finance and Revenue Accounts of the Union & State Governments" for the year 2005-2020, Comptroller and Auditor General of India (CAG)

Exp: Expenditure

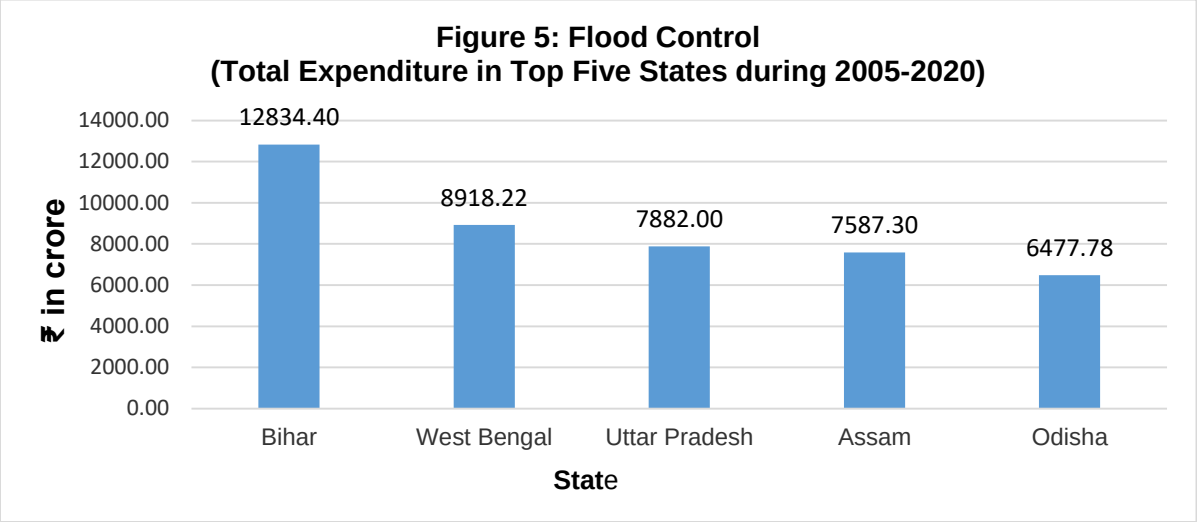

Figure-5 shows that Bihar, West Bengal, Uttar Pradesh, Assam and Odisha have implemented flood control related projects considerably higher compared to other States.

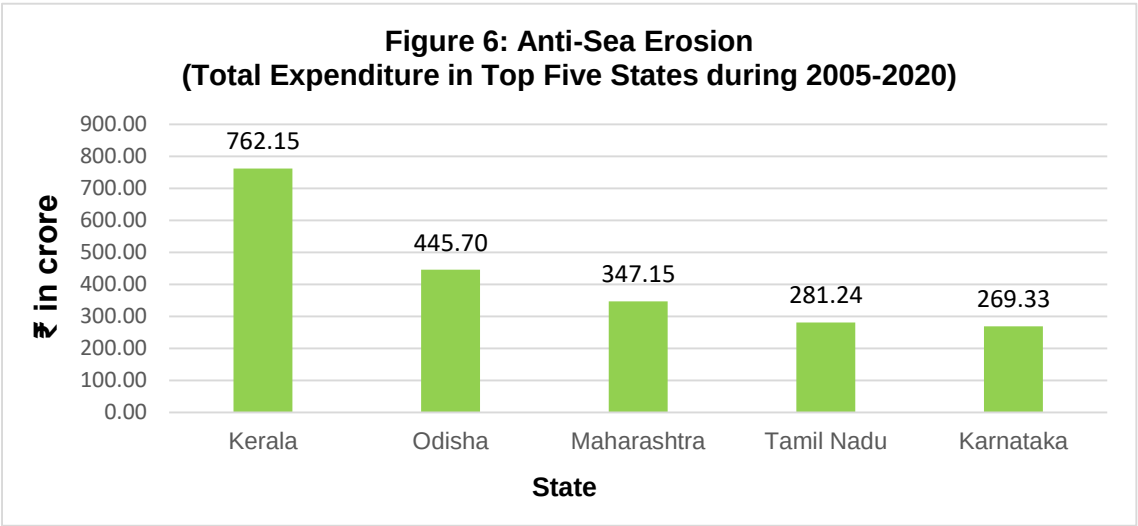

Figure 6 shows that the expenditure for Anti-Sea Erosion is mainly taken place in Kerala, Odisha, Maharashtra, Tamil Nadu and Karnataka.

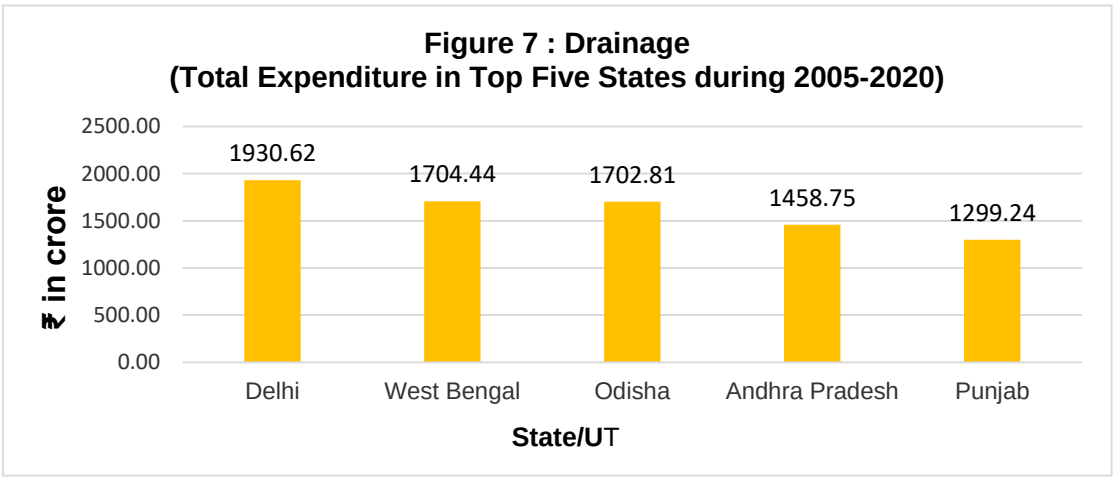

Figure-7 shows that the major expenditure has been incurred in Delhi, West Bengal, Odisha, Andhra Pradesh and Punjab.

Table-6 presents the capital expenditure of the States/UTs-wise incurred during 2005-2020 by sub-major heads of accounts namely Flood Control, Anti-Sea Erosion and Drainage.

Table-6: Distribution of Capital Expenditure by Sub-Major Head of Accounts of the Union and State/UT Governments during 2005-2020

(₹ in crore)

Sl. No.	Name of States/UTs	Flood Control (01)		Anti-Sea Erosion (02)		Drainage (03)		Total (99)	
		Exp.	%	Exp.	%	Exp.	%	Exp.	%
1	Andhra Pradesh	2535.08	4.97	0.00	0.00	578.94	8.65	3114.02	5.23
2	Arunachal Pradesh	860.70	1.69	0.00	0.00	0.00	0.00	860.70	1.45
3	Assam	4641.99	9.10	0.00	0.00	0.00	0.00	4641.99	7.79
4	Bihar	9909.54	19.44	0.00	0.00	0.00	0.00	9909.54	16.64
5	Chhattisgarh	135.80	0.27	0.00	0.00	0.00	0.00	135.80	0.23
6	Delhi	60.68	0.12	0.00	0.00	842.09	12.58	902.77	1.52
7	Goa	339.00	0.66	148.26	7.87	165.19	2.47	652.45	1.10
8	Gujarat	655.61	1.29	0.00	0.00	576.20	8.61	1231.80	2.07
9	Haryana	2309.10	4.53	0.00	0.00	0.00	0.00	2309.10	3.88
10	Himachal Pradesh	1360.10	2.67	0.00	0.00	0.00	0.00	1360.10	2.28
11	Jammu & Kashmir (incl. Ladakh)	1424.62	2.79	0.40	0.02	0.16	0.00	1425.18	2.39
12	Jharkhand	192.84	0.38	0.00	0.00	0.00	0.00	192.84	0.32
13	Karnataka	407.92	0.80	258.33	13.71	0.00	0.00	666.25	1.12
14	Kerala	964.43	1.89	595.04	31.58	0.00	0.00	1559.47	2.62
15	Madhya Pradesh	117.33	0.23	0.00	0.00	0.00	0.00	117.33	0.20
16	Maharashtra	533.95	1.05	227.91	12.10	24.85	0.37	786.71	1.32
17	Manipur	784.21	1.54	0.00	0.00	3.98	0.06	788.19	1.32
18	Meghalaya	65.42	0.13	0.00	0.00	0.00	0.00	65.42	0.11
19	Mizoram	0.00	0.00	21.03	1.12	0.00	0.00	21.03	0.04
20	Nagaland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	Odisha	5072.73	9.95	175.37	9.31	1484.79	22.19	6732.89	11.30
22	Puducherry	62.05	0.12	3.03	0.16	276.83	4.14	341.91	0.57
23	Punjab	749.10	1.47	0.00	0.00	1299.24	19.42	2048.34	3.44
24	Rajasthan	224.17	0.44	0.00	0.00	0.00	0.00	224.17	0.38

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Table-6: Distribution of Capital Expenditure by Sub-Major Head of Accounts of the Union and State/UT Governments during 2005-2020

(₹ in crore)

Sl. No.	Name of States/UTs	Flood Control (01)		Anti-Sea Erosion (02)		Drainage (03)		Total (99)	
		Exp.	%	Exp.	%	Exp.	%	Exp.	%
25	Sikkim	80.22	0.16	0.00	0.00	14.85	0.22	95.07	0.16
26	Tamil Nadu	2159.44	4.24	281.24	14.93	0.00	0.00	2440.67	4.10
27	Telangana	282.20	0.55	0.00	0.00	0.32	0.00	282.52	0.47
28	Tripura	155.92	0.31	0.00	0.00	0.00	0.00	155.92	0.26
29	Union Government	145.57	0.29	152.56	8.10	0.00	0.00	298.13	0.50
30	Uttar Pradesh	6947.09	13.63	0.00	0.00	428.75	6.41	7375.83	12.38
31	Uttarakhand	1418.58	2.78	0.00	0.00	0.99	0.01	1419.56	2.38
32	West Bengal	6389.49	12.53	21.07	1.12	994.14	14.86	7404.70	12.43
	Total (99)	**50984.87**	**100.00**	**1884.24**	**100.00**	**6691.32**	**100.00**	**59560.42**	**100.00**

Source: Annual Report of "Combined Finance and Revenue Accounts of the Union & State Governments" for the year 2005-2020, Comptroller and Auditor General of India (CAG)
(Exp.): Expenditure

Figure 8: Flood Control
(Capital Expenditure in Top Five States during 2005-2020)

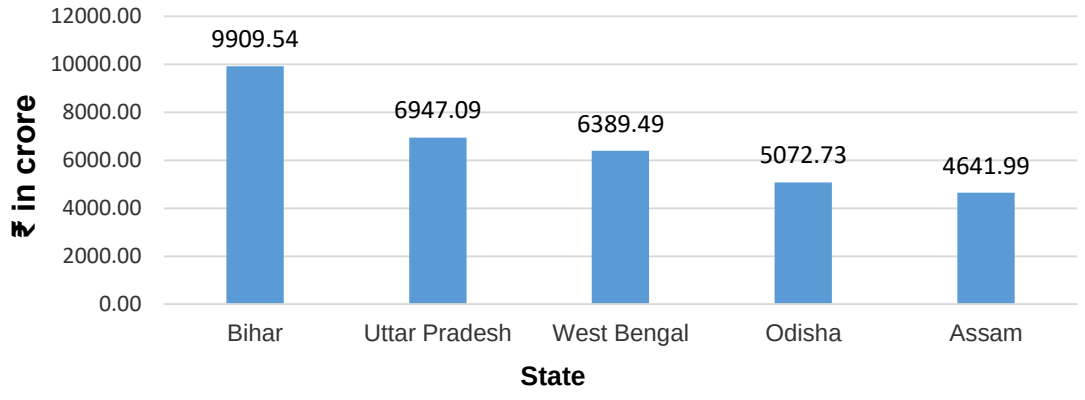

Figure-8 shows that the states namely, Bihar, Uttar Pradesh, West Bengal, Odisha and Assam have implemented flood control related projects considerably higher compared to other states. Mizoram and Nagaland have not taken up any such project.

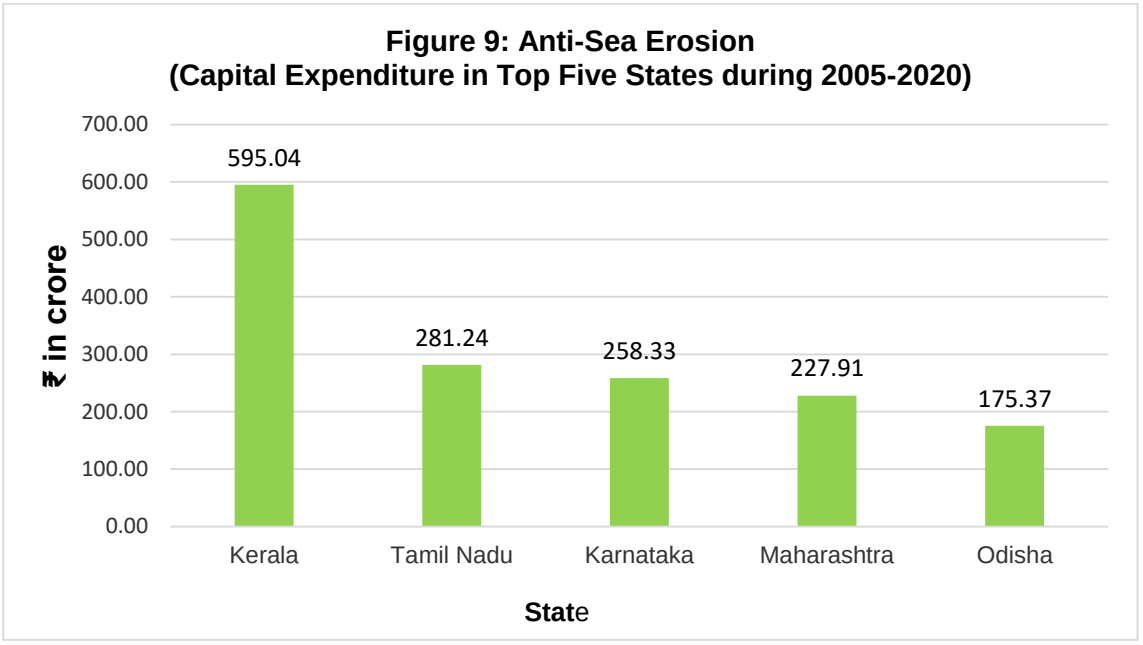

Figure-9 shows that the capital expenditure for Anti-Sea Erosion is considerable only in Kerala, Tamil Nadu, Karnataka, Maharashtra and Odisha.

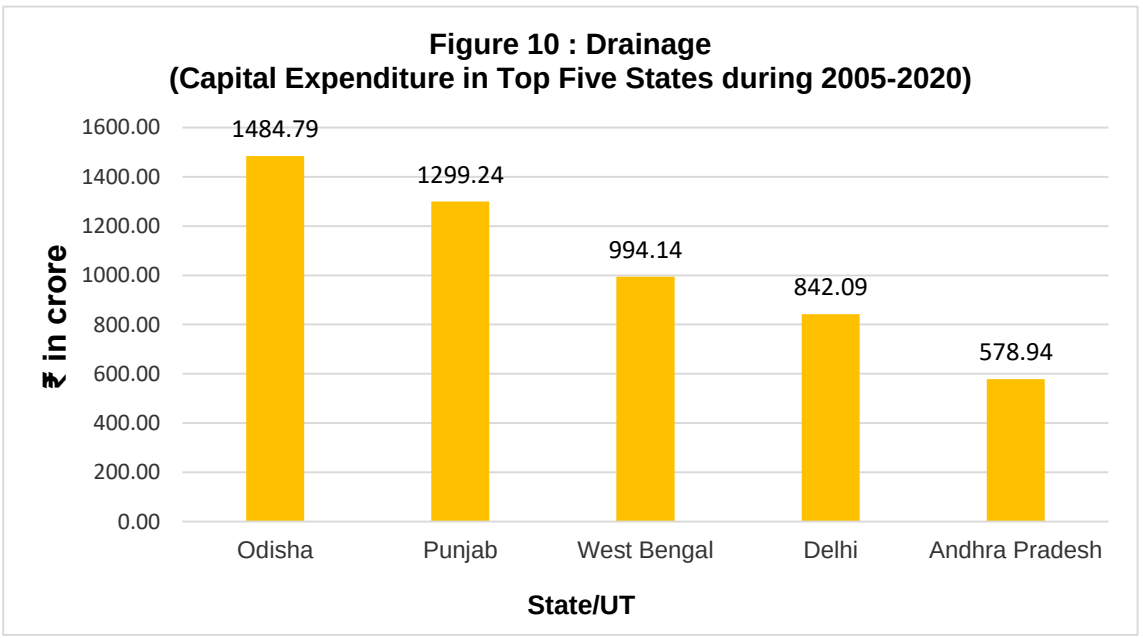

Figure-10 shows that the expenditure for Drainage is considerable only in Odisha, Punjab, West Bengal, Delhi and Andhra Pradesh.

Table-7 presents the revenue expenditure of the States/UTs-wise incurred during 2005-2020 by sub-major heads of accounts namely Flood Control, Anti-Sea Erosion and Drainage.

Table-7: Distribution of Revenue Expenditure by Sub-Major Head of Accounts of the Union and State/UT Governments during 2005-2020

(₹ in crore)

Sl. No.	Name of States/UTs	Flood Control (01)		Anti-Sea Erosion (02)		Drainage (03)		Total (99)	
		Exp.	%	Exp.	%	Exp.	%	Exp	%
1	Andhra Pradesh	11.55	0.06	0.00	0.00	879.81	22.00	891.36	3.76
2	Arunachal Pradesh	108.46	0.57	0.00	0.00	0.00	0.00	108.46	0.46
3	Assam	2945.31	15.44	0.00	0.00	0.00	0.00	2945.31	12.43
4	Bihar	2924.86	15.34	0.00	0.00	233.86	5.85	3158.73	13.33
5	Chhattisgarh	12.90	0.07	0.00	0.00	0.00	0.00	12.90	0.05
6	Delhi	476.61	2.50	0.00	0.00	1088.53	27.22	1565.14	6.61
7	Goa	135.41	0.71	22.72	3.65	21.08	0.53	179.21	0.76
8	Gujarat	356.89	1.87	0.00	0.00	97.14	2.43	454.02	1.92
9	Haryana	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	Himachal Pradesh	129.03	0.68	0.00	0.00	0.00	0.00	129.03	0.54
11	Jammu & Kashmir (incl. Ladakh)	898.43	4.71	0.00	0.00	0.00	0.00	898.43	3.79
12	Jharkhand	4.20	0.02	0.00	0.00	0.00	0.00	4.20	0.02
13	Karnataka	0.00	0.00	11.00	1.77	0.00	0.00	11.00	0.05
14	Kerala	276.15	1.45	167.11	26.87	0.00	0.00	443.27	1.87
15	Madhya Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	Maharashtra	0.00	0.00	119.25	19.17	200.53	5.02	319.78	1.35
17	Manipur	187.10	0.98	0.00	0.00	0.00	0.00	187.10	0.79
18	Meghalaya	12.30	0.06	0.00	0.00	0.00	0.00	12.30	0.05
19	Mizoram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	Nagaland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	Odisha	1405.05	7.37	270.33	43.47	218.02	5.45	1893.40	7.99
22	Puducherry	15.18	0.08	0.00	0.00	11.28	0.28	26.46	0.11
23	Punjab	1410.34	7.39	0.00	0.00	0.00	0.00	1410.34	5.95
24	Rajasthan	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	Sikkim	90.19	0.47	0.00	0.00	0.00	0.00	90.19	0.38
26	Tamil Nadu	1215.92	6.38	0.00	0.00	15.42	0.39	1231.35	5.20
27	Telangana	0.13	0.00	0.00	0.00	0.00	0.00	0.13	0.00
28	Tripura	150.58	0.79	0.00	0.00	0.00	0.00	150.58	0.64
29	Union Government[1]	2782.20	14.59	31.52	5.07	0.00	0.00	2813.73	11.88
30	Uttar Pradesh	934.91	4.90	0.00	0.00	522.49	13.07	1457.40	6.15
31	Uttarakhand	60.27	0.32	0.00	0.00	0.00	0.00	60.27	0.25
32	West Bengal	2528.73	13.26	0.00	0.00	710.30	17.76	3239.03	13.67
	Total (99)	**19072.73**	**100.00**	**621.93**	**100.00**	**3998.45**	**100.00**	**23693.11**	**100.00**

Source: Annual Report of "Combined Finance and Revenue Accounts of the Union & State Governments" for the year 2005-2020, Comptroller and Auditor General of India (CAG).

Note: Year-wise distributions of revenue expenditure have been presented in Appendix Tables A1 - A3.

1: In these tables Union Government has been shown separately. It Corresponds to the project directly spent by Union Government especially for UT's.

Figure 11: Flood Control
(Revenue Expenditure in Top Five States/Union Government during 2005-2020)

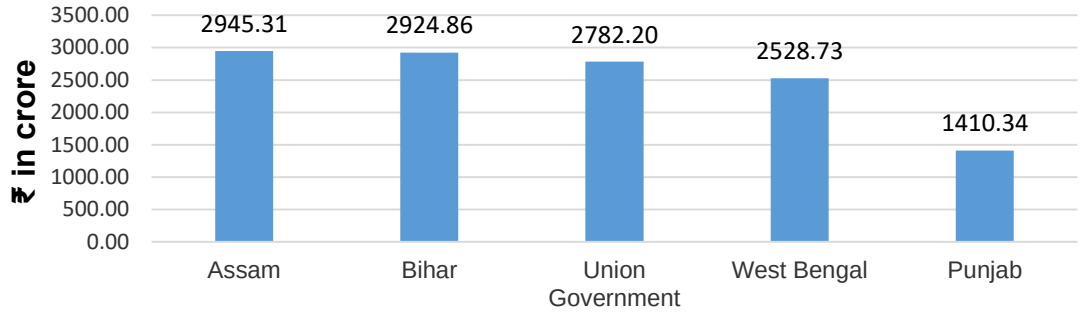

Figure-11 shows that the states namely, Assam, Bihar, Union Government, West Bengal and Punjab have implemented flood control related projects considerably higher compared to other states.

Figure 12: Anti-Sea Erosion
(Revenue Expenditure in Top Five States/Union Government during 2005-2020)

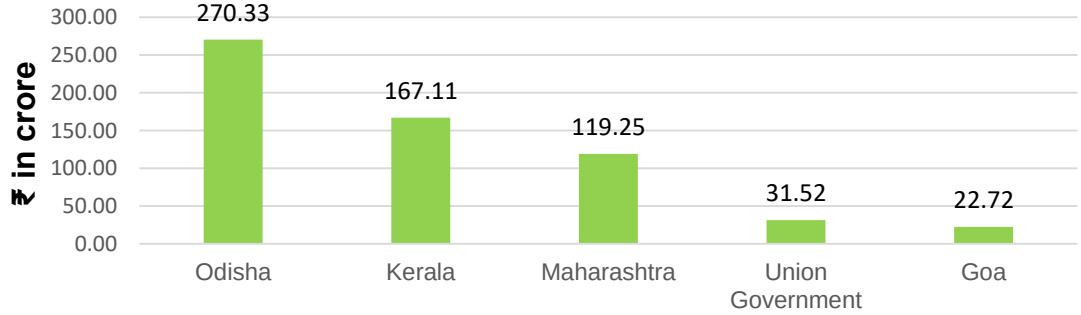

Figure-12 shows that the revenue expenditure was considerable only in Odisha, Kerala and Maharashtra.

Figure 13 : Drainage
(Revenue Expenditure in Top Five States during 2005-2020)

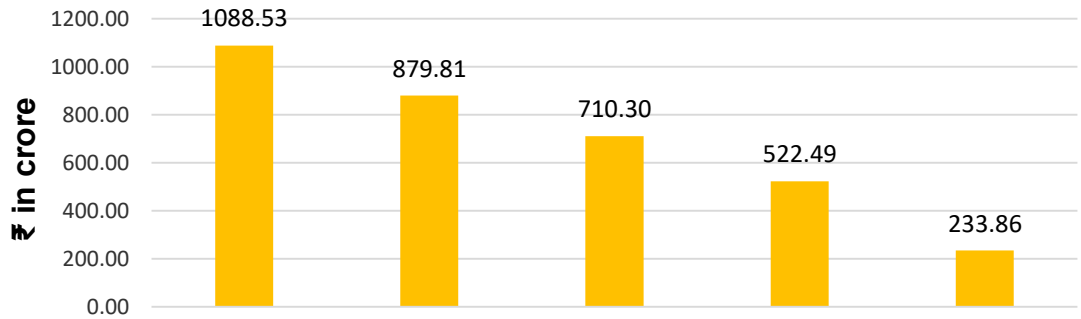

Figure-13 shows that the expenditure for Drainage is considerable only in Delhi, Andhra Pradesh, West Bengal, Uttar Pradesh and Bihar.

Table-8 presents the break-up of expenditure incurred during 2005-2020 by minor head of accounts. Here, it may be mentioned that there are 34 minor heads for which some expenditure has been recorded by the Comptroller & Auditor General (CAG) under the major heads 2711 and 4711. Out of 34, total expenditure under 26 minor heads of accounts are reported ₹1crore or more. These minor heads of accounts have been presented separately in this table. However, only three minor heads (Direction & Administration. Civil work and Other Expenditure) are reported as 82.87% of the total expenditure and remaining 23 minor heads are reported as 17.13% of the total expenditure.

Table-8: Break up of expenditure by minor head of accounts during last 15 years (2005 to 2020)

Minor Head of Account		Revenue Expenditure		Capital Expenditure		Total Expenditure	
		Value (₹ in crore)	%	Value (₹ in crore)	%	Value (₹ in crore)	%
001	Direction & Administration	9452.06	39.87	47921.61	9.62	57392.81	10.99
004	Research	3.18	0.01	0.00	0.00	3.18	0.00
005	Survey & Investigation	4.02	0.02	0.00	0.00	4.02	0.00
051	Construction	0.00	0.00	20609.73	4.14	20609.73	3.95
052	Machinery & Equipment	1450.60	6.12	558.32	0.11	2008.91	0.38
103	Civil work	6163.79	26.00	297610.91	59.72	303755.27	58.19
104	Drainage in industrial Estates	0.00	0.00	6.27	0.00	6.27	0.00
106	original works	0.00	0.00	232.21	0.05	232.21	0.04
190	Investment in Public Sector & other Undertakings	119.25	0.50	2457.98	0.49	2577.23	0.49
192	Assistance to Municipalities/Municipal Councils	6.50	0.03	0.00	0.00	6.50	0.00
198	Assistance to Gram Panchayats	1.12	0.00	0.00	0.00	1.12	0.00
201	Drainage & Flood Control	0.00	0.00	16063.11	3.22	16063.11	3.08
202	Ujjain Diversion Drain scheme	0.00	0.00	1301.27	0.26	1301.27	0.25

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Table-8: Break up of expenditure by minor head of accounts during last 15 years (2005 to 2020)

Minor Head of Account		Revenue Expenditure		Capital Expenditure		Total Expenditure	
		Value (₹ in crore)	%	Value (₹ in crore)	%	Value (₹ in crore)	%
203	Anti-water-Logging Scheme	0.00	0.00	1959.03	0.39	1959.03	0.38
204	Minor irrigation Scheme	0.00	0.00	12.43	0.00	12.43	0.00
205	Jagadhari Tube wells Projects	0.00	0.00	11.30	0.00	11.30	0.00
206	Installation of Tube wells in western Yamuna canal Tract	0.00	0.00	6.49	0.00	6.49	0.00
207	Gurogaon Canal project	0.00	0.00	15.11	0.00	15.11	0.00
208	Drainage project	0.00	0.00	37.86	0.01	37.86	0.01
209	Investigation and Research Scheme	0.00	0.00	11.81	0.00	11.81	0.00
210	Massani Barrage Project	0.00	0.00	346.47	0.07	346.47	0.07
299	Other Schemes each costing ₹one crore and less	0.00	0.00	16.31	0.00	16.31	0.00
789	Special Component Plan for SC	13.06	0.06	28590.52	5.74	28603.57	5.48
796	Tribal area sub Plan	8.50	0.04	6032.30	1.21	6040.80	1.16
799	Suspense	141.14	0.60	9399.75	1.89	9540.89	1.83
800	Other Expenditure	6347.11	26.77	65115.29	13.07	71462.75	13.69
	Total	**23710.33**	**100.00**	**498316.08**	**100.00**	**522026.45**	**100.00**

Source: Annual Report of "Combined Finance and Revenue Accounts of the Union & State Governments" for the year 2005-2020, Comptroller and Auditor General of India (CAG)

In the CAG's report cumulative capital expenditure since beginning by head of accounts is given. Accordingly, the capital expenditure till March 2020 incurred by sub-major head of account has been presented in Table 9.

Table-9: Distribution of Cumulative Capital Expenditure by Sub-Major Head of Accounts of the Union and State/UT Governments upto March 2020

(₹ in crore)

Sl. No.	Name of States/UTs	Flood Control (01)		Anti-Sea Erosion (02)		Drainage (03)		Total (99)	
		Exp.	%	Exp.	%	Exp.	%	Exp.	%
1	Andhra Pradesh	2757.19	5.03	0.00	0.00	1186.05	12.99	3943.24	5.93
2	Arunachal Pradesh	916.31	1.67	5.14	0.21	0.00	0.00	921.44	1.39
3	Assam	5405.42	9.86	0.00	0.00	0.00	0.00	5405.42	8.14
4	Bihar	11161.89	20.36	0.00	0.00	26.59	0.29	11188.47	16.84
5	Chhattisgarh	141.35	0.26	0.00	0.00	0.00	0.00	141.35	0.21
6	Delhi	82.33	0.15	0.00	0.00	1151.00	12.61	1233.34	1.86
7	Goa	346.86	0.63	152.84	6.12	175.33	1.92	675.03	1.02
8	Gujarat	684.40	1.25	0.00	0.00	754.77	8.27	1439.17	2.17
9	Haryana	2639.59	4.82	0.00	0.00	0.00	0.00	2639.59	3.97
10	Himachal Pradesh	1448.87	2.64	0.00	0.00	0.93	0.01	1449.80	2.18
11	Jammu & Kashmir (incl. Ladakh)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	Jharkhand	196.35	0.36	0.00	0.00	0.00	0.00	196.35	0.30
13	Karnataka	547.38	1.00	254.89	10.21	0.00	0.00	802.27	1.21
14	Kerala	1052.92	1.92	878.53	35.19	0.00	0.00	1931.45	2.91
15	Madhya Pradesh	0.00	0.00	138.77	5.56	0.00	0.00	138.77	0.21
16	Maharashtra	556.14	1.01	276.43	11.07	40.49	0.44	873.06	1.31
17	Manipur	844.78	1.54	0.00	0.00	3.98	0.04	848.76	1.28
18	Meghalaya	97.34	0.18	0.00	0.00	0.00	0.00	97.34	0.15
19	Mizoram	0.00	0.00	21.03	0.84	0.00	0.00	21.03	0.03
20	Nagaland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	Odisha	5281.04	9.63	186.95	7.49	1516.16	16.61	6984.15	10.51
22	Puducherry	89.77	0.16	8.49	0.34	309.43	3.39	407.69	0.61
23	Punjab	976.83	1.78	0.00	0.00	1954.93	21.41	2931.75	4.41

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Table-9: Distribution of Cumulative Capital Expenditure by Sub-Major Head of Accounts of the Union and State/UT Governments upto March 2020

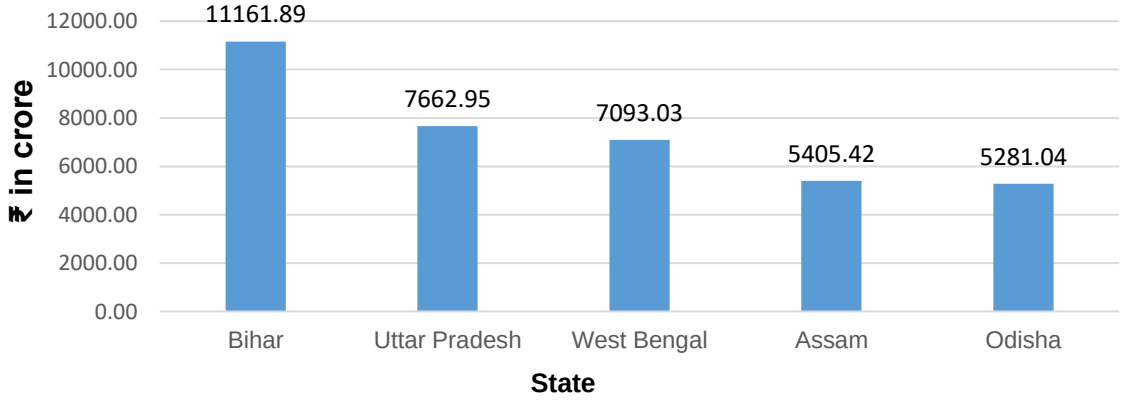
(₹ in crore)

Sl. No.	Name of States/UTs	Flood Control (01)		Anti-Sea Erosion (02)		Drainage (03)		Total (99)	
		Exp.	%	Exp.	%	Exp.	%	Exp.	%
24	Rajasthan	382.27	0.70	0.00	0.00	0.00	0.00	382.27	0.58
25	Sikkim	83.78	0.15	0.00	0.00	15.35	0.17	99.13	0.15
26	Tamil Nadu	2226.77	4.06	337.61	13.52	7.00	0.08	2571.37	3.87
27	Telangana	282.20	0.51	0.00	0.00	0.32	0.00	282.52	0.43
28	Tripura	231.66	0.42	0.00	0.00	0.00	0.00	231.66	0.35
29	Union Government	190.68	0.35	201.38	8.07	35.89	0.39	427.95	0.64
30	Uttar Pradesh	7662.95	13.98	0.00	0.00	481.44	5.27	8144.39	12.26
31	Uttarakhand	1439.17	2.63	0.00	0.00	0.99	0.01	1440.16	2.17
32	West Bengal	7093.03	12.94	34.19	1.37	1468.43	16.09	8595.65	12.94
	Total (99)	**54819.26**	**100.00**	**2496.25**	**100.00**	**9129.07**	**100.00**	**66444.58**	**100.00**

Source: Annual Report of "Combined Finance and Revenue Accounts of the Union & State Governments" for the year upto March 2020, Comptroller and Auditor General of India (CAG)
(Exp.): Expenditure

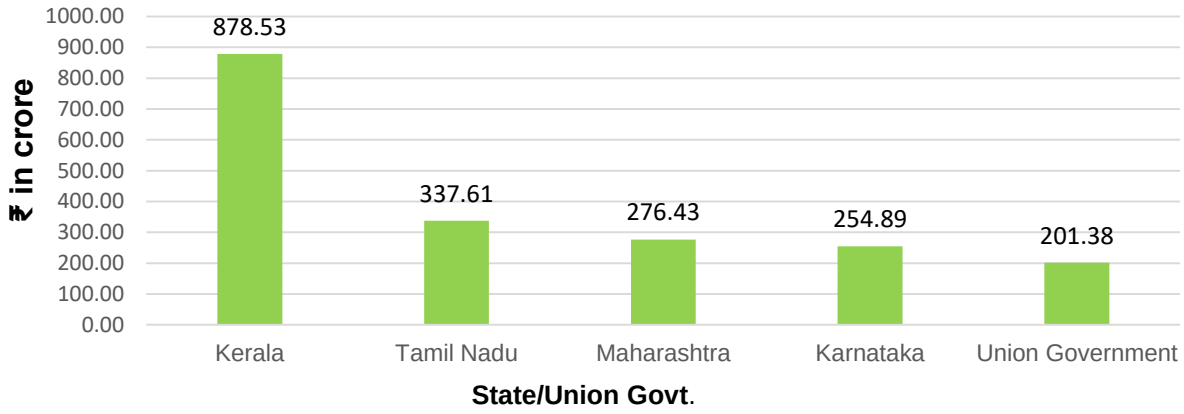
In percentage terms, Bihar (16.84%) has the maximum share of total capital expenditure – followed by West Bengal (12.94%), Uttar Pradesh (12.26%), Odisha (10.51%) and Assam (8.14%), Share of rest of States were less than 6.00%.

Figure 16: Flood Control (Cumulative Capital Expenditure in Top Five States during 2005-2020)



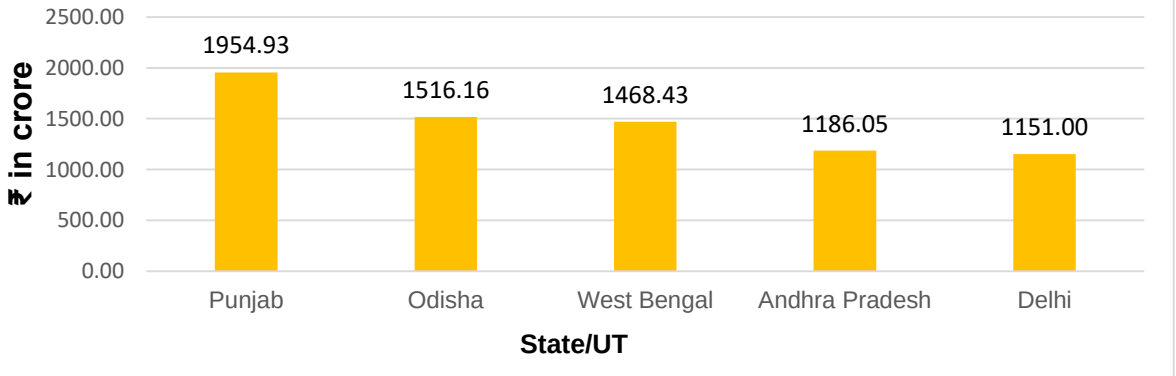
As regards flood control, being major component of the total expenditure, the expenditure pattern of States was similar to their total expenditure. The table revealed that Bihar spent maximum capital expenditure amounting to 20.36% of total expenditure on flood control followed by Uttar Pradesh (13.98%), West Bengal (12.94), Assam (9.86%) and Odisha (9.63%).

Figure 17: Anti-Sea Erosion (Cumulative Capital Expenditure in Top Five States/Union Government during 2005-2020)



For anti-sea erosion projects, 35.19% of the total capital expenditure incurred was in Kerala followed by Tamil Nadu (13.52%), Maharashtra (11.07%), Karnataka (10.21%) and Union Government (8.07%).

Figure 18 : Drainage (Cumulative Capital Expenditure in Top Five States during 2005-2020)



For drainage projects, cumulative capital expenditure is maximum in Punjab (21.41%) followed by, Odisha (16.61%), West Bengal (16.09%), Andhra Pradesh (12.99%) and Delhi (12.61). To summarise, the list of States incurring significant cumulative capital expenditure since beginning has been depicted in Table 10.

Table-10: List of States/Union Government incurred major expenditure by type of project

Flood Control (01)	Anti-Sea Erosion (02)	Drainage (03)	Total (99)
Bihar	Kerala	Punjab	Bihar
Uttar Pradesh	Tamil Nadu	Odisha	West Bengal
West Bengal	Maharashtra	West Bengal	Uttar Pradesh
Assam	Karnataka	Andhra Pradesh	Odisha
Odisha	Union Government	Delhi	Assam

5.2 Physical Performance of Flood Control and Drainage Projects

Floods are water related disasters, which the life on earth has to encounter from time to time. Water management, in a broader sense, includes management of flood and water related disaster to mitigate the misery of humans, animals and infrastructure & property. Floods continue to plague many parts of the country which are faced almost every year in varying magnitudes. After the unprecedented floods of 1954, the Government of India took several initiatives and constituted number of committees to suggest a suitable Flood Management strategy to be followed to reduce the impact of devastating floods. Providing absolute protection instantly to all flood prone areas is neither practically possible nor economically viable. Such an attempt would involve stupendously high cost of construction and maintenance besides time to implement the schemes. Hence a practical approach is to provide a reasonable degree of protection against floods damage at economic cost through a combination of structural measures, non-structural measures and catchment area treatment.

Flood management activities can be broadly classified into four major groups

- Attempt to modify the floods
- Attempt to modify the susceptibility to damage due to floods
- Attempts to modify the burden of loss
- Bearing of loss due to flood

All these measures for flood management can be classified under structural measures and non-structural measures. Broadly speaking, all physical measures like modifying the flood are classified as structural measures while all other measures are defined as non-structural measures.

The general approach about flood management has been in the form of physical measure to prevent the flood water from reaching potential damage centres. The main thrust of the flood protection programme undertaken in India, so far has been of structural measures like (i) Embankment, flood walls (ii) Dams and reservoirs (iii) Natural detention basin (iv) Channel improvement (v) Drainage improvement and (vi) Diversion of Flood water.

Table A4 in Appendix presents the extent of damage in terms of monetary value as well as physical assets including loss of cattle and human lives at all-India level. The summary of the findings based on this table is presented in the following paragraphs.

Table 11 below presents the extent of damage due to floods for the entire country was estimated to be ₹58433.40 crore during the flood season 2021. The average annual damages to crops, houses and public utilities from the year 1953 to 2021 as reported by the state/UTs are of the order of ₹6972 Crore, the maximum annual damage being ₹58433.40 crore during 2021.

A comparative details of damages occurred during the flood seasons 2019 to 2021 on different accounts, based on the reports (Tentative), receipt from the revenue authorities of the state government is given in the table.

Table-11: Damages occurred during flood season for the year 2019 to 2021

Sl. No.	Items	Total Damages occurred during the year			Average	Flood Damages during 1953-2021	
		2019	2020	2021	1953-2021	Maximum	
						Damage	Year
1	Area affected (Mha)	11.60	6.90	16.75	7.38	17.50	1978
2	Population affected (Million)	46.35	26.79	38.56	32.42	70.45	1978
3	Crop area damaged (Mha)	10.69	6.55	7.40	4.10	12.30	2005
4	Damage to crops (₹ in crore)	10902.35	5626.02	29229.72	2328.87	29229.72	2021
5	Damage to houses (Nos.)	656595	239539	461205	1202735	3959191	2015
6	Damage to houses (₹ in crore)	462.79	272.10	3960.07	883.74	10809.80	2009
7	Cattle lost (No.)	25852	46911	64880	90540	618248	1979
8	Human live lost (Nos.)	2754	1474	1371	1666	11316	1977
9	Damage to public utilities (₹ in crore)	4498.39	5458.01	25243.61	3759.32	38937.84	2013
10	Total Damage to crops, houses & public utilities (₹ in crore)	15863.53	11356.13	58433.40	6971.92	58433.40	2021

Source: FM-II Directorate, Central Water Commission
(Mha): Million Hectares

Table-12: States/UTs-wise Maximum Area Affected by Floods from 1953 to 2021

Sl. No.	States/UTs	Max Area affected (Mha)	Year of Maximum Area affected
1	Andhra Pradesh	9.040	2005
2	Arunachal Pradesh	0.743	2018
3	Assam	3.820	1988
4	Bihar	4.260	1971
5	Chhattisgarh	0.089	2001
6	Delhi	0.458	1997
7	Goa	0.000	
8	Gujarat	2.902	2020
9	Haryana	1.000	1977
10	Himachal Pradesh	2.870	1999
11	Jammu & Kashmir	0.651	2014
12	Jharkhand	0.041	2012
13	Karnataka	3.780	2016
14	Kerala	3.150	2018
15	Madhya Pradesh	6.047	2019
16	Maharashtra	0.391	2002
17	Manipur	0.116	2002
18	Meghalaya	0.095	1987
19	Mizoram	0.541	1993
20	Nagaland	0.568	2017
21	Odisha	3.970	2014
22	Punjab	2.790	1988
23	Rajasthan	3.260	1977
24	Sikkim	1.170	2000
25	Tamil Nadu	1.466	2010
26	Telangana	0.000	
27	Tripura	0.330	1963
28	Uttar Pradesh	7.340	1978
29	Uttarakhand	0.059	2013
30	West Bengal	3.080	1978
31	Andaman & Nicobar Island	0.030	1988
32	Chandigarh	0.000	
33	Dadar & Nagar Haveli and Daman & Diu	0.000	
34	Ladakh	0.000	
35	Lakshadweep	0.000	
36	Puducherry	0.050	1977
	Total	**64.107**	

Source: FM-II Directorate, Central Water Commission, M/o Jal Shakti

1. As per the reports received in CWC from State Revenue Authorities & MHA.

(Mha): Million Hectares

Figure 19: Area affected due to flood from 1953 to 2021

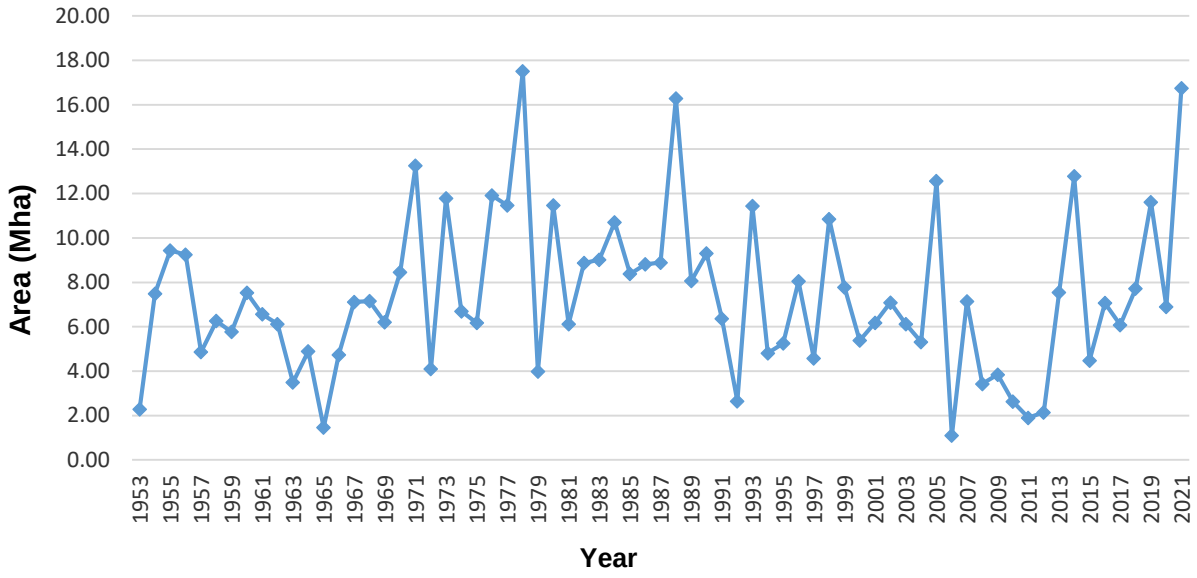


Figure-19 depicts the area affected by flood in India from 1953 to 2021. The chart shows ups and downs over the years. The maximum damage was observed in 1978 and 2021 while the minimum loss was experienced in 1965 and 2006.

Figure 20: Population affected in million from 1953 to 2021

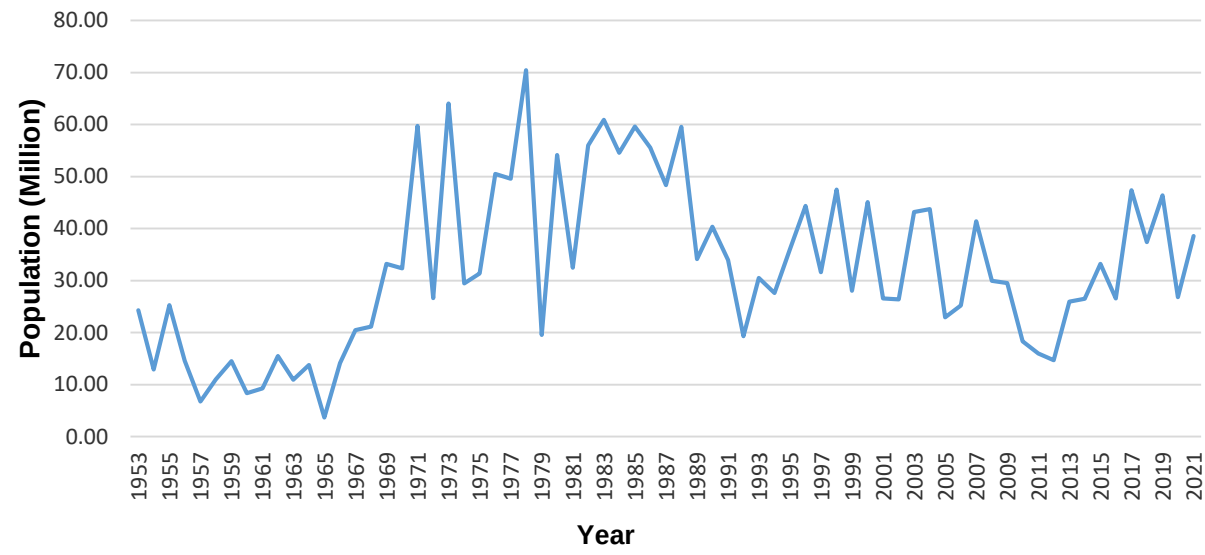


Figure-20 presents the population affected by flood in India during 1953 to 2021. The chart shows the effect is fluctuating. The population affected was the highest in 1978 while it was the lowest in 1965. A trend line fitted in the chart shows there is a slow increasing trend with fluctuation in the population affected over the years from 1953 to 2021. In spite of undertaking extensive flood control measures, the size of affected population has increased during the period. However, population growth during that period was much faster.

Figure 21: Population affected vs Area affected from 1953 to 2021

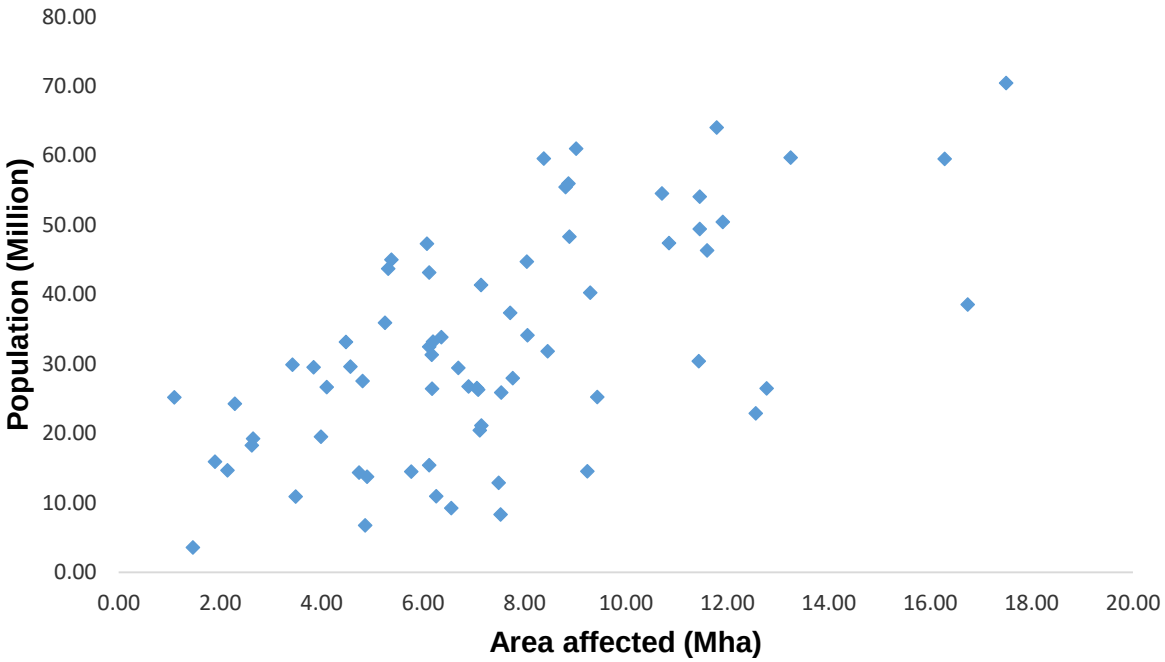


Figure-21 shows scatter diagram of area and population affected due to flood or heavy rain in the country over the period 1953-2021. It is expected that area and population affected due to flood or heavy rain would have a very high positive correlation. In reality, it is positive but not high. It is less than 0.6. It implies the areas affected over the years were different and they had varying population density.

Figure 22: Relation between total area affected with crop area affected due to floods/heavy rain

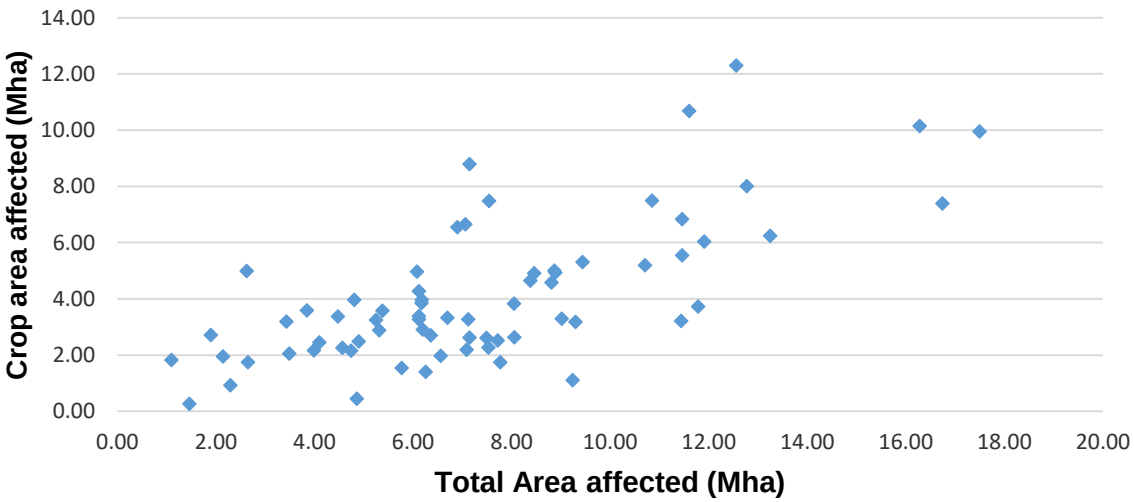


Figure- 22 shows a scatter diagram between crop areas affected and total area affected which shows that pattern of damages to crops is faster than damages to area.

For physical performance in protecting from flood, the following indicators are measured:

(i) Length of Embankments made

(ii) Length of drainage channels made

(iii) Number of towns /villages where protection works implemented

(iv) Number of villages raised/protected against flood and

(v) Area benefited from flood control projects

Embankment including ring bunds and protection works confine the flood flows. It is generally designed and constructed to afford a degree of protection against floods of a certain frequency and intensity or against the recorded maximum flood depending upon the location protected and their economic justification. The raising and strengthening of existing embankments have also been taken up in many flood prone States.

Drainage channel improvement is one of the important measures for flood or surface water drainage congestion in some pockets of the country. Under the flood management programme, construction of new channels or improvement in the discharge capacity of the existing drainage system is carried out.

Raising of a village here means making land-fills to keep houses above predetermined flood level even though nearby agricultural roads are liable to inundation and also connecting the village to nearby roads or high roads.

The details of the achievement made through flood control projects have been presented in Table 13. It gives cumulative progress up to end of XIIth Plan since start of the activities against the indicators listed above. It shows that Embankment works were carried out in most of the States. However, this work was found to be concentrated in six States, namely, West Bengal, Odisha, Assam, Uttar Pradesh, Bihar and Andhra Pradesh. These 6 States accounted 86.19% of total length of embankment made by Government Agencies in the country. The table also shows that the area benefitted was the highest in Bihar followed by West Bengal, Punjab, Assam, Haryana and Uttar Pradesh. These six States taken together comprises 79.26% of total embankment works carried out in the country up to end of XIIth Plan.

As regards construction of drainage channels, the share of Haryana, Andhra Pradesh, West Bengal, Punjab, and Uttar Pradesh was significantly higher than other states. In these five States, the total length of drainage channel provided was 35963.76 km out of the total 39726.7 km in the whole country.

In addition, at all-India level protection works against flood were carried out in 7713 villages and 2906 towns.

Table-13: Physical Achievements of Flood Management Works till end of 12th Plan

S. No.	Name of States/UTs	Area Benefited	Length of embankments	Length of drainage channel	Village raised/ protected	Town/ Vill. protection works	Raised Platforms
		(Mha)	(Km)	(Km)	(Nos.)	(Nos.)	(Nos.)
1	Andhra Pradesh	1.310	2230.00	13569.00	23	72	0
2	Arunachal Pradesh	0.100	65.23	16.92	17	30	0
3	Assam	2.110	4473.82	874.97	1100	911	0
4	Bihar	3.692	3759.91	365.00	0	204	58
5	Chhattisgarh	0.000	0.00	0.00	0	0	0
6	Delhi	0.078	83.00	453.00	0	0	0
7	Goa	0.003	23.19	32.77	0	2	0
8	Gujarat	0.483	104.12	271.00	30	805	0
9	Haryana	2.000	1144.00	4385.00	98	448	7
10	Himachal Pradesh	0.018	159.16	11.00	82	0	0
11	Jammu & Kashmir (incl. Ladakh)	0.217	560.68	324.00	1301	22	0
12	Jharkhand	0.001	14.00	0.00	5	2	0
13	Karnataka	0.005	73.52	10.00	0	0	0
14	Kerala	0.346	205.74	82.19	6	4	0
15	Madhya Pradesh	0.004	26.00	0.00	0	37	0
16	Maharashtra	0.001	44.50	110.00	0	0	0
17	Manipur	0.132	577.00	166.00	512	38	0
18	Meghalaya	0.015	112.00	0.00	10	8	0
19	Mizoram	0.000	0.00	0.00	0	38	0
20	Nagaland	0.632	10.52	0.00	0	8	0
21	Odisha	0.630	7137.75	650.00	14	29	0
22	Punjab	3.190	1370.00	6622.00	0	3	0
23	Rajasthan	0.082	145.00	197.00	0	25	0
24	Sikkim	0.041	101.81	64.86	0	18	0
25	Tamil Nadu	0.122	87.00	19.00	4	46	0
26	Tripura	0.033	141.74	95.23	0	11	0
27	Uttar Pradesh	1.703	3813.97	3995.00	4511	65	0
28	Uttarakhand	0.002	9.00	0.00	0	6	0
29	West Bengal	3.584	10539.00	7392.76	0	74	0
	Union Territories						
30	Andaman & Nicobar Island	0.000	0.00	0.00	0		0
31	Chandigarh	0.000	0.00	0.00	0		0
32	Dadra & Nagar Haveli	0.000	0.00	0.00	0		0
33	Daman & Diu	0.000	0.00	0.00	0		0
34	Lakshadweep	0.000	0.00	0.00	0		0
35	Puducherry	0.004	61.00	20.00	0		0
	Total	**20.538**	**37072.66**	**39726.70**	**7713**	**2906**	**65**

Source: FMP Directorate, Central Water Commission, M/o Jal Shakti
Table has been compiled from available information in the office and website of various State Govts/UTs.

APPENDIX TABLES

Table A-1: Distribution of Revenue Expenditure by Sub-Major Head of Accounts of the Union and State/UT Governments for the year 2005-06

(₹ in Lakh)

Sl. No.	Name of States/UTs	Flood Control (01)	Anti-Sea Erosion (02)	Drainage (03)	General (80)	Total (99)
1	Andhra Pradesh	180.71	0.00	7483.85	0.00	7664.56
2	Arunachal Pradesh	0.00	0.00	0.00	0.00	0.00
3	Assam	8074.08	0.00	0.00	0.00	8074.08
4	Bihar	4860.95	0.00	829.73	0.00	5690.68
5	Chhattisgarh	0.00	0.00	0.00	0.00	0.00
6	Delhi	1538.79	0.00	2988.34	0.00	4527.13
7	Goa	79.94	16.62	8.41	0.00	104.97
8	Gujarat	177.58	0.00	150.40	0.00	327.98
9	Haryana	0.00	0.00	0.00	0.00	0.00
10	Himachal Pradesh	28.64	0.00	0.00	0.00	28.64
11	Jammu & Kashmir (incl. Ladakh)	3281.41	0.00	0.00	0.00	3281.41
12	Jharkhand	0.00	0.00	0.00	0.00	0.00
13	Karnataka	0.00	48.95	0.00	0.00	48.95
14	Kerala	979.34	848.60	0.00	0.00	1827.94
15	Madhya Pradesh	0.00	0.00	0.00	0.00	0.00
16	Maharashtra	0.00	0.00	1382.26	0.00	1382.26
17	Manipur	749.62	0.00	0.00	149.84	899.46
18	Meghalaya	64.10	0.00	0.00	0.00	64.10
19	Mizoram	0.00	0.00	0.00	0.00	0.00
20	Nagaland	0.00	0.00	0.00	0.00	0.00
21	Odisha	3118.31	531.71	89.33	0.00	3739.35
22	Puducherry	54.75	0.00	143.55	0.00	198.30
23	Punjab	4489.03	0.00	0.00	0.00	4489.03
24	Rajasthan	0.00	0.00	0.00	0.00	0.00
25	Sikkim	283.76	0.00	0.00	0.00	283.76
26	Tamil Nadu	419.86	0.00	495.58	0.00	915.44
27	Tripura	653.59	0.00	0.00	0.00	653.59
28	Union Government	12382.73	418.00	0.00	0.00	12800.73
29	Uttar Pradesh	2703.56	0.00	746.37	0.00	3449.93
30	Uttarakhand	290.78	0.00	0.00	0.00	290.78
31	West Bengal	3539.40	0.00	4997.42	60.92	8597.74
	Total (99)	**47950.93**	**1863.88**	**19315.24**	**210.76**	**69340.81**

Source: Annual Report of "Combined Finance and Revenue Accounts of the Union & State Governments" for the year 2005-06, Comptroller and Auditor General of India (CAG)

Table A-1: Distribution of Revenue Expenditure by Sub-Major Head of Accounts of the Union and State/UT Governments for the year 2006-07

(₹ in Lakh)

Sl. No.	Name of States/UTs	Flood Control (01)	Anti-Sea Erosion (02)	Drainage (03)	General (80)	Total (99)
1	Andhra Pradesh	119.36	0.00	7365.38	0.00	7484.74
2	Arunachal Pradesh	1534.65	0.00	0.00	0.00	1534.65
3	Assam	9929.35	0.00	0.00	0.00	9929.35
4	Bihar	4905.18	0.00	892.04	0.00	5797.22
5	Chhattisgarh	0.00	0.00	0.00	0.00	0.00
6	Delhi	1454.35	0.00	2701.94	0.00	4156.29
7	Goa	221.65	47.83	35.46	0.00	304.94
8	Gujarat	390.04	0.00	767.29	0.00	1157.33
9	Haryana	0.00	0.00	0.00	0.00	0.00
10	Himachal Pradesh	47.06	0.00	0.00	0.00	47.06
11	Jammu & Kashmir (incl. Ladakh)	3294.25	0.00	0.00	0.00	3294.25
12	Jharkhand	0.00	0.00	0.00	0.00	0.00
13	Karnataka	0.00	59.43	0.00	0.00	59.43
14	Kerala	257.57	282.31	0.00	0.00	539.88
15	Madhya Pradesh	0.00	0.00	0.00	0.00	0.00
16	Maharashtra	0.00	0.00	745.36	0.00	745.36
17	Manipur	546.40	0.00	0.00	279.38	825.78
18	Meghalaya	54.75	0.00	0.00	0.00	54.75
19	Mizoram	0.00	0.00	0.00	0.00	0.00
20	Nagaland	0.00	0.00	0.00	0.00	0.00
21	Odisha	4061.51	572.63	204.44	0.00	4838.58
22	Puducherry	104.53	0.00	156.96	0.00	261.49
23	Punjab	4790.23	0.00	0.00	0.00	4790.23
24	Rajasthan	0.00	0.00	0.00	0.00	0.00
25	Sikkim	777.96	0.00	0.00	0.00	777.96
26	Tamil Nadu	209.88	0.00	80.51	0.00	290.39
27	Tripura	771.23	0.00	0.00	0.00	771.23
28	Union Government	13284.34	235.42	0.00	0.00	13519.76
29	Uttar Pradesh	2749.78	0.00	632.04	0.00	3381.82
30	Uttarakhand	276.80	0.00	0.00	0.00	276.80
31	West Bengal	3788.12	0.00	6052.46	25.40	9865.98
	Total (99)	**53568.99**	**1197.62**	**19633.88**	**304.78**	**74705.27**

Source: Annual Report of "Combined Finance and Revenue Accounts of the Union & State Governments" for the year 2006-07, Comptroller and Auditor General of India (CAG)

Table A-1: Distribution of Revenue Expenditure by Sub-Major Head of Accounts of the Union and State/UT Governments for the year 2007-08

(₹ in Lakh)

Sl. No.	Name of States/UTs	Flood Control (01)	Anti-Sea Erosion (02)	Drainage (03)	General (80)	Total (99)
1	Andhra Pradesh	251.00	0.00	1841.20	0.00	2092.20
2	Arunachal Pradesh	698.36	0.00	0.00	0.00	698.36
3	Assam	10826.87	0.00	0.00	0.00	10826.87
4	Bihar	6455.89	0.00	964.10	0.00	7419.99
5	Chhattisgarh	0.00	0.00	0.00	0.00	0.00
6	Delhi	1504.96	0.00	2827.72	0.00	4332.68
7	Goa	283.86	57.18	74.33	0.00	415.37
8	Gujarat	690.51	0.00	235.90	0.00	926.41
9	Haryana	0.00	0.00	0.00	0.00	0.00
10	Himachal Pradesh	61.20	0.00	0.00	0.00	61.20
11	Jammu & Kashmir (incl. Ladakh)	3467.88	0.00	0.00	0.00	3467.88
12	Jharkhand	0.00	0.00	0.00	0.00	0.00
13	Karnataka	0.00	39.45	0.00	0.00	39.45
14	Kerala	1028.74	708.08	0.00	0.00	1736.82
15	Madhya Pradesh	0.00	0.00	0.00	0.00	0.00
16	Maharashtra	0.00	0.00	920.30	0.00	920.30
17	Manipur	813.06	0.00	0.00	0.00	813.06
18	Meghalaya	64.00	0.00	0.00	0.00	64.00
19	Mizoram	0.00	0.00	0.00	0.00	0.00
20	Nagaland	0.00	0.00	0.00	0.00	0.00
21	Odisha	6206.69	916.80	283.37	0.00	7406.86
22	Puducherry	287.00	0.00	100.00	0.00	387.00
23	Punjab	5490.96	0.00	0.00	0.00	5490.96
24	Rajasthan	0.00	0.00	0.00	0.00	0.00
25	Sikkim	614.44	0.00	0.00	0.00	614.44
26	Tamil Nadu	533.43	0.00	80.51	0.00	613.94
27	Tripura	654.39	0.00	0.00	0.00	654.39
28	Union Government	9631.90	471.68	0.00	0.00	10103.58
29	Uttar Pradesh	2567.98	0.00	775.57	0.00	3343.55
30	Uttarakhand	283.29	0.00	0.00	0.00	283.29
31	West Bengal	2930.70	0.00	6379.12	51.99	9361.81
	Total (99)	**55347.11**	**2193.19**	**14482.12**	**51.99**	**72074.41**

Source: Annual Report of Combined Finance and Revenue Accounts of the Union & State Governments for the year 2007-08, Comptroller and Auditor General of India (CAG)

Table A-1: Distribution of Revenue Expenditure by Sub-Major Head of Accounts of the Union and State/UT Governments for the year 2008-09

(₹ in Lakh)

Sl. No.	Name of States/UTs	Flood Control (01)	Anti-Sea Erosion (02)	Drainage (03)	General (80)	Total (99)
1	Andhra Pradesh	61.39	0.00	10302.39	0.00	10363.78
2	Arunachal Pradesh	530.00	0.00	0.00	0.00	530.00
3	Assam	10951.58	0.00	0.00	0.00	10951.58
4	Bihar	9615.05	0.00	1555.97	0.00	11171.02
5	Chhattisgarh	0.00	0.00	0.00	0.00	0.00
6	Delhi	2271.71	0.00	3895.19	0.00	6166.90
7	Goa	203.78	62.77	81.88	0.00	348.43
8	Gujarat	2922.36	0.00	1324.68	0.00	4247.04
9	Haryana	0.00	0.00	0.00	0.00	0.00
10	Himachal Pradesh	111.72	0.00	0.00	0.00	111.72
11	Jammu & Kashmir (incl. Ladakh)	3478.28	0.00	0.00	0.00	3478.28
12	Jharkhand	420.45	0.00	0.00	0.00	420.45
13	Karnataka	0.00	40.85	0.00	0.00	40.85
14	Kerala	1927.75	1116.11	0.00	0.00	3043.86
15	Madhya Pradesh	0.00	0.00	0.00	0.00	0.00
16	Maharashtra	0.00	0.00	809.02	0.00	809.02
17	Manipur	997.48	0.00	0.00	0.00	997.48
18	Meghalaya	63.43	0.00	0.00	0.00	63.43
19	Mizoram	0.00	0.00	0.00	0.00	0.00
20	Nagaland	0.00	0.00	0.00	0.00	0.00
21	Odisha	11197.43	1135.05	397.61	0.00	12730.09
22	Puducherry	72.05	0.00	83.70	0.00	155.75
23	Punjab	5617.02	0.00	0.00	0.00	5617.02
24	Rajasthan	0.00	0.00	0.00	0.00	0.00
25	Sikkim	1778.96	0.00	0.00	0.00	1778.96
26	Tamil Nadu	720.32	0.00	80.51	0.00	800.83
27	Tripura	714.36	0.00	0.00	0.00	714.36
28	Union Government	17128.01	399.80	0.00	0.00	17527.81
29	Uttar Pradesh	2809.68	0.00	682.72	0.00	3492.40
30	Uttarakhand	309.02	0.00	0.00	0.00	309.02
31	West Bengal	4265.28	0.00	6218.36	41.42	10525.06
	Total (99)	**78167.11**	**2754.58**	**25432.03**	**41.42**	**106395.14**

Source: Annual Report of Combined Finance and Revenue Accounts of the Union & State Governments for the year 2008-09, Comptroller and Auditor General of India (CAG)

Table A-1: Distribution of Revenue Expenditure by Sub-Major Head of Accounts of the Union and State/UT Governments for the year 2009-10

(₹ in Lakh)

Sl. No.	Name of States/UTs	Flood Control (01)	Anti-Sea Erosion (02)	Drainage (03)	General (80)	Total (99)
1	Andhra Pradesh	95.80	0.00	9954.91	0.00	10050.71
2	Arunachal Pradesh	932.23	0.00	0.00	0.00	932.23
3	Assam	12422.92	0.00	0.00	0.00	12422.92
4	Bihar	18864.90	0.00	2426.13	0.00	21291.03
5	Chhattisgarh	0.00	0.00	0.00	0.00	0.00
6	Delhi	2217.76	0.00	5478.82	0.00	7696.58
7	Goa	656.91	254.96	170.02	0.00	1081.89
8	Gujarat	3352.03	0.00	1100.66	0.00	4452.69
9	Haryana	0.00	0.00	0.00	0.00	0.00
10	Himachal Pradesh	30.46	0.00	0.00	0.00	30.46
11	Jammu & Kashmir (incl. Ladakh)	4231.44	0.00	0.00	0.00	4231.44
12	Jharkhand	0.00	0.00	0.00	0.00	0.00
13	Karnataka	0.00	43.91	0.00	0.00	43.91
14	Kerala	1363.79	693.78	0.00	0.00	2057.57
15	Madhya Pradesh	0.00	0.00	0.00	0.00	0.00
16	Maharashtra	0.00	0.00	1027.41	0.00	1027.41
17	Manipur	970.70	0.00	0.00	0.00	970.70
18	Meghalaya	74.09	0.00	0.00	0.00	74.09
19	Mizoram	0.00	0.00	0.00	0.00	0.00
20	Nagaland	0.00	0.00	0.00	0.00	0.00
21	Odisha	7492.07	1398.56	467.57	0.00	9358.20
22	Puducherry	115.00	0.00	74.95	0.00	189.95
23	Punjab	6733.54	0.00	0.00	0.00	6733.54
24	Rajasthan	0.00	0.00	0.00	0.00	0.00
25	Sikkim	355.64	0.00	0.00	0.00	355.64
26	Tamil Nadu	1561.28	0.00	80.51	0.00	1641.79
27	Tripura	948.07	0.00	0.00	0.00	948.07
28	Union Government	14639.58	497.60	0.00	0.00	15137.18
29	Uttar Pradesh	3017.96	0.00	1204.91	0.00	4222.87
30	Uttarakhand	350.19	0.00	0.00	0.00	350.19
31	West Bengal	3606.68	0.00	7187.94	32.47	10827.09
	Total (99)	**84033.04**	**2888.81**	**29173.83**	**32.47**	**116128.15**

Source: Annual Report of "Combined Finance and Revenue Accounts of the Union & State Governments" for the year 2008-9-10, Comptroller and Auditor General of India (CAG)

Table A-1: Distribution of Revenue Expenditure by Sub-Major Head of Accounts of the Union and State/UT Governments for the year 2010-11

(₹ in Lakh)

Sl. No.	Name of States/UTs	Flood Control (01)	Anti-Sea Erosion (02)	Drainage (03)	General (80)	Total (99)
1	Andhra Pradesh	45.93	0.00	10866.61	0.00	10912.54
2	Arunachal Pradesh	153.09	0.00	0.00	0.00	153.09
3	Assam	16588.78	0.00	0.00	0.00	16588.78
4	Bihar	18614.20	0.00	2441.33	0.00	21055.53
5	Chhattisgarh	0.00	0.00	0.00	0.00	0.00
6	Delhi	2622.44	0.00	5710.60	0.00	8333.04
7	Goa	936.49	198.81	344.36	0.00	1479.66
8	Gujarat	4072.61	0.00	822.31	0.00	4894.92
9	Haryana	0.00	0.00	0.00	0.00	0.00
10	Himachal Pradesh	83.25	0.00	0.00	0.00	83.25
11	Jammu & Kashmir (incl. Ladakh)	4863.08	0.00	0.00	0.00	4863.08
12	Jharkhand	0.00	0.00	0.00	0.00	0.00
13	Karnataka	0.00	46.14	0.00	0.00	46.14
14	Kerala	1475.72	860.39	0.00	0.00	2336.11
15	Madhya Pradesh	0.00	0.00	0.00	0.00	0.00
16	Maharashtra	0.00	0.00	1254.85	0.00	1254.85
17	Manipur	1229.05	0.00	0.00	0.00	1229.05
18	Meghalaya	80.92	0.00	0.00	0.00	80.92
19	Mizoram	0.00	0.00	0.00	0.00	0.00
20	Nagaland	0.00	0.00	0.00	0.00	0.00
21	Odisha	8015.30	1642.29	1045.98	0.00	10703.57
22	Puducherry	92.00	0.00	115.00	0.00	207.00
23	Punjab	7877.03	0.00	0.00	0.00	7877.03
24	Rajasthan	0.00	0.00	0.00	0.00	0.00
25	Sikkim	228.48	0.00	0.00	0.00	228.48
26	Tamil Nadu	3433.67	0.00	80.51	0.00	3514.18
27	Tripura	654.44	0.00	0.00	0.00	654.44
28	Union Government	17435.39	398.42	0.00	0.00	17833.81
29	Uttar Pradesh	2963.12	0.00	1564.47	0.00	4527.59
30	Uttarakhand	386.04	0.00	0.00	0.00	386.04
31	West Bengal	3814.22	0.00	7098.56	36.81	10949.59
	Total (99)	**95665.25**	**3146.05**	**31344.58**	**36.81**	**130192.69**

Source: Annual Report of "Combined Finance and Revenue Accounts of the Union & State Governments" for the year 2010-11 Comptroller and Auditor General of India (CAG)

Table A-1: Distribution of Revenue Expenditure by Sub-Major Head of Accounts of the Union and State/UT Governments for the year 2011-12

(₹ in Lakh)

Sl. No.	Name of States/UTs	Flood Control (01)	Anti-Sea Erosion (02)	Drainage (03)	General (80)	Total (99)
1	Andhra Pradesh	179.40	0.00	11533.43	0.00	11712.83
2	Arunachal Pradesh	2099.96	0.00	0.00	0.00	2099.96
3	Assam	21062.14	0.00	0.00	0.00	21062.14
4	Bihar	20377.24	0.00	2532.66	0.00	22909.90
5	Chhattisgarh	0.00	0.00	0.00	0.00	0.00
6	Delhi	3867.13	0.00	5450.32	0.00	9317.45
7	Goa	917.48	254.86	291.07	0.00	1463.41
8	Gujarat	2856.96	0.00	923.88	0.00	3780.84
9	Haryana	0.00	0.00	0.00	0.00	0.00
10	Himachal Pradesh	87.55	0.00	0.00	0.00	87.55
11	Jammu & Kashmir (incl. Ladakh)	6033.72	0.00	0.00	0.00	6033.72
12	Jharkhand	0.00	0.00	0.00	0.00	0.00
13	Karnataka	0.00	20.00	0.00	0.00	20.00
14	Kerala	993.64	650.19	0.00	0.00	1643.83
15	Madhya Pradesh	0.00	0.00	0.00	0.00	0.00
16	Maharashtra	0.00	2220.00	1615.27	0.00	3835.27
17	Manipur	1455.90	0.00	0.00	0.00	1455.90
18	Meghalaya	90.60	0.00	0.00	0.00	90.60
19	Mizoram	0.00	0.00	0.00	0.00	0.00
20	Nagaland	0.00	0.00	0.00	0.00	0.00
21	Odisha	7818.53	1339.35	1215.31	0.00	10373.19
22	Puducherry	121.80	0.00	105.50	0.00	227.30
23	Punjab	9853.99	0.00	0.00	0.00	9853.99
24	Rajasthan	0.00	0.00	0.00	0.00	0.00
25	Sikkim	564.95	0.00	0.00	0.00	564.95
26	Tamil Nadu	7430.85	0.00	80.51	0.00	7511.36
27	Tripura	525.11	0.00	0.00	0.00	525.11
28	Union Government	16711.99	20.55	0.00	0.00	16732.54
29	Uttar Pradesh	5974.34	0.00	1380.60	0.00	7354.94
30	Uttarakhand	324.05	0.00	0.00	0.00	324.05
31	West Bengal	15709.71	0.00	3665.70	88.23	19463.64
	Total (99)	**125057.04**	**4504.95**	**28794.25**	**88.23**	**158444.47**

Source: Annual Report of "Combined Finance and Revenue Accounts of the Union & State Governments" for the year 2011-12 Comptroller and Auditor General of India (CAG)

Table A-1: Distribution of Revenue Expenditure by Sub-Major Head of Accounts of the Union and State/UT Governments for the year 2012-13

(₹ in Lakh)

Sl. No.	Name of States/UTs	Flood Control (01)	Anti-Sea Erosion (02)	Drainage (03)	General (80)	Total (99)
1	Andhra Pradesh	57.27	0.00	10793.77	0.00	10851.04
2	Arunachal Pradesh	0.00	0.00	0.00	0.00	0.00
3	Assam	22364.64	0.00	0.00	0.00	22364.64
4	Bihar	17800.25	0.00	2294.70	0.00	20094.95
5	Chhattisgarh	0.00	0.00	0.00	0.00	0.00
6	Delhi	3480.96	0.00	6256.01	0.00	9736.97
7	Goa	889.85	194.73	259.17	0.00	1343.75
8	Gujarat	3859.25	0.00	686.11	0.00	4545.36
9	Haryana	0.00	0.00	0.00	0.00	0.00
10	Himachal Pradesh	523.98	0.00	0.00	0.00	523.98
11	Jammu & Kashmir (incl. Ladakh)	7096.37	0.00	0.00	0.00	7096.37
12	Jharkhand	0.00	0.00	0.00	0.00	0.00
13	Karnataka	0.00	50.16	0.00	0.00	50.16
14	Kerala	2412.51	1538.13	0.00	0.00	3950.64
15	Madhya Pradesh	0.00	0.00	0.00	0.00	0.00
16	Maharashtra	0.00	4396.54	1333.81	0.00	5730.35
17	Manipur	1572.74	0.00	0.00	0.00	1572.74
18	Meghalaya	97.33	0.00	0.00	0.00	97.33
19	Mizoram	0.00	0.00	0.00	0.00	0.00
20	Nagaland	0.00	0.00	0.00	0.00	0.00
21	Odisha	9187.89	1585.02	1503.06	0.00	12275.97
22	Puducherry	85.12	0.00	58.40	0.00	143.52
23	Punjab	11266.20	0.00	0.00	0.00	11266.20
24	Rajasthan	0.00	0.00	0.00	0.00	0.00
25	Sikkim	611.22	0.00	0.00	0.00	611.22
26	Tamil Nadu	9822.84	0.00	80.51	0.00	9903.35
27	Tripura	438.83	0.00	0.00	0.00	438.83
28	Union Government	19336.81	540.11	0.00	0.00	19876.92
29	Uttar Pradesh	6270.94	0.00	8616.44	0.00	14887.38
30	Uttarakhand	413.90	0.00	0.00	0.00	413.90
31	West Bengal	16285.06	0.00	4989.72	60.06	21334.84
	Total (99)	**133873.96**	**8304.69**	**36871.70**	**60.06**	**179110.41**

Source: Annual Report of "Combined Finance and Revenue Accounts of the Union & State Governments" for the year 2012-13 Comptroller and Auditor General of India (CAG)

Table A-1: Distribution of Revenue Expenditure by Sub-Major Head of Accounts of the Union and State/UT Governments for the year 2013-14

(₹ in Lakh)

Sl. No.	Name of States/UTs	Flood Control (01)	Anti-Sea Erosion (02)	Drainage (03)	General (80)	Total (99)
1	Andhra Pradesh	75.44	0.00	10794.85	0.00	10870.29
2	Arunachal Pradesh	1949.99	0.00	0.00	0.00	1949.99
3	Assam	23165.45	0.00	0.00	0.00	23165.45
4	Bihar	20561.85	0.00	2490.15	0.00	23052.00
5	Chhattisgarh	0.00	0.00	0.00	0.00	0.00
6	Delhi	3582.79	0.00	6441.58	0.00	10024.37
7	Goa	1361.59	60.02	42.22	0.00	1463.83
8	Gujarat	3308.68	0.00	551.66	0.00	3860.34
9	Haryana	0.00	0.00	0.00	0.00	0.00
10	Himachal Pradesh	180.01	0.00	0.00	0.00	180.01
11	Jammu & Kashmir (incl. Ladakh)	7144.52	0.00	0.00	0.00	7144.52
12	Jharkhand	0.00	0.00	0.00	0.00	0.00
13	Karnataka	0.00	52.79	0.00	0.00	52.79
14	Kerala	3012.96	971.27	0.00	0.00	3984.23
15	Madhya Pradesh	0.00	0.00	0.00	0.00	0.00
16	Maharashtra	0.00	2480.80	1373.54	0.00	3854.34
17	Manipur	1519.42	0.00	0.00	0.00	1519.42
18	Meghalaya	98.71	0.00	0.00	0.00	98.71
19	Mizoram	0.00	0.00	0.00	0.00	0.00
20	Nagaland	0.00	0.00	0.00	0.00	0.00
21	Odisha	11026.97	1809.81	1814.31	0.00	14651.09
22	Puducherry	143.33	0.00	65.59	0.00	208.92
23	Punjab	11759.41	0.00	0.00	0.00	11759.41
24	Rajasthan	0.00	0.00	0.00	0.00	0.00
25	Sikkim	209.95	0.00	0.00	0.00	209.95
26	Tamil Nadu	11492.64	0.00	80.51	0.00	11573.15
27	Telangana	0.00	0.00	0.00	0.00	0.00
28	Tripura	577.10	0.00	0.00	0.00	577.10
29	Union Government	20270.79	64.24	0.00	0.00	20335.03
30	Uttar Pradesh	6695.38	0.00	4043.92	0.00	10739.30
31	Uttarakhand	396.52	0.00	0.00	0.00	396.52
32	West Bengal	18865.26	0.00	3874.11	186.45	22925.82
	Total (99)	**147398.76**	**5438.93**	**31572.44**	**186.45**	**184596.58**

Source: Annual Report of "Combined Finance and Revenue Accounts of the Union & State Governments" for the year 2013-14, Comptroller and Auditor General of India (CAG)

Table A-1: Distribution of Revenue Expenditure by Sub-Major Head of Accounts of the Union and State/UT Governments for the year 2014-15

(₹ in Lakh)

Sl. No.	Name of States/UTs	Flood Control (01)	Anti-Sea Erosion (02)	Drainage (03)	General (80)	Total (99)
1	Andhra Pradesh	2.24	0.00	7044.89	0.00	7047.13
2	Arunachal Pradesh	0.00	0.00	0.00	0.00	0.00
3	Assam	25630.64	0.00	0.00	0.00	25630.64
4	Bihar	20047.80	0.00	2485.98	0.00	22533.78
5	Chhattisgarh	0.00	0.00	0.00	0.00	0.00
6	Delhi	3800.59	0.00	8427.10	0.00	12227.69
7	Goa	1129.28	120.32	318.90	0.00	1568.50
8	Gujarat	2050.46	0.00	395.44	0.00	2445.90
9	Haryana	0.00	0.00	0.00	0.00	0.00
10	Himachal Pradesh	3894.27	0.00	0.00	0.00	3894.27
11	Jammu & Kashmir (incl. Ladakh)	7127.55	0.00	0.00	0.00	7127.55
12	Jharkhand	0.00	0.00	0.00	0.00	0.00
13	Karnataka	0.00	54.68	0.00	0.00	54.68
14	Kerala	1530.11	609.40	0.00	0.00	2139.51
15	Madhya Pradesh	0.00	0.00	0.00	0.00	0.00
16	Maharashtra	0.00	2122.50	1474.41	0.00	3596.91
17	Manipur	1572.75	0.00	0.00	0.00	1572.75
18	Meghalaya	84.37	0.00	0.00	0.00	84.37
19	Mizoram	0.00	0.00	0.00	0.00	0.00
20	Nagaland	0.00	0.00	0.00	0.00	0.00
21	Odisha	12631.94	2436.71	1958.11	0.00	17026.76
22	Puducherry	129.20	0.00	35.21	0.00	164.41
23	Punjab	12512.58	0.00	0.00	0.00	12512.58
24	Rajasthan	0.00	0.00	0.00	0.00	0.00
25	Sikkim	160.31	0.00	0.00	0.00	160.31
26	Tamil Nadu	12885.09	0.00	80.51	0.00	12965.60
27	Telangana	13.16	0.00	0.00	0.00	13.16
28	Tripura	1099.32	0.00	0.00	0.00	1099.32
29	Union Government	22423.18	106.00	0.00	0.00	22529.18
30	Uttar Pradesh	10485.28	0.00	6962.42	0.00	17447.70
31	Uttarakhand	488.84	0.00	0.00	0.00	488.84
32	West Bengal	19100.36	0.00	4251.29	78.06	23429.71
	Total (99)	**158799.32**	**5449.61**	**33434.26**	**78.06**	**197761.25**

Source: Annual Report of "Combined Finance and Revenue Accounts of the Union & State Governments" for the year 2014-15, Comptroller and Auditor General of India (CAG)

Table A-1: Distribution of Revenue Expenditure by Sub-Major Head of Accounts of the Union and State/UT Governments for the year 2015-16

(₹ in Lakh)

Sl. No.	Name of States/UTs	Flood Control (01)	Anti-Sea Erosion (02)	Drainage (03)	General (80)	Total (99)
1	Andhra Pradesh	22.12	0.00	0.06	0.00	22.18
2	Arunachal Pradesh	0.00	0.00	0.00	0.00	0.00
3	Assam	20181.26	0.00	0.00	0.00	20181.26
4	Bihar	19118.59	0.00	2237.03	0.00	21355.62
5	Chhattisgarh	0.00	0.00	0.00	0.00	0.00
6	Delhi	4040.90	0.00	9620.36	0.00	13661.26
7	Goa	1512.95	219.37	262.44	0.00	1994.76
8	Gujarat	2019.58	0.00	636.96	0.00	2656.54
9	Haryana	0.00	0.00	0.00	0.00	0.00
10	Himachal Pradesh	983.70	0.00	0.00	0.00	983.70
11	Jammu & Kashmir (incl. Ladakh)	8903.30	0.00	0.00	0.00	8903.30
12	Jharkhand	0.00	0.00	0.00	0.00	0.00
13	Karnataka	0.00	42.17	0.00	0.00	42.17
14	Kerala	1407.69	2291.44	0.00	0.00	3699.13
15	Madhya Pradesh	0.00	0.00	0.00	0.00	0.00
16	Maharashtra	0.00	253.33	1473.40	0.00	1726.73
17	Manipur	1522.65	0.00	0.00	0.00	1522.65
18	Meghalaya	91.44	0.00	0.00	0.00	91.44
19	Mizoram	0.00	0.00	0.00	0.00	0.00
20	Nagaland	0.00	0.00	0.00	0.00	0.00
21	Odisha	12543.66	2887.01	2205.39	0.00	17636.06
22	Puducherry	120.11	0.00	31.13	0.00	151.24
23	Punjab	12811.08	0.00	0.00	0.00	12811.08
24	Rajasthan	0.00	0.00	0.00	0.00	0.00
25	Sikkim	1009.98	0.00	0.00	0.00	1009.98
26	Tamil Nadu	12965.99	0.00	0.00	0.00	12965.99
27	Telangana	0.00	0.00	0.00	0.00	0.00
28	Tripura	1180.52	0.00	0.00	0.00	1180.52
29	Union Government	25440.55	0.00	0.00	0.00	25440.55
30	Uttar Pradesh	7107.09	0.00	3399.54	0.00	10506.63
31	Uttarakhand	485.85	0.00	0.00	0.00	485.85
32	West Bengal	23049.93	0.00	2971.83	58.76	26080.52
	Total (99)	**156518.94**	**5693.32**	**22838.14**	**58.76**	**185109.16**

Source: Annual Report of "Combined Finance and Revenue Accounts of the Union & State Governments" for the year 2015-16, Comptroller and Auditor General of India (CAG)

Table A-1: Distribution of Revenue Expenditure by Sub-Major Head of Accounts of the Union and State/UT Governments for the year 2016-17

(₹ in Lakh)

Sl. No.	Name of States/UTs	Flood Control (01)	Anti-Sea Erosion (02)	Drainage (03)	General (80)	Total (99)
1	Andhra Pradesh	24.89	0.00	0.00	0.00	24.89
2	Arunachal Pradesh	0.00	0.00	0.00	0.00	0.00
3	Assam	26353.83	0.00	0.00	0.00	26353.83
4	Bihar	23669.23	0.00	2278.13	0.00	25947.36
5	Chhattisgarh	1290.00	0.00	0.00	0.00	1290.00
6	Delhi	4136.20	0.00	10548.62	0.00	14684.82
7	Goa	1160.61	289.24	19.14	0.00	1468.99
8	Gujarat	2472.35	0.00	862.25	0.00	3334.60
9	Haryana	0.00	0.00	0.00	0.00	0.00
10	Himachal Pradesh	1430.11	0.00	0.00	0.00	1430.11
11	Jammu & Kashmir (incl. Ladakh)	9152.35	0.00	0.00	0.00	9152.35
12	Jharkhand	0.00	0.00	0.00	0.00	0.00
13	Karnataka	0.00	13.48	0.00	0.00	13.48
14	Kerala	1544.08	1855.23	0.00	0.00	3399.31
15	Madhya Pradesh	0.00	0.00	0.00	0.00	0.00
16	Maharashtra	0.00	320.00	1487.62	0.00	1807.62
17	Manipur	1572.33	0.00	0.00	0.00	1572.33
18	Meghalaya	106.31	0.00	0.00	0.00	106.31
19	Mizoram	0.00	0.00	0.00	0.00	0.00
20	Nagaland	0.00	0.00	0.00	0.00	0.00
21	Odisha	12442.78	2923.73	2463.11	0.00	17829.62
22	Puducherry	61.39	0.00	32.22	0.00	93.61
23	Punjab	12662.70	0.00	0.00	0.00	12662.70
24	Rajasthan	0.00	0.00	0.00	0.00	0.00
25	Sikkim	475.73	0.00	0.00	0.00	475.73
26	Tamil Nadu	13922.39	0.00	80.51	0.00	14002.90
27	Telangana	0.00	0.00	0.00	0.00	0.00
28	Tripura	1199.09	0.00	0.00	0.00	1199.09
29	Union Government	23122.89	0.00	0.00	0.00	23122.89
30	Uttar Pradesh	7516.46	0.00	3600.67	0.00	11117.13
31	Uttarakhand	456.05	0.00	0.00	0.00	456.05
32	West Bengal	26438.89	0.00	1874.18	-0.11	28312.96
	Total (99)	**171210.66**	**5401.68**	**23246.45**	**-0.11**	**199858.68**

Source: Annual Report of "Combined Finance and Revenue Accounts of the Union & State Governments" for the year 2016-17, Comptroller and Auditor General of India (CAG)

Table A-1: Distribution of Revenue Expenditure by Sub-Major Head of Accounts of the Union and State/UT Governments for the year 2017-18

(₹ in Lakh)

Sl. No.	Name of States/UTs	Flood Control (01)	Anti-Sea Erosion (02)	Drainage (03)	General (80)	Total (99)
1	Andhra Pradesh	16.08	0.00	0.00	0.00	16.08
2	Arunachal Pradesh	1860.06	0.00	0.00	0.00	1860.06
3	Assam	29955.77	0.00	0.00	0.00	29955.77
4	Bihar	38748.36	0.00	0.00	0.00	38748.36
5	Chhattisgarh	0.00	0.00	0.00	0.00	0.00
6	Delhi	4115.63	0.00	10954.40	0.00	15070.03
7	Goa	1472.40	158.28	55.33	0.00	1686.01
8	Gujarat	2620.06	0.00	422.42	0.00	3042.48
9	Haryana	0.00	0.00	0.00	0.00	0.00
10	Himachal Pradesh	599.51	0.00	0.00	0.00	599.51
11	Jammu & Kashmir (incl. Ladakh)	9402.17	0.00	0.00	0.00	9402.17
12	Jharkhand	0.00	0.00	0.00	0.00	0.00
13	Karnataka	0.00	50.00	0.00	0.00	50.00
14	Kerala	3218.48	2106.40	0.00	0.00	5324.88
15	Madhya Pradesh	0.00	0.00	0.00	0.00	0.00
16	Maharashtra	0.00	131.63	1488.33	0.00	1619.96
17	Manipur	1490.03	0.00	0.00	0.00	1490.03
18	Meghalaya	103.10	0.00	0.00	2.61	105.71
19	Mizoram	0.00	0.00	0.00	0.00	0.00
20	Nagaland	0.00	0.00	0.00	0.00	0.00
21	Odisha	12258.21	2976.23	2644.92	0.00	17879.36
22	Puducherry	24.61	0.00	47.75	0.00	72.36
23	Punjab	12603.59	0.00	0.00	0.00	12603.59
24	Rajasthan	0.00	0.00	0.00	0.00	0.00
25	Sikkim	1931.14	0.00	0.00	0.00	1931.14
26	Tamil Nadu	14956.23	0.00	80.51	0.00	15036.74
27	Telangana	0.00	0.00	0.00	0.00	0.00
28	Tripura	1465.71	0.00	0.00	0.00	1465.71
29	Union Government	26797.24	0.50	0.00	0.00	26797.74
30	Uttar Pradesh	11096.25	0.00	3283.72	0.00	14379.97
31	Uttarakhand	490.41	0.00	0.00	0.00	490.41
32	West Bengal	33902.41	0.00	2544.38	32.15	36478.94
	Total (99)	**209127.45**	**5423.04**	**21521.76**	**34.76**	**236107.01**

Source: Annual Report of "Combined Finance and Revenue Accounts of the Union & State Governments" for the year 2017-18, Comptroller and Auditor General of India (CAG)

Table A-1: Distribution of Revenue Expenditure by Sub-Major Head of Accounts of the Union and State/UT Governments for the year 2018-19

(₹ in Lakh)

Sl. No.	Name of States/UTs	Flood Control (01)	Anti-Sea Erosion (02)	Drainage (03)	General (80)	Total (99)
1	Andhra Pradesh	18.10	0.00	0.00	0.00	18.10
2	Arunachal Pradesh	788.01	0.00	0.00	0.00	788.01
3	Assam	27962.08	0.00	0.00	0.00	27962.08
4	Bihar	39523.30	0.00	0.00	0.00	39523.30
5	Chhattisgarh	0.00	0.00	0.00	0.00	0.00
6	Delhi	4549.23	0.00	12919.57	0.00	17468.80
7	Goa	1711.96	295.72	86.42	0.00	2094.10
8	Gujarat	2934.12	0.00	379.48	0.00	3313.60
9	Haryana	0.00	0.00	0.00	0.00	0.00
10	Himachal Pradesh	1903.51	0.00	0.00	0.00	1903.51
11	Jammu & Kashmir (incl. Ladakh)	12367.06	0.00	0.00	0.00	12367.06
12	Jharkhand	0.00	0.00	0.00	0.00	0.00
13	Karnataka	0.00	48.85	0.00	0.00	48.85
14	Kerala	2952.73	1140.98	0.00	0.00	4093.71
15	Madhya Pradesh	0.00	0.00	0.00	0.00	0.00
16	Maharashtra	0.00	0.00	1872.86	0.00	1872.86
17	Manipur	1437.10	0.00	0.00	0.00	1437.10
18	Meghalaya	131.19	0.00	0.00	0.00	131.19
19	Mizoram	0.00	0.00	0.00	0.00	0.00
20	Nagaland	0.00	0.00	0.00	0.00	0.00
21	Odisha	10957.77	2447.17	2612.83	0.00	16017.77
22	Puducherry	44.10	0.00	47.17	0.00	91.27
23	Punjab	11559.26	0.00	0.00	0.00	11559.26
24	Rajasthan	0.00	0.00	0.00	0.00	0.00
25	Sikkim	9.21	0.00	0.00	0.00	9.21
26	Tamil Nadu	15507.00	0.00	80.51	0.00	15587.51
27	Telangana	0.00	0.00	0.00	0.00	0.00
28	Tripura	1913.81	0.00	0.00	0.00	1913.81
29	Union Government	21064.33	0.00	0.00	0.00	21064.33
30	Uttar Pradesh	7370.11	0.00	3589.19	0.00	10959.30
31	Uttarakhand	490.39	0.00	0.00	0.00	490.39
32	West Bengal	39645.85	0.00	4131.22	0.00	43777.07
	Total (99)	**204840.22**	**3932.72**	**25719.25**	**0.00**	**234492.19**

Source: Annual Report of "Combined Finance and Revenue Accounts of the Union & State Governments" for the year 2018-19, Comptroller and Auditor General of India (CAG)

Table A-1: Distribution of Revenue Expenditure by Sub-Major Head of Accounts of the Union and State/UT Governments for the year 2019-20

(₹ in Lakh)

Sl. No.	Name of States/UTs	Flood Control (01)	Anti-Sea Erosion (02)	Drainage (03)	General (80)	Total (99)
1	Andhra Pradesh	4.90	0.00	0.00	0.00	4.90
2	Arunachal Pradesh	300.00	0.00	0.00	0.00	300.00
3	Assam	29061.62	0.00	0.00	0.00	29061.62
4	Bihar	29323.61	0.00	-41.80	0.00	29281.81
5	Chhattisgarh	0.00	0.00	0.00	0.00	0.00
6	Delhi	4477.79	0.00	14632.02	0.00	19109.81
7	Goa	1001.79	40.93	59.17	0.00	1101.89
8	Gujarat	1961.92	0.00	454.08	0.00	2416.00
9	Haryana	0.00	0.00	0.00	0.00	0.00
10	Himachal Pradesh	2938.30	0.00	0.00	0.00	2938.30
11	Jammu & Kashmir (incl. Ladakh)	0.00	0.00	0.00	0.00	0.00
12	Jharkhand	0.00	0.00	0.00	0.00	0.00
13	Karnataka	0.00	489.00	0.00	0.00	489.00
14	Kerala	3510.32	1038.91	0.00	0.00	4549.23
15	Madhya Pradesh	0.00	0.00	0.00	0.00	0.00
16	Maharashtra	0.00	0.00	1794.71	0.00	1794.71
17	Manipur	1260.87	0.00	0.00	0.00	1260.87
18	Meghalaya	25.28	0.00	0.00	0.00	25.28
19	Mizoram	0.00	0.00	0.00	0.00	0.00
20	Nagaland	0.00	0.00	0.00	0.00	0.00
21	Odisha	11546.14	2431.23	2896.18	0.00	16873.55
22	Puducherry	63.30	0.00	30.38	0.00	93.68
23	Punjab	11007.86	0.00	0.00	0.00	11007.86
24	Rajasthan	0.00	0.00	0.00	0.00	0.00
25	Sikkim	7.48	0.00	0.00	0.00	7.48
26	Tamil Nadu	15730.86	0.00	80.51	0.00	15811.37
27	Telangana	0.00	0.00	0.00	0.00	0.00
28	Tripura	2262.64	0.00	0.00	0.00	2262.64
29	Union Government	18550.52	0.00	0.00	0.00	18550.52
30	Uttar Pradesh	14163.24	0.00	11765.93	0.00	25929.17
31	Uttarakhand	584.53	0.00	0.00	0.00	584.53
32	West Bengal	37931.31	0.00	4793.59	-0.10	42724.80
	Total (99)	**185714.28**	**4000.07**	**36464.77**	**-0.10**	**226179.02**

Source: Annual Report of "Combined Finance and Revenue Accounts of the Union & State Governments" for the year 2019-20, Comptroller and Auditor General of India (CAG)

Table A-1: Distribution of Revenue Expenditure by Sub-Major Head of Accounts of the Union and State/UT Governments for the year 2005-2020

(₹ in Lakh)

Sl. No.	Name of States/UTs	Flood Control (01)	Anti-Sea Erosion (02)	Drainage (03)	General (80)	Total (99)
1	Andhra Pradesh	1154.63	0.00	87981.34	0.00	89135.97
2	Arunachal Pradesh	10846.35	0.00	0.00	0.00	10846.35
3	Assam	294531.01	0.00	0.00	0.00	294531.01
4	Bihar	292486.40	0.00	23386.15	0.00	315872.55
5	Chhattisgarh	1290.00	0.00	0.00	0.00	1290.00
6	Delhi	47661.23	0.00	108852.59	0.00	156513.82
7	Goa	13540.54	2271.64	2108.32	0.00	17920.50
8	Gujarat	35688.51	0.00	9713.52	0.00	45402.03
9	Haryana	0.00	0.00	0.00	0.00	0.00
10	Himachal Pradesh	12903.27	0.00	0.00	0.00	12903.27
11	Jammu & Kashmir (incl. Ladakh)	89843.38	0.00	0.00	0.00	89843.38
12	Jharkhand	420.45	0.00	0.00	0.00	420.45
13	Karnataka	0.00	1099.86	0.00	0.00	1099.86
14	Kerala	27615.43	16711.22	0.00	0.00	44326.65
15	Madhya Pradesh	0.00	0.00	0.00	0.00	0.00
16	Maharashtra	0.00	11924.80	20053.15	0.00	31977.95
17	Manipur	18710.10	0.00	0.00	429.22	19139.32
18	Meghalaya	1229.62	0.00	0.00	2.61	1232.23
19	Mizoram	0.00	0.00	0.00	0.00	0.00
20	Nagaland	0.00	0.00	0.00	0.00	0.00
21	Odisha	140505.20	27033.30	21801.52	0.00	189340.02
22	Puducherry	1518.29	0.00	1127.51	0.00	2645.80
23	Punjab	141034.48	0.00	0.00	0.00	141034.48
24	Rajasthan	0.00	0.00	0.00	0.00	0.00
25	Sikkim	9019.21	0.00	0.00	0.00	9019.21
26	Tamil Nadu	121592.33	0.00	1542.21	0.00	123134.54
27	Telangana	13.16	0.00	0.00	0.00	13.16
28	Tripura	15058.21	0.00	0.00	0.00	15058.21
29	Union Government	278220.25	3152.32	0.00	0.00	281372.57
30	Uttar Pradesh	93491.17	0.00	52248.51	0.00	145739.68
31	Uttarakhand	6026.66	0.00	0.00	0.00	6026.66
32	West Bengal	252873.18	0.00	71029.88	752.51	324655.57
	Total (99)	**1907273.06**	**62193.14**	**399844.70**	**1184.34**	**2370495.24**

Source: Annual Report of "Combined Finance and Revenue Accounts of the Union & State Governments" for the year 2005-2020, Comptroller and Auditor General of India (CAG)

Table A-2: Distribution of Capital Expenditure by Sub-Major Head of Accounts of the Union and State/UT Governments for the year 2005-06

(₹ in Lakh)

Sl. No.	Name of States/UTs	Flood Control (01)	Anti-Sea Erosion (02)	Drainage (03)	General (80)	Total (99)
1	Andhra Pradesh	1170.16	0.00	3796.92	0.00	4967.08
2	Arunachal Pradesh	575.00	0.00	0.00	0.00	575.00
3	Assam	4809.60	0.00	0.00	0.00	4809.60
4	Bihar	14004.47	0.00	0.00	0.00	14004.47
5	Chhattisgarh	68.54	0.00	0.00	0.00	68.54
6	Delhi	281.82	0.00	3875.71	0.00	4157.53
7	Goa	108.04	98.36	175.51	0.00	381.91
8	Gujarat	15.33	0.00	800.16	0.00	815.49
9	Haryana	6118.67	0.00	0.00	0.00	6118.67
10	Himachal Pradesh	1641.56	0.00	0.00	0.00	1641.56
11	Jammu & Kashmir (incl. Ladakh)	2016.71	6.01	0.00	0.00	2022.72
12	Jharkhand	211.63	0.00	0.00	0.00	211.63
13	Karnataka	545.67	381.13	0.00	0.00	926.80
14	Kerala	280.09	714.15	0.00	0.00	994.24
15	Madhya Pradesh	232.89	0.00	0.00	0.00	232.89
16	Maharashtra	151.29	455.68	5.18	0.00	612.15
17	Manipur	652.29	0.00	0.00	0.00	652.29
18	Meghalaya	439.91	0.00	0.00	0.00	439.91
19	Mizoram	0.00	60.00	0.00	0.00	60.00
20	Nagaland	0.00	0.00	0.00	0.00	0.00
21	Odisha	444.86	41.76	611.29	0.00	1097.91
22	Puducherry	660.56	293.62	1723.74	0.00	2677.92
23	Punjab	2260.24	0.00	4601.02	0.00	6861.26
24	Rajasthan	730.72	0.00	0.00	0.00	730.72
25	Sikkim	168.64	0.00	22.18	0.00	190.82
26	Tamil Nadu	1776.32	4125.47	0.00	0.00	5901.79
27	Tripura	773.67	0.00	0.00	0.00	773.67
28	Union Government	696.68	90.97	0.00	0.00	787.65
29	Uttar Pradesh	20738.85	0.00	9579.47	0.00	30318.32
30	Uttarakhand	3614.37	0.00	0.00	0.00	3614.37
31	West Bengal	7563.72	19.48	3650.78	0.00	11233.98
	Total (99)	**72752.30**	**6286.63**	**28841.96**	**0.00**	**107880.89**

Source: Annual Report of "Combined Finance and Revenue Accounts of the Union & State Governments" for the year 2005-06, Comptroller and Auditor General of India (CAG)

Table A-2: Distribution of Capital Expenditure by Sub-Major Head of Accounts of the Union and State/UT Governments for the year 2006-07

(₹ in Lakh)

Sl. No.	Name of States/UTs	Flood Control (01)	Anti-Sea Erosion (02)	Drainage (03)	General (80)	Total (99)
1	Andhra Pradesh	5210.42	0.00	7432.64	0.00	12643.06
2	Arunachal Pradesh	904.51	0.00	0.00	0.00	904.51
3	Assam	12303.66	0.00	0.00	0.00	12303.66
4	Bihar	13243.13	0.00	0.00	0.00	13243.13
5	Chhattisgarh	174.32	0.00	0.00	0.00	174.32
6	Delhi	282.09	0.00	1511.85	0.00	1793.94
7	Goa	453.26	525.34	260.24	0.00	1238.84
8	Gujarat	189.40	0.00	939.69	0.00	1129.09
9	Haryana	5849.00	0.00	0.00	0.00	5849.00
10	Himachal Pradesh	1873.30	0.00	0.00	0.00	1873.30
11	Jammu & Kashmir (incl. Ladakh)	3492.49	34.28	0.05	0.00	3526.82
12	Jharkhand	-1559.11	0.00	0.00	0.00	-1559.11
13	Karnataka	845.53	1223.28	0.00	0.00	2068.81
14	Kerala	59.77	1142.11	0.00	0.00	1201.88
15	Madhya Pradesh	514.83	0.00	0.00	0.00	514.83
16	Maharashtra	1109.51	857.81	31.46	0.00	1998.78
17	Manipur	1477.21	0.00	0.00	0.00	1477.21
18	Meghalaya	248.20	0.00	0.00	0.00	248.20
19	Mizoram	0.00	351.00	0.00	0.00	351.00
20	Nagaland	0.00	0.00	0.00	0.00	0.00
21	Odisha	568.20	201.51	1086.04	0.00	1855.75
22	Puducherry	397.33	9.67	3145.01	0.00	3552.01
23	Punjab	1983.96	0.00	932.55	0.00	2916.51
24	Rajasthan	309.58	0.00	0.00	0.00	309.58
25	Sikkim	158.71	0.00	85.46	0.00	244.17
26	Tamil Nadu	1136.64	2150.30	0.00	0.00	3286.94
27	Tripura	1299.53	0.00	0.00	0.00	1299.53
28	Union Government	388.60	684.61	0.00	0.00	1073.21
29	Uttar Pradesh	30865.07	0.00	8077.88	0.00	38942.95
30	Uttarakhand	3788.34	0.00	0.00	0.00	3788.34
31	West Bengal	10065.93	0.00	1258.77	0.00	11324.70
	Total (99)	**97633.41**	**7179.91**	**24761.64**	**0.00**	**129574.96**

Source: Annual Report of "Combined Finance and Revenue Accounts of the Union & State Governments" for the year 2006-07, Comptroller and Auditor General of India (CAG)

Table A-2: Distribution of Capital Expenditure by Sub-Major Head of Accounts of the Union and State/UT Governments for the year 2007-08

(₹ in Lakh)

Sl. No.	Name of States/UTs	Flood Control (01)	Anti-Sea Erosion (02)	Drainage (03)	General (80)	Total (99)
1	Andhra Pradesh	19711.20	0.00	5520.85	0.00	25232.05
2	Arunachal Pradesh	712.85	0.00	0.00	0.00	712.85
3	Assam	9127.85	0.00	0.00	0.00	9127.85
4	Bihar	25775.71	0.00	0.00	0.00	25775.71
5	Chhattisgarh	418.54	0.00	0.00	0.00	418.54
6	Delhi	310.19	0.00	2762.64	0.00	3072.83
7	Goa	709.01	404.98	374.86	0.00	1488.85
8	Gujarat	8627.90	0.00	1663.63	0.00	10291.53
9	Haryana	6448.76	0.00	0.00	0.00	6448.76
10	Himachal Pradesh	2288.62	0.00	0.00	0.00	2288.62
11	Jammu & Kashmir (incl. Ladakh)	2897.98	0.00	1.59	0.00	2899.57
12	Jharkhand	681.70	0.00	0.00	0.00	681.70
13	Karnataka	1471.66	465.09	0.00	0.00	1936.75
14	Kerala	387.70	3789.96	0.00	0.00	4177.66
15	Madhya Pradesh	1629.65	0.00	0.00	0.00	1629.65
16	Maharashtra	978.67	1553.23	510.22	0.00	3042.12
17	Manipur	1091.64	0.00	0.00	0.00	1091.64
18	Meghalaya	357.00	0.00	0.00	0.00	357.00
19	Mizoram	0.00	271.00	0.00	0.00	271.00
20	Nagaland	0.00	0.00	0.00	0.00	0.00
21	Odisha	2307.72	205.43	3470.93	0.00	5984.08
22	Puducherry	314.99	0.00	2058.00	0.00	2372.99
23	Punjab	5037.07	0.00	4956.68	0.00	9993.75
24	Rajasthan	178.63	0.00	0.00	0.00	178.63
25	Sikkim	116.14	0.00	164.43	0.00	280.57
26	Tamil Nadu	1019.79	2842.58	0.00	0.00	3862.37
27	Tripura	1155.41	0.00	0.00	0.00	1155.41
28	Union Government	154.38	933.84	0.00	0.00	1088.22
29	Uttar Pradesh	27120.42	0.00	4279.51	0.00	31399.93
30	Uttarakhand	2357.72	0.00	0.00	0.00	2357.72
31	West Bengal	13556.65	313.93	674.22	0.00	14544.80
	Total (99)	**136945.55**	**10780.04**	**26437.56**	**0.00**	**174163.15**

Source: Annual Report of "Combined Finance and Revenue Accounts of the Union & State Governments" for the year 2007-08, Comptroller and Auditor General of India (CAG)

Table A-2: Distribution of Capital Expenditure by Sub-Major Head of Accounts of the Union and State/UT Governments for the year 2008-09

(₹ in Lakh)

Sl. No.	Name of States/UTs	Flood Control (01)	Anti-Sea Erosion (02)	Drainage (03)	General (80)	Total (99)
1	Andhra Pradesh	18193.47	0.00	2752.65	0.00	20946.12
2	Arunachal Pradesh	6527.08	0.00	0.00	0.00	6527.08
3	Assam	19540.27	0.00	0.00	0.00	19540.27
4	Bihar	57284.16	0.00	0.00	0.00	57284.16
5	Chhattisgarh	333.71	0.00	0.00	0.00	333.71
6	Delhi	324.36	0.00	4179.26	0.00	4503.62
7	Goa	1582.24	1442.16	542.16	0.00	3566.56
8	Gujarat	5876.70	0.00	1724.21	0.00	7600.91
9	Haryana	8104.58	0.00	0.00	0.00	8104.58
10	Himachal Pradesh	2361.96	0.00	0.00	0.00	2361.96
11	Jammu & Kashmir (incl. Ladakh)	5764.79	0.00	0.00	0.00	5764.79
12	Jharkhand	571.32	0.00	0.00	0.00	571.32
13	Karnataka	2414.85	914.04	0.00	0.00	3328.89
14	Kerala	701.41	10384.90	0.00	0.00	11086.31
15	Madhya Pradesh	1264.94	0.00	0.00	0.00	1264.94
16	Maharashtra	2059.85	2595.46	80.37	0.00	4735.68
17	Manipur	6430.09	0.00	0.00	0.00	6430.09
18	Meghalaya	538.82	0.00	0.00	0.00	538.82
19	Mizoram	0.00	1108.19	0.00	0.00	1108.19
20	Nagaland	0.00	0.00	0.00	0.00	0.00
21	Odisha	4533.19	105.69	2799.15	0.00	7438.03
22	Puducherry	294.96	0.00	1031.94	0.00	1326.90
23	Punjab	2588.92	0.00	12430.85	0.00	15019.77
24	Rajasthan	162.23	0.00	0.00	0.00	162.23
25	Sikkim	406.25	0.00	62.06	0.00	468.31
26	Tamil Nadu	4135.86	995.58	0.00	0.00	5131.44
27	Tripura	922.15	0.00	0.00	0.00	922.15
28	Union Government	655.75	1113.71	0.00	0.00	1769.46
29	Uttar Pradesh	33787.07	0.00	3737.53	0.00	37524.60
30	Uttarakhand	1808.51	0.00	0.00	0.00	1808.51
31	West Bengal	11548.14	239.19	1998.80	0.00	13786.13
	Total (99)	**200717.63**	**18898.92**	**31338.98**	**0.00**	**250955.53**

Source: Annual Report of "Combined Finance and Revenue Accounts of the Union & State Governments" for the year 2008-09, Comptroller and Auditor General of India (CAG)

Table A-2: Distribution of Capital Expenditure by Sub-Major Head of Accounts of the Union and State/UT Governments for the year 2009-10

(₹ in Lakh)

Sl. No.	Name of States/UTs	Flood Control (01)	Anti-Sea Erosion (02)	Drainage (03)	General (80)	Total (99)
1	Andhra Pradesh	25901.94	0.00	3165.06	0.00	29067.00
2	Arunachal Pradesh	2921.38	0.00	0.00	0.00	2921.38
3	Assam	30005.56	0.00	0.00	0.00	30005.56
4	Bihar	76309.62	0.00	0.00	0.00	76309.62
5	Chhattisgarh	538.70	0.00	0.00	0.00	538.70
6	Delhi	364.68	0.00	5909.36	0.00	6274.04
7	Goa	3715.73	1409.87	1534.78	0.00	6660.38
8	Gujarat	5903.19	0.00	3212.39	0.00	9115.58
9	Haryana	7898.24	0.00	0.00	0.00	7898.24
10	Himachal Pradesh	7097.28	0.00	0.00	0.00	7097.28
11	Jammu & Kashmir (incl. Ladakh)	5047.21	0.00	0.00	0.00	5047.21
12	Jharkhand	1132.51	0.00	0.00	0.00	1132.51
13	Karnataka	703.91	704.24	0.00	0.00	1408.15
14	Kerala	248.49	14262.77	0.00	0.00	14511.26
15	Madhya Pradesh	689.70	0.00	0.00	0.00	689.70
16	Maharashtra	1697.03	4205.37	213.20	0.00	6115.60
17	Manipur	5534.75	0.00	0.00	0.00	5534.75
18	Meghalaya	280.15	0.00	0.00	0.00	280.15
19	Mizoram	0.00	0.00	0.00	0.00	0.00
20	Nagaland	0.00	0.00	0.00	0.00	0.00
21	Odisha	12433.74	397.07	5429.67	0.00	18260.48
22	Puducherry	237.94	0.00	2898.67	0.00	3136.61
23	Punjab	5338.27	0.00	8674.88	0.00	14013.15
24	Rajasthan	171.69	0.00	0.00	0.00	171.69
25	Sikkim	318.19	0.00	11.93	0.00	330.12
26	Tamil Nadu	16234.68	221.49	0.00	0.00	16456.17
27	Tripura	799.86	0.00	0.00	0.00	799.86
28	Union Government	424.89	1098.00	0.00	0.00	1522.89
29	Uttar Pradesh	34994.32	0.00	848.07	0.00	35842.39
30	Uttarakhand	509.66	0.00	0.00	0.00	509.66
31	West Bengal	28567.27	124.06	1984.11	0.00	30675.44
	Total (99)	**276020.58**	**22422.87**	**33882.12**	**0.00**	**332325.57**

Source: Annual Report of "Combined Finance and Revenue Accounts of the Union & State Governments" for the year 2009-10, Comptroller and Auditor General of India (CAG)

Table A-2: Distribution of Capital Expenditure by Sub-Major Head of Accounts of the Union and State/UT Governments for the year 2010-11

(₹ in Lakh)

Sl. No.	Name of States/UTs	Flood Control (01)	Anti-Sea Erosion (02)	Drainage (03)	General (80)	Total (99)
1	Andhra Pradesh	18581.53	0.00	3573.17	0.00	22154.70
2	Arunachal Pradesh	9017.99	0.00	0.00	0.00	9017.99
3	Assam	26189.84	0.00	0.00	0.00	26189.84
4	Bihar	70290.00	0.00	0.00	0.00	70290.00
5	Chhattisgarh	428.20	0.00	0.00	0.00	428.20
6	Delhi	347.52	0.00	4832.53	0.00	5180.05
7	Goa	3377.12	488.66	1181.66	0.00	5047.44
8	Gujarat	5477.30	0.00	4316.42	0.00	9793.72
9	Haryana	12131.60	0.00	0.00	0.00	12131.60
10	Himachal Pradesh	12416.38	0.00	0.00	0.00	12416.38
11	Jammu & Kashmir (incl. Ladakh)	8322.63	0.00	0.00	0.00	8322.63
12	Jharkhand	1156.72	0.00	0.00	0.00	1156.72
13	Karnataka	1203.77	1130.34	0.00	0.00	2334.11
14	Kerala	6103.90	4371.49	0.00	0.00	10475.39
15	Madhya Pradesh	1588.18	0.00	0.00	0.00	1588.18
16	Maharashtra	1743.90	8150.83	212.52	0.00	10107.25
17	Manipur	8580.67	0.00	0.00	0.00	8580.67
18	Meghalaya	197.82	0.00	0.00	0.00	197.82
19	Mizoram	0.00	0.00	0.00	0.00	0.00
20	Nagaland	0.00	0.00	0.00	0.00	0.00
21	Odisha	6931.19	369.27	3381.99	0.00	10682.45
22	Puducherry	1161.28	0.00	901.79	0.00	2063.07
23	Punjab	1313.55	0.00	3071.53	0.00	4385.08
24	Rajasthan	192.42	0.00	0.00	0.00	192.42
25	Sikkim	311.56	0.00	217.53	0.00	529.09
26	Tamil Nadu	28201.93	398.65	0.00	0.00	28600.58
27	Tripura	1687.88	0.00	0.00	0.00	1687.88
28	Union Government	948.20	564.65	0.00	0.00	1512.85
29	Uttar Pradesh	45249.89	0.00	119.17	0.00	45369.06
30	Uttarakhand	2062.80	0.00	0.00	0.00	2062.80
31	West Bengal	40941.87	623.55	1633.10	0.00	43198.52
	Total (99)	**316157.64**	**16097.44**	**23441.41**	**0.00**	**355696.49**

Source: Annual Report of "Combined Finance and Revenue Accounts of the Union & State Governments" for the year 2010-11, Comptroller and Auditor General of India (CAG)

Table A-2: Distribution of Capital Expenditure by Sub-Major Head of Accounts of the Union and State/UT Governments for the year 2011-12

(₹ in Lakh)

1	2	3	4	5	6	7
1	Andhra Pradesh	27040.48	0.00	3275.63	0.00	30316.11
2	Arunachal Pradesh	6017.61	0.00	0.00	0.00	6017.61
3	Assam	31932.17	0.00	0.00	0.00	31932.17
4	Bihar	113652.46	0.00	0.00	0.00	113652.46
5	Chhattisgarh	2516.94	0.00	0.00	0.00	2516.94
6	Delhi	428.77	0.00	4881.93	0.00	5310.70
7	Goa	2735.04	1035.00	1457.39	0.00	5227.43
8	Gujarat	3308.42	0.00	4157.53	0.00	7465.95
9	Haryana	13327.21	0.00	0.00	0.00	13327.21
10	Himachal Pradesh	4691.15	0.00	0.00	0.00	4691.15
11	Jammu & Kashmir (incl. Ladakh)	11634.46	0.00	-0.54	0.00	11633.92
12	Jharkhand	1585.73	0.00	0.00	0.00	1585.73
13	Karnataka	2024.02	625.74	0.00	0.00	2649.76
14	Kerala	3465.03	168.77	0.00	0.00	3633.80
15	Madhya Pradesh	661.77	0.00	0.00	0.00	661.77
16	Maharashtra	2208.83	150.00	335.72	0.00	2694.55
17	Manipur	8486.93	0.00	0.00	0.00	8486.93
18	Meghalaya	622.69	0.00	0.00	0.00	622.69
19	Mizoram	0.00	115.65	0.00	0.00	115.65
20	Nagaland	0.00	0.00	0.00	0.00	0.00
21	Odisha	13311.51	365.26	7734.23	0.00	21411.00
22	Puducherry	422.00	0.00	1179.23	0.00	1601.23
23	Punjab	2338.17	0.00	3328.50	0.00	5666.67
24	Rajasthan	184.63	0.00	0.00	0.00	184.63
25	Sikkim	49.99	0.00	241.05	0.00	291.04
26	Tamil Nadu	85545.58	301.39	0.00	0.00	85846.97
27	Tripura	1905.14	0.00	0.00	0.00	1905.14
28	Union Government	573.18	1668.78	0.00	0.00	2241.96
29	Uttar Pradesh	35425.74	0.00	699.19	0.00	36124.93
30	Uttarakhand	1543.60	0.00	0.00	0.00	1543.60
31	West Bengal	21896.62	393.89	1361.75	0.00	23652.26
	Total (99)	**399535.87**	**4824.48**	**28651.61**	**0.00**	**433011.96**

Source: Annual Report of "Combined Finance and Revenue Accounts of the Union & State Governments" for the year 2011-12, Comptroller and Auditor General of India (CAG)

Table A-2: Distribution of Capital Expenditure by Sub-Major Head of Accounts of the Union and State/UT Governments for the year 2012-13

(₹ in Lakh)

Sl. No.	Name of States/UTs	Flood Control (01)	Anti-Sea Erosion (02)	Drainage (03)	General (80)	Total (99)
1	Andhra Pradesh	16769.06	0.00	3621.80	0.00	20390.86
2	Arunachal Pradesh	2093.75	0.00	0.00	0.00	2093.75
3	Assam	33446.55	0.00	0.00	0.00	33446.55
4	Bihar	95698.95	0.00	0.00	0.00	95698.95
5	Chhattisgarh	487.77	0.00	0.00	0.00	487.77
6	Delhi	449.94	0.00	7369.46	0.00	7819.40
7	Goa	1693.52	1241.90	1069.28	0.00	4004.70
8	Gujarat	1703.20	0.00	5002.96	0.00	6706.16
9	Haryana	16329.90	0.00	0.00	0.00	16329.90
10	Himachal Pradesh	5626.81	0.00	0.00	0.00	5626.81
11	Jammu & Kashmir (incl. Ladakh)	10129.94	0.00	14.63	0.00	10144.57
12	Jharkhand	1747.78	0.00	0.00	0.00	1747.78
13	Karnataka	6077.29	644.00	0.00	0.00	6721.29
14	Kerala	12641.58	2672.31	0.00	0.00	15313.89
15	Madhya Pradesh	621.79	0.00	0.00	0.00	621.79
16	Maharashtra	3240.99	0.00	261.67	0.00	3502.66
17	Manipur	8916.90	0.00	0.00	0.00	8916.90
18	Meghalaya	286.46	0.00	0.00	0.00	286.46
19	Mizoram	0.00	0.00	0.00	0.00	0.00
20	Nagaland	0.00	0.00	0.00	0.00	0.00
21	Odisha	18412.99	978.24	7776.80	0.00	27168.03
22	Puducherry	242.37	0.00	1075.90	0.00	1318.27
23	Punjab	5865.51	0.00	10483.79	0.00	16349.30
24	Rajasthan	1020.42	0.00	0.00	0.00	1020.42
25	Sikkim	479.38	0.00	232.38	0.00	711.76
26	Tamil Nadu	26037.66	4080.84	0.00	0.00	30118.50
27	Tripura	2159.58	0.00	0.00	0.00	2159.58
28	Union Government	499.34	1591.53	0.00	0.00	2090.87
29	Uttar Pradesh	43481.67	0.00	2282.24	0.00	45763.91
30	Uttarakhand	3950.25	0.00	0.00	0.00	3950.25
31	West Bengal	42232.32	283.16	4000.04	0.00	46515.52
	Total (99)	**362343.67**	**11491.98**	**43190.95**	**0.00**	**417026.60**

Source: Annual Report of "Combined Finance and Revenue Accounts of the Union & State Governments" for the year 2012-13, Comptroller and Auditor General of India (CAG)

Table A-2: Distribution of Capital Expenditure by Sub-Major Head of Accounts of the Union and State/UT Governments for the year 2013-14

(₹ in Lakh)

Sl. No.	Name of States/UTs	Flood Control (01)	Anti-Sea Erosion (02)	Drainage (03)	General (80)	Total (99)
1	Andhra Pradesh	12321.49	0.00	3141.35	0.00	15462.84
2	Arunachal Pradesh	2029.81	0.00	0.00	0.00	2029.81
3	Assam	19849.36	0.00	0.00	0.00	19849.36
4	Bihar	75395.90	0.00	0.00	0.00	75395.90
5	Chhattisgarh	915.39	0.00	0.00	0.00	915.39
6	Delhi	449.57	0.00	6968.41	0.00	7417.98
7	Goa	2059.35	1423.02	1268.32	0.00	4750.69
8	Gujarat	8898.09	0.00	5505.01	0.00	14403.10
9	Haryana	21910.03	0.00	0.00	0.00	21910.03
10	Himachal Pradesh	3926.94	0.00	0.00	0.00	3926.94
11	Jammu & Kashmir (incl. Ladakh)	4391.48	0.00	0.00	0.00	4391.48
12	Jharkhand	901.09	0.00	0.00	0.00	901.09
13	Karnataka	4054.28	1213.27	0.00	0.00	5267.55
14	Kerala	4052.34	3572.79	0.00	0.00	7625.13
15	Madhya Pradesh	678.10	0.00	0.00	0.00	678.10
16	Maharashtra	3943.16	0.00	149.10	0.00	4092.26
17	Manipur	9498.72	0.00	0.00	0.00	9498.72
18	Meghalaya	393.90	0.00	0.00	0.00	393.90
19	Mizoram	0.00	13.00	0.00	0.00	13.00
20	Nagaland	0.00	0.00	0.00	0.00	0.00
21	Odisha	40722.03	2153.36	7446.30	0.00	50321.69
22	Puducherry	241.73	0.00	1085.37	0.00	1327.10
23	Punjab	4072.64	0.00	5515.17	0.00	9587.81
24	Rajasthan	881.49	0.00	0.00	0.00	881.49
25	Sikkim	250.40	0.00	129.06	0.00	379.46
26	Tamil Nadu	8922.09	4480.69	0.00	0.00	13402.78
27	Telangana	0.00	0.00	0.00	0.00	0.00
28	Tripura	958.31	0.00	0.00	0.00	958.31
29	Union Government	579.78	1951.42	0.00	0.00	2531.20
30	Uttar Pradesh	40751.01	0.00	1047.38	0.00	41798.39
31	Uttarakhand	8805.77	0.00	0.00	0.00	8805.77
32	West Bengal	49070.17	90.00	4665.30	0.00	53825.47
	Total (99)	**330924.42**	**14897.55**	**36920.77**	**0.00**	**382742.74**

Source: Annual Report of "Combined Finance and Revenue Accounts of the Union & State Governments" for the year 2013-14, Comptroller and Auditor General of India (CAG)

Table A-2: Distribution of Capital Expenditure by Sub-Major Head of Accounts of the Union and State/UT Governments for the year 2014-15

(₹ in Lakh)

Sl. No.	Name of States/UTs	Flood Control (01)	Anti-Sea Erosion (02)	Drainage (03)	General (80)	Total (99)
1	Andhra Pradesh	18018.82	0.00	1911.14	0.00	19929.96
2	Arunachal Pradesh	3076.37	0.00	0.00	0.00	3076.37
3	Assam	51917.55	0.00	0.00	0.00	51917.55
4	Bihar	45006.62	0.00	0.00	0.00	45006.62
5	Chhattisgarh	824.47	0.00	0.00	0.00	824.47
6	Delhi	481.79	0.00	8119.31	0.00	8601.10
7	Goa	2449.15	1511.29	1796.12	0.00	5756.56
8	Gujarat	12829.79	0.00	3999.20	0.00	16828.99
9	Haryana	22152.36	0.00	0.00	0.00	22152.36
10	Himachal Pradesh	32771.55	0.00	0.00	0.00	32771.55
11	Jammu & Kashmir (incl. Ladakh)	9039.10	0.00	0.00	0.00	9039.10
12	Jharkhand	2923.03	0.00	0.00	0.00	2923.03
13	Karnataka	2978.90	2288.31	0.00	0.00	5267.21
14	Kerala	7464.02	4388.28	0.00	0.00	11852.30
15	Madhya Pradesh	697.62	0.00	0.00	0.00	697.62
16	Maharashtra	13758.75	0.00	281.80	0.00	14040.55
17	Manipur	3256.44	0.00	0.00	0.00	3256.44
18	Meghalaya	193.61	0.00	0.00	0.00	193.61
19	Mizoram	0.00	38.40	0.00	0.00	38.40
20	Nagaland	0.00	0.00	0.00	0.00	0.00
21	Odisha	41248.67	1954.53	9792.88	0.00	52996.08
22	Puducherry	1637.63	0.00	1606.76	0.00	3244.39
23	Punjab	6509.24	0.00	16583.94	0.00	23093.18
24	Rajasthan	256.87	0.00	0.00	0.00	256.87
25	Sikkim	282.53	0.00	142.77	0.00	425.30
26	Tamil Nadu	18035.28	1434.71	0.00	0.00	19469.99
27	Telangana	1953.35	0.00	31.59	0.00	1984.94
28	Tripura	1259.21	0.00	0.00	0.00	1259.21
29	Union Government	1219.81	1500.27	0.00	0.00	2720.08
30	Uttar Pradesh	63648.10	0.00	-211.02	0.00	63437.08
31	Uttarakhand	31065.02	0.00	0.00	0.00	31065.02
32	West Bengal	81156.74	19.29	7040.81	0.00	88216.84
	Total (99)	**478112.39**	**13135.08**	**51095.30**	**0.00**	**542342.77**

Source: Annual Report of "Combined Finance and Revenue Accounts of the Union & State Governments" for the year 2014-15, Comptroller and Auditor General of India (CAG)

Table A-2: Distribution of Capital Expenditure by Sub-Major Head of Accounts of the Union and State/UT Governments for the year 2015-16

(₹ in Lakh)

Sl. No.	Name of States/UTs	Flood Control (01)	Anti-Sea Erosion (02)	Drainage (03)	General (80)	Total (99)
1	Andhra Pradesh	16570.66	0.00	4593.82	0.00	21164.48
2	Arunachal Pradesh	11280.81	0.00	0.00	0.00	11280.81
3	Assam	22229.84	0.00	0.00	0.00	22229.84
4	Bihar	65111.60	0.00	0.00	0.00	65111.60
5	Chhattisgarh	515.23	0.00	0.00	0.00	515.23
6	Delhi	379.45	0.00	4839.52	0.00	5218.97
7	Goa	1991.16	1362.14	1353.43	0.00	4706.73
8	Gujarat	5662.46	0.00	4624.40	0.00	10286.86
9	Haryana	20519.10	0.00	0.00	0.00	20519.10
10	Himachal Pradesh	4190.40	0.00	0.00	0.00	4190.40
11	Jammu & Kashmir (incl. Ladakh)	15476.80	0.00	0.00	0.00	15476.80
12	Jharkhand	5080.83	0.00	0.00	0.00	5080.83
13	Karnataka	2606.59	3138.06	0.00	0.00	5744.65
14	Kerala	20983.23	4353.91	0.00	0.00	25337.14
15	Madhya Pradesh	623.76	0.00	0.00	0.00	623.76
16	Maharashtra	8661.59	0.00	236.07	0.00	8897.66
17	Manipur	2310.55	0.00	0.00	0.00	2310.55
18	Meghalaya	125.83	0.00	0.00	0.00	125.83
19	Mizoram	0.00	146.00	0.00	0.00	146.00
20	Nagaland	0.00	0.00	0.00	0.00	0.00
21	Odisha	58329.61	2199.89	15894.54	0.00	76424.04
22	Puducherry	216.81	0.00	2444.34	0.00	2661.15
23	Punjab	8250.47	0.00	17512.59	0.00	25763.06
24	Rajasthan	4241.03	0.00	0.00	0.00	4241.03
25	Sikkim	115.48	0.00	0.00	0.00	115.48
26	Tamil Nadu	6311.68	312.89	0.00	0.00	6624.57
27	Telangana	6583.56	0.00	0.00	0.00	6583.56
28	Tripura	210.92	0.00	0.00	0.00	210.92
29	Union Government	1032.59	1449.19	0.00	0.00	2481.78
30	Uttar Pradesh	69428.23	0.00	1576.95	0.00	71005.18
31	Uttarakhand	32251.00	0.00	0.00	0.00	32251.00
32	West Bengal	62223.12	0.00	8596.76	0.00	70819.88
	Total (99)	**453514.39**	**12962.08**	**61672.42**	**0.00**	**528148.89**

Source: Annual Report of "Combined Finance and Revenue Accounts of the Union & State Governments" for the year 2015-16, Comptroller and Auditor General of India (CAG)

Table A-2: Distribution of Capital Expenditure by Sub-Major Head of Accounts of the Union and State/UT Governments for the year 2016-17

(₹ in Lakh)

Sl. No.	Name of States/UTs	Flood Control (01)	Anti-Sea Erosion (02)	Drainage (03)	General (80)	Total (99)
1	Andhra Pradesh	38736.85	0.00	3662.28	0.00	42399.13
2	Arunachal Pradesh	7606.20	0.00	0.00	0.00	7606.20
3	Assam	50418.70	0.00	0.00	0.00	50418.70
4	Bihar	89953.39	0.00	0.00	0.00	89953.39
5	Chhattisgarh	1498.77	0.00	0.00	0.00	1498.77
6	Delhi	76.51	0.00	5893.09	0.00	5969.60
7	Goa	3229.61	1384.61	1633.02	0.00	6247.24
8	Gujarat	1674.47	0.00	4765.05	0.00	6439.52
9	Haryana	22121.83	0.00	0.00	0.00	22121.83
10	Himachal Pradesh	6225.94	0.00	0.00	0.00	6225.94
11	Jammu & Kashmir (incl. Ladakh)	30032.21	0.00	0.00	0.00	30032.21
12	Jharkhand	1550.77	0.00	0.00	0.00	1550.77
13	Karnataka	3555.91	2657.25	0.00	0.00	6213.16
14	Kerala	20064.26	4161.65	0.00	0.00	24225.91
15	Madhya Pradesh	653.82	0.00	0.00	0.00	653.82
16	Maharashtra	3803.98	4.56	11.31	0.00	3819.85
17	Manipur	10232.59	0.00	0.00	0.00	10232.59
18	Meghalaya	622.68	0.00	0.00	0.00	622.68
19	Mizoram	0.00	0.00	0.00	0.00	0.00
20	Nagaland	0.00	0.00	0.00	0.00	0.00
21	Odisha	75994.26	1948.97	22779.36	0.00	100722.59
22	Puducherry	128.59	0.00	3221.20	0.00	3349.79
23	Punjab	15742.44	0.00	25343.31	0.00	41085.75
24	Rajasthan	2420.53	0.00	0.00	0.00	2420.53
25	Sikkim	44.00	0.00	35.20	0.00	79.20
26	Tamil Nadu	6583.94	1821.08	0.00	0.00	8405.02
27	Telangana	13708.48	0.00	0.00	0.00	13708.48
28	Tripura	790.03	0.00	0.00	0.00	790.03
29	Union Government	982.52	743.94	0.00	0.00	1726.46
30	Uttar Pradesh	50130.59	0.00	5105.49	0.00	55236.08
31	Uttarakhand	17654.76	0.00	0.00	0.00	17654.76
32	West Bengal	71843.04	0.00	13067.88	0.00	84910.92
	Total (99)	**548081.67**	**12722.06**	**85517.19**	**0.00**	**646320.92**

Source: Annual Report of "Combined Finance and Revenue Accounts of the Union & State Governments" for the year 2016-17, Comptroller and Auditor General of India (CAG)

Table A-2: Distribution of Capital Expenditure by Sub-Major Head of Accounts of the Union and State/UT Governments for the year 2017-18

(₹ in Lakh)

Sl. No.	Name of States/UTs	Flood Control (01)	Anti-Sea Erosion (02)	Drainage (03)	General (80)	Total (99)
1	Andhra Pradesh	20368.03	0.00	4941.12	0.00	25309.15
2	Arunachal Pradesh	6600.06	0.00	0.00	0.00	6600.06
3	Assam	30484.32	0.00	0.00	0.00	30484.32
4	Bihar	128749.90	0.00	0.00	0.00	128749.90
5	Chhattisgarh	1100.95	0.00	0.00	0.00	1100.95
6	Delhi	157.16	0.00	6328.61	0.00	6485.77
7	Goa	3219.76	940.70	1478.66	0.00	5639.12
8	Gujarat	1494.13	0.00	5288.93	0.00	6783.06
9	Haryana	19962.41	0.00	0.00	0.00	19962.41
10	Himachal Pradesh	4528.69	0.00	0.00	0.00	4528.69
11	Jammu & Kashmir (incl. Ladakh)	16265.17	0.00	0.00	0.00	16265.17
12	Jharkhand	930.71	0.00	0.00	0.00	930.71
13	Karnataka	1563.21	5825.25	0.00	0.00	7388.46
14	Kerala	13368.35	2495.34	0.00	0.00	15863.69
15	Madhya Pradesh	1161.41	0.00	0.00	0.00	1161.41
16	Maharashtra	-1387.38	94.62	1.95	0.00	-1290.81
17	Manipur	3829.43	0.00	0.00	0.00	3829.43
18	Meghalaya	929.52	0.00	0.00	0.00	929.52
19	Mizoram	0.00	0.00	0.00	0.00	0.00
20	Nagaland	0.00	0.00	0.00	0.00	0.00
21	Odisha	68900.24	2050.00	25403.44	0.00	96353.68
22	Puducherry	65.63	0.00	2613.33	0.00	2678.96
23	Punjab	3014.28	0.00	3667.80	0.00	6682.08
24	Rajasthan	7388.23	0.00	0.00	0.00	7388.23
25	Sikkim	50.16	0.00	141.02	0.00	191.18
26	Tamil Nadu	4558.17	4702.14	0.00	0.00	9260.31
27	Telangana	4082.89	0.00	0.00	0.00	4082.89
28	Tripura	929.62	0.00	0.00	0.00	929.62
29	Union Government	2873.04	742.44	0.00	0.00	3615.48
30	Uttar Pradesh	54280.78	0.00	2151.76	0.00	56432.54
31	Uttarakhand	14015.38	0.00	0.00	0.00	14015.38
32	West Bengal	77779.51	0.00	10895.29	0.00	88674.80
	Total (99)	**491263.76**	**16850.49**	**62911.91**	**0.00**	**571026.16**

Source: Annual Report of "Combined Finance and Revenue Accounts of the Union & State Governments" for the year 2017-18, Comptroller and Auditor General of India (CAG)

Table A-2: Distribution of Capital Expenditure by Sub-Major Head of Accounts of the Union and State/UT Governments for the year 2018-19

(₹ in Lakh)

Sl. No.	Name of States/UTs	Flood Control (01)	Anti-Sea Erosion (02)	Drainage (03)	General (80)	Total (99)
1	Andhra Pradesh	11977.35	0.00	3316.39	0.00	15293.74
2	Arunachal Pradesh	14139.62	0.00	0.00	0.00	14139.62
3	Assam	48649.76	0.00	0.00	0.00	48649.76
4	Bihar	124387.75	0.00	0.00	0.00	124387.75
5	Chhattisgarh	2736.70	0.00	0.00	0.00	2736.70
6	Delhi	1133.45	0.00	5718.60	0.00	6852.05
7	Goa	3296.98	877.53	1642.11	0.00	5816.62
8	Gujarat	2098.82	0.00	5390.73	0.00	7489.55
9	Haryana	18678.51	0.00	0.00	0.00	18678.51
10	Himachal Pradesh	13701.82	0.00	0.00	0.00	13701.82
11	Jammu & Kashmir (incl. Ladakh)	17951.41	0.00	0.00	0.00	17951.41
12	Jharkhand	1822.49	0.00	0.00	0.00	1822.49
13	Karnataka	2080.14	3470.23	0.00	0.00	5550.37
14	Kerala	5098.26	775.99	0.00	0.00	5874.25
15	Madhya Pradesh	215.28	0.00	0.00	0.00	215.28
16	Maharashtra	7073.80	787.35	0.39	0.00	7861.54
17	Manipur	5169.70	0.00	321.07	0.00	5490.77
18	Meghalaya	1255.64	0.00	0.00	0.00	1255.64
19	Mizoram	0.00	0.00	0.00	0.00	0.00
20	Nagaland	0.00	0.00	0.00	0.00	0.00
21	Odisha	81955.11	2699.98	19874.46	0.00	104529.55
22	Puducherry	93.46	0.00	1540.08	0.00	1633.54
23	Punjab	2197.57	0.00	433.23	0.00	2630.80
24	Rajasthan	1565.95	0.00	0.00	0.00	1565.95
25	Sikkim	5188.22	0.00	0.00	0.00	5188.22
26	Tamil Nadu	5124.07	208.54	0.00	0.00	5332.61
27	Telangana	1790.71	0.00	0.00	0.00	1790.71
28	Tripura	648.59	0.00	0.00	0.00	648.59
29	Union Government	1752.66	664.23	0.00	0.00	2416.89
30	Uttar Pradesh	71147.52	0.00	2049.94	0.00	73197.46
31	Uttarakhand	7855.39	0.00	98.75	0.00	7954.14
32	West Bengal	69005.34	0.00	21561.92	0.00	90567.26
	Total (99)	**529792.07**	**9483.85**	**61947.67**	**0.00**	**601223.59**

Source: Annual Report of "Combined Finance and Revenue Accounts of the Union & State Governments" for the year 2018-19, Comptroller and Auditor General of India (CAG)

Table A-2: Distribution of Capital Expenditure by Sub-Major Head of Accounts of the Union and State/UT Governments for the year 2019-20

(₹ in Lakh)

Sl. No.	Name of States/UTs	Flood Control (01)	Anti-Sea Erosion (02)	Drainage (03)	General (80)	Total (99)
1	Andhra Pradesh	2936.55	0.00	3189.27	0.00	6125.82
2	Arunachal Pradesh	12567.26	0.00	0.00	0.00	12567.26
3	Assam	73294.42	0.00	0.00	0.00	73294.42
4	Bihar	-3909.63	0.00	0.00	0.00	-3909.63
5	Chhattisgarh	1021.48	0.00	0.00	0.00	1021.48
6	Delhi	600.74	0.00	11018.99	0.00	11619.73
7	Goa	3279.53	680.91	751.69	0.00	4712.13
8	Gujarat	1801.37	0.00	6229.33	0.00	8030.70
9	Haryana	29357.32	0.00	0.00	0.00	29357.32
10	Himachal Pradesh	32667.74	0.00	0.00	0.00	32667.74
11	Jammu & Kashmir (incl. Ladakh)	0.00	0.00	0.00	0.00	0.00
12	Jharkhand	546.95	0.00	0.00	0.00	546.95
13	Karnataka	8665.90	1152.87	0.00	0.00	9818.77
14	Kerala	1524.29	2249.59	0.00	0.00	3773.88
15	Madhya Pradesh	499.42	0.00	0.00	0.00	499.42
16	Maharashtra	4350.92	3935.68	154.34	0.00	8440.94
17	Manipur	2953.34	0.00	77.00	0.00	3030.34
18	Meghalaya	50.00	0.00	0.00	0.00	50.00
19	Mizoram	0.00	0.00	0.00	0.00	0.00
20	Nagaland	0.00	0.00	0.00	0.00	0.00
21	Odisha	81179.97	1865.55	14997.98	0.00	98043.50
22	Puducherry	89.57	0.00	1157.53	0.00	1247.10
23	Punjab	8398.16	0.00	12388.04	0.00	20786.20
24	Rajasthan	2712.47	0.00	0.00	0.00	2712.47
25	Sikkim	81.90	0.00	0.00	0.00	81.90
26	Tamil Nadu	2319.98	47.35	0.00	0.00	2367.33
27	Telangana	101.10	0.00	0.00	0.00	101.10
28	Tripura	91.70	0.00	0.00	0.00	91.70
29	Union Government	1775.98	458.20	0.00	0.00	2234.18
30	Uttar Pradesh	73659.25	0.00	1531.34	0.00	75190.59
31	Uttarakhand	10575.03	0.00	0.00	0.00	10575.03
32	West Bengal	51498.54	0.00	17024.95	0.00	68523.49
	Total (99)	**404691.25**	**10390.15**	**68520.46**	**0.00**	**483601.86**

Source: Annual Report of "Combined Finance and Revenue Accounts of the Union & State Governments" for the year 2019-20, Comptroller and Auditor General of India (CAG)

Table A-2: Distribution of Capital Expenditure by Sub-Major Head of Accounts of the Union and State/UT Governments for the year 2005-2020

(₹ in Lakh)

Sl. No.	Name of States/UTs	Flood Control (01)	Anti-Sea Erosion (02)	Drainage (03)	General (80)	Total (99)
1	Andhra Pradesh	253508.01	0.00	57894.09	0.00	311402.10
2	Arunachal Pradesh	86070.30	0.00	0.00	0.00	86070.30
3	Assam	464199.45	0.00	0.00	0.00	464199.45
4	Bihar	990954.03	0.00	0.00	0.00	990954.03
5	Chhattisgarh	13579.71	0.00	0.00	0.00	13579.71
6	Delhi	6068.04	0.00	84209.27	0.00	90277.31
7	Goa	33899.50	14826.47	16519.23	0.00	65245.20
8	Gujarat	65560.57	0.00	57619.64	0.00	123180.21
9	Haryana	230909.52	0.00	0.00	0.00	230909.52
10	Himachal Pradesh	136010.14	0.00	0.00	0.00	136010.14
11	Jammu & Kashmir (incl. Ladakh)	142462.38	40.29	15.73	0.00	142518.40
12	Jharkhand	19284.15	0.00	0.00	0.00	19284.15
13	Karnataka	40791.63	25833.10	0.00	0.00	66624.73
14	Kerala	96442.72	59504.01	0.00	0.00	155946.73
15	Madhya Pradesh	11733.16	0.00	0.00	0.00	11733.16
16	Maharashtra	53394.89	22790.59	2485.30	0.00	78670.78
17	Manipur	78421.25	0.00	398.07	0.00	78819.32
18	Meghalaya	6542.23	0.00	0.00	0.00	6542.23
19	Mizoram	0.00	2103.24	0.00	0.00	2103.24
20	Nagaland	0.00	0.00	0.00	0.00	0.00
21	Odisha	507273.29	17536.51	148479.06	0.00	673288.86
22	Puducherry	6204.85	303.29	27682.89	0.00	34191.03
23	Punjab	74910.49	0.00	129923.88	0.00	204834.37
24	Rajasthan	22416.89	0.00	0.00	0.00	22416.89
25	Sikkim	8021.55	0.00	1485.07	0.00	9506.62
26	Tamil Nadu	215943.67	28123.70	0.00	0.00	244067.37
27	Telangana	28220.09	0.00	31.59	0.00	28251.68
28	Tripura	15591.60	0.00	0.00	0.00	15591.60
29	Union Government	14557.40	15255.78	0.00	0.00	29813.18
30	Uttar Pradesh	694708.51	0.00	42874.90	0.00	737583.41
31	Uttarakhand	141857.60	0.00	98.75	0.00	141956.35
32	West Bengal	638948.98	2106.55	99414.48	0.00	740470.01
	Total (99)	**5098486.60**	**188423.53**	**669131.95**	**0.00**	**5956042.08**

Note: (-) Not Available

Source: Annual Report of "Combined Finance and Revenue Accounts of the Union & State Governments" for the year 2005-2020, Comptroller and Auditor General of India (CAG)

Table A-3: Distribution of Expenditure (Revenue + Capital) by Sub-Major Head of Accounts of the Union and State/UT Governments for the year 2005-06

(₹ in Lakh)

Sl. No.	Name of States/UTs	Flood Control (01)	Anti-Sea Erosion (02)	Drainage (03)	General (80)	Total (99)
1	Andhra Pradesh	1350.87	0.00	11280.77	0.00	12631.64
2	Arunachal Pradesh	575.00	0.00	0.00	0.00	575.00
3	Assam	12883.68	0.00	0.00	0.00	12883.68
4	Bihar	18865.42	0.00	829.73	0.00	19695.15
5	Chhattisgarh	68.54	0.00	0.00	0.00	68.54
6	Delhi	1820.61	0.00	6864.05	0.00	8684.66
7	Goa	187.98	114.98	183.92	0.00	486.88
8	Gujarat	192.91	0.00	950.56	0.00	1143.47
9	Haryana	6118.67	0.00	0.00	0.00	6118.67
10	Himachal Pradesh	1670.20	0.00	0.00	0.00	1670.20
11	Jammu & Kashmir (incl. Ladakh)	5298.12	6.01	0.00	0.00	5304.13
12	Jharkhand	211.63	0.00	0.00	0.00	211.63
13	Karnataka	545.67	430.08	0.00	0.00	975.75
14	Kerala	1259.43	1562.75	0.00	0.00	2822.18
15	Madhya Pradesh	232.89	0.00	0.00	0.00	232.89
16	Maharashtra	151.29	455.68	1387.44	0.00	1994.41
17	Manipur	1401.91	0.00	0.00	149.84	1551.75
18	Meghalaya	504.01	0.00	0.00	0.00	504.01
19	Mizoram	0.00	60.00	0.00	0.00	60.00
20	Nagaland	0.00	0.00	0.00	0.00	0.00
21	Odisha	3563.17	573.47	700.62	0.00	4837.26
22	Puducherry	715.31	293.62	1867.29	0.00	2876.22
23	Punjab	6749.27	0.00	4601.02	0.00	11350.29
24	Rajasthan	730.72	0.00	0.00	0.00	730.72
25	Sikkim	452.40	0.00	22.18	0.00	474.58
26	Tamil Nadu	2196.18	4125.47	495.58	0.00	6817.23
27	Tripura	1427.26	0.00	0.00	0.00	1427.26
28	Union Government	13079.41	508.97	0.00	0.00	13588.38
29	Uttar Pradesh	23442.41	0.00	10325.84	0.00	33768.25
30	Uttarakhand	3905.15	0.00	0.00	0.00	3905.15
31	West Bengal	11103.12	19.48	8648.20	60.92	19831.72
	Total (99)	**120703.23**	**8150.51**	**48157.20**	**210.76**	**177221.70**

Source: Annual Report of "Combined Finance and Revenue Accounts of the Union & State Governments" for the year 2005-06, Comptroller and Auditor General of India (CAG)

Table A-3: Distribution of Expenditure (Revenue + Capital) by Sub-Major Head of Accounts of the Union and State/UT Governments for the year 2006-07

(₹ in Lakh)

Sl. No.	Name of States/UTs	Flood Control (01)	Anti-Sea Erosion (02)	Drainage (03)	General (80)	Total (99)
1	Andhra Pradesh	5329.78	0.00	14798.02	0.00	20127.80
2	Arunachal Pradesh	2439.16	0.00	0.00	0.00	2439.16
3	Assam	22233.01	0.00	0.00	0.00	22233.01
4	Bihar	18148.31	0.00	892.04	0.00	19040.35
5	Chhattisgarh	174.32	0.00	0.00	0.00	174.32
6	Delhi	1736.44	0.00	4213.79	0.00	5950.23
7	Goa	674.91	573.17	295.70	0.00	1543.78
8	Gujarat	579.44	0.00	1706.98	0.00	2286.42
9	Haryana	5849.00	0.00	0.00	0.00	5849.00
10	Himachal Pradesh	1920.36	0.00	0.00	0.00	1920.36
11	Jammu & Kashmir (incl. Ladakh)	6786.74	34.28	0.05	0.00	6821.07
12	Jharkhand	-1559.11	0.00	0.00	0.00	-1559.11
13	Karnataka	845.53	1282.71	0.00	0.00	2128.24
14	Kerala	317.34	1424.42	0.00	0.00	1741.76
15	Madhya Pradesh	514.83	0.00	0.00	0.00	514.83
16	Maharashtra	1109.51	857.81	776.82	0.00	2744.14
17	Manipur	2023.61	0.00	0.00	279.38	2302.99
18	Meghalaya	302.95	0.00	0.00	0.00	302.95
19	Mizoram	0.00	351.00	0.00	0.00	351.00
20	Nagaland	0.00	0.00	0.00	0.00	0.00
21	Odisha	4629.71	774.14	1290.48	0.00	6694.33
22	Puducherry	501.86	9.67	3301.97	0.00	3813.50
23	Punjab	6774.19	0.00	932.55	0.00	7706.74
24	Rajasthan	309.58	0.00	0.00	0.00	309.58
25	Sikkim	936.67	0.00	85.46	0.00	1022.13
26	Tamil Nadu	1346.52	2150.30	80.51	0.00	3577.33
27	Tripura	2070.76	0.00	0.00	0.00	2070.76
28	Union Government	13672.94	920.03	0.00	0.00	14592.97
29	Uttar Pradesh	33614.85	0.00	8709.92	0.00	42324.77
30	Uttarakhand	4065.14	0.00	0.00	0.00	4065.14
31	West Bengal	13854.05	0.00	7311.23	25.40	21190.68
	Total (99)	**151202.40**	**8377.53**	**44395.52**	**304.78**	**204280.23**

Source: Annual Report of "Combined Finance and Revenue Accounts of the Union & State Governments" for the year 2006-07, Comptroller and Auditor General of India (CAG)

Table A-3: Distribution of Expenditure (Revenue + Capital) by Sub-Major Head of Accounts of the Union and State/UT Governments for the year 2007-08

(₹ in Lakh)

Sl. No.	Name of States/UTs	Flood Control (01)	Anti-Sea Erosion (02)	Drainage (03)	General (80)	Total (99)
1	Andhra Pradesh	19962.20	0.00	7362.05	0.00	27324.25
2	Arunachal Pradesh	1411.21	0.00	0.00	0.00	1411.21
3	Assam	19954.72	0.00	0.00	0.00	19954.72
4	Bihar	32231.60	0.00	964.10	0.00	33195.70
5	Chhattisgarh	418.54	0.00	0.00	0.00	418.54
6	Delhi	1815.15	0.00	5590.36	0.00	7405.51
7	Goa	992.87	462.16	449.19	0.00	1904.22
8	Gujarat	9318.41	0.00	1899.53	0.00	11217.94
9	Haryana	6448.76	0.00	0.00	0.00	6448.76
10	Himachal Pradesh	2349.82	0.00	0.00	0.00	2349.82
11	Jammu & Kashmir (incl. Ladakh)	6365.86	0.00	1.59	0.00	6367.45
12	Jharkhand	681.70	0.00	0.00	0.00	681.70
13	Karnataka	1471.66	504.54	0.00	0.00	1976.20
14	Kerala	1416.44	4498.04	0.00	0.00	5914.48
15	Madhya Pradesh	1629.65	0.00	0.00	0.00	1629.65
16	Maharashtra	978.67	1553.23	1430.52	0.00	3962.42
17	Manipur	1904.70	0.00	0.00	0.00	1904.70
18	Meghalaya	421.00	0.00	0.00	0.00	421.00
19	Mizoram	0.00	271.00	0.00	0.00	271.00
20	Nagaland	0.00	0.00	0.00	0.00	0.00
21	Odisha	8514.41	1122.23	3754.30	0.00	13390.94
22	Puducherry	601.99	0.00	2158.00	0.00	2759.99
23	Punjab	10528.03	0.00	4956.68	0.00	15484.71
24	Rajasthan	178.63	0.00	0.00	0.00	178.63
25	Sikkim	730.58	0.00	164.43	0.00	895.01
26	Tamil Nadu	1553.22	2842.58	80.51	0.00	4476.31
27	Tripura	1809.80	0.00	0.00	0.00	1809.80
28	Union Government	9786.28	1405.52	0.00	0.00	11191.80
29	Uttar Pradesh	29688.40	0.00	5055.08	0.00	34743.48
30	Uttarakhand	2641.01	0.00	0.00	0.00	2641.01
31	West Bengal	16487.35	313.93	7053.34	51.99	23906.61
	Total (99)	**192292.66**	**12973.23**	**40919.68**	**51.99**	**246237.56**

Source: Annual Report of "Combined Finance and Revenue Accounts of the Union & State Governments" for the year 2007-08, Comptroller and Auditor General of India (CAG)

Table A-3: Distribution of Expenditure (Revenue + Capital) by Sub-Major Head of Accounts of the Union and State/UT Governments for the year 2008-09

(₹ in Lakh)

Sl. No.	Name of States/UTs	Flood Control (01)	Anti-Sea Erosion (02)	Drainage (03)	General (80)	Total (99)
1	Andhra Pradesh	18254.86	0.00	13055.04	0.00	31309.90
2	Arunachal Pradesh	7057.08	0.00	0.00	0.00	7057.08
3	Assam	30491.85	0.00	0.00	0.00	30491.85
4	Bihar	66899.21	0.00	1555.97	0.00	68455.18
5	Chhattisgarh	333.71	0.00	0.00	0.00	333.71
6	Delhi	2596.07	0.00	8074.45	0.00	10670.52
7	Goa	1786.02	1504.93	624.04	0.00	3914.99
8	Gujarat	8799.06	0.00	3048.89	0.00	11847.95
9	Haryana	8104.58	0.00	0.00	0.00	8104.58
10	Himachal Pradesh	2473.68	0.00	0.00	0.00	2473.68
11	Jammu & Kashmir (incl. Ladakh)	9243.07	0.00	0.00	0.00	9243.07
12	Jharkhand	991.77	0.00	0.00	0.00	991.77
13	Karnataka	2414.85	954.89	0.00	0.00	3369.74
14	Kerala	2629.16	11501.01	0.00	0.00	14130.17
15	Madhya Pradesh	1264.94	0.00	0.00	0.00	1264.94
16	Maharashtra	2059.85	2595.46	889.39	0.00	5544.70
17	Manipur	7427.57	0.00	0.00	0.00	7427.57
18	Meghalaya	602.25	0.00	0.00	0.00	602.25
19	Mizoram	0.00	1108.19	0.00	0.00	1108.19
20	Nagaland	0.00	0.00	0.00	0.00	0.00
21	Odisha	15730.62	1240.74	3196.76	0.00	20168.12
22	Puducherry	367.01	0.00	1115.64	0.00	1482.65
23	Punjab	8205.94	0.00	12430.85	0.00	20636.79
24	Rajasthan	162.23	0.00	0.00	0.00	162.23
25	Sikkim	2185.21	0.00	62.06	0.00	2247.27
26	Tamil Nadu	4856.18	995.58	80.51	0.00	5932.27
27	Tripura	1636.51	0.00	0.00	0.00	1636.51
28	Union Government	17783.76	1513.51	0.00	0.00	19297.27
29	Uttar Pradesh	36596.75	0.00	4420.25	0.00	41017.00
30	Uttarakhand	2117.53	0.00	0.00	0.00	2117.53
31	West Bengal	15813.42	239.19	8217.16	41.42	24311.19
	Total (99)	**278884.74**	**21653.50**	**56771.01**	**41.42**	**357350.67**

Source: Annual Report of "Combined Finance and Revenue Accounts of the Union & State Governments" for the year 2008-09, Comptroller and Auditor General of India (CAG)

Table A-3: Distribution of Expenditure (Revenue + Capital) by Sub-Major Head of Accounts of the Union and State/UT Governments for the year 2009-10

(₹ in Lakh)

Sl. No.	Name of States/UTs	Flood Control (01)	Anti-Sea Erosion (02)	Drainage (03)	General (80)	Total (99)
1	Andhra Pradesh	25997.74	0.00	13119.97	0.00	39117.71
2	Arunachal Pradesh	3853.61	0.00	0.00	0.00	3853.61
3	Assam	42428.48	0.00	0.00	0.00	42428.48
4	Bihar	95174.52	0.00	2426.13	0.00	97600.65
5	Chhattisgarh	538.70	0.00	0.00	0.00	538.70
6	Delhi	2582.44	0.00	11388.18	0.00	13970.62
7	Goa	4372.64	1664.83	1704.80	0.00	7742.27
8	Gujarat	9255.22	0.00	4313.05	0.00	13568.27
9	Haryana	7898.24	0.00	0.00	0.00	7898.24
10	Himachal Pradesh	7127.74	0.00	0.00	0.00	7127.74
11	Jammu & Kashmir (incl. Ladakh)	9278.65	0.00	0.00	0.00	9278.65
12	Jharkhand	1132.51	0.00	0.00	0.00	1132.51
13	Karnataka	703.91	748.15	0.00	0.00	1452.06
14	Kerala	1612.28	14956.55	0.00	0.00	16568.83
15	Madhya Pradesh	689.70	0.00	0.00	0.00	689.70
16	Maharashtra	1697.03	4205.37	1240.61	0.00	7143.01
17	Manipur	6505.45	0.00	0.00	0.00	6505.45
18	Meghalaya	354.24	0.00	0.00	0.00	354.24
19	Mizoram	0.00	0.00	0.00	0.00	0.00
20	Nagaland	0.00	0.00	0.00	0.00	0.00
21	Odisha	19925.81	1795.63	5897.24	0.00	27618.68
22	Puducherry	352.94	0.00	2973.62	0.00	3326.56
23	Punjab	12071.81	0.00	8674.88	0.00	20746.69
24	Rajasthan	171.69	0.00	0.00	0.00	171.69
25	Sikkim	673.83	0.00	11.93	0.00	685.76
26	Tamil Nadu	17795.96	221.49	80.51	0.00	18097.96
27	Tripura	1747.93	0.00	0.00	0.00	1747.93
28	Union Government	15064.47	1595.60	0.00	0.00	16660.07
29	Uttar Pradesh	38012.28	0.00	2052.98	0.00	40065.26
30	Uttarakhand	859.85	0.00	0.00	0.00	859.85
31	West Bengal	32173.95	124.06	9172.05	32.47	41502.53
	Total (99)	**360053.62**	**25311.68**	**63055.95**	**32.47**	**448453.72**

Source: Annual Report of "Combined Finance and Revenue Accounts of the Union & State Governments" for the year 2009-10, Comptroller and Auditor General of India (CAG)

Table A-3: Distribution of Expenditure (Revenue + Capital) by Sub-Major Head of Accounts of the Union and State/UT Governments for the year 2010-11

(₹ in Lakh)

Sl. No.	Name of States/UTs	Flood Control (01)	Anti-Sea Erosion (02)	Drainage (03)	General (80)	Total (99)
1	Andhra Pradesh	18627.46	0.00	14439.78	0.00	33067.24
2	Arunachal Pradesh	9171.08	0.00	0.00	0.00	9171.08
3	Assam	42778.62	0.00	0.00	0.00	42778.62
4	Bihar	88904.20	0.00	2441.33	0.00	91345.53
5	Chhattisgarh	428.20	0.00	0.00	0.00	428.20
6	Delhi	2969.96	0.00	10543.13	0.00	13513.09
7	Goa	4313.61	687.47	1526.02	0.00	6527.10
8	Gujarat	9549.91	0.00	5138.73	0.00	14688.64
9	Haryana	12131.60	0.00	0.00	0.00	12131.60
10	Himachal Pradesh	12499.63	0.00	0.00	0.00	12499.63
11	Jammu & Kashmir (incl. Ladakh)	13185.71	0.00	0.00	0.00	13185.71
12	Jharkhand	1156.72	0.00	0.00	0.00	1156.72
13	Karnataka	1203.77	1176.48	0.00	0.00	2380.25
14	Kerala	7579.62	5231.88	0.00	0.00	12811.50
15	Madhya Pradesh	1588.18	0.00	0.00	0.00	1588.18
16	Maharashtra	1743.90	8150.83	1467.37	0.00	11362.10
17	Manipur	9809.72	0.00	0.00	0.00	9809.72
18	Meghalaya	278.74	0.00	0.00	0.00	278.74
19	Mizoram	0.00	0.00	0.00	0.00	0.00
20	Nagaland	0.00	0.00	0.00	0.00	0.00
21	Odisha	14946.49	2011.56	4427.97	0.00	21386.02
22	Puducherry	1253.28	0.00	1016.79	0.00	2270.07
23	Punjab	9190.58	0.00	3071.53	0.00	12262.11
24	Rajasthan	192.42	0.00	0.00	0.00	192.42
25	Sikkim	540.04	0.00	217.53	0.00	757.57
26	Tamil Nadu	31635.60	398.65	80.51	0.00	32114.76
27	Tripura	2342.32	0.00	0.00	**0.00**	2342.32
28	Union Government	18383.59	963.07	0.00	**0.00**	19346.66
29	Uttar Pradesh	48213.01	0.00	1683.64	**0.00**	49896.65
30	Uttarakhand	2448.84	0.00	0.00	**0.00**	2448.84
31	West Bengal	44756.09	623.55	8731.66	**36.81**	54148.11
	Total (99)	**411822.89**	**19243.49**	**54785.99**	**36.81**	**485889.18**

Source: Annual Report of "Combined Finance and Revenue Accounts of the Union & State Governments" for the year 2010-11, Comptroller and Auditor General of India (CAG)

Table A-3: Distribution of Expenditure (Revenue + Capital) by Sub-Major Head of Accounts of the Union and State/UT Governments for the year 2011-12

(₹ in Lakh)

Sl. No.	Name of States/UTs	Flood Control (01)	Anti-Sea Erosion (02)	Drainage (03)	General (80)	Total (99)
1	Andhra Pradesh	27219.88	0.00	14809.06	0.00	42028.94
2	Arunachal Pradesh	8117.57	0.00	0.00	0.00	8117.57
3	Assam	52994.31	0.00	0.00	0.00	52994.31
4	Bihar	134029.70	0.00	2532.66	0.00	136562.36
5	Chhattisgarh	2516.94	0.00	0.00	0.00	2516.94
6	Delhi	4295.90	0.00	10332.25	0.00	14628.15
7	Goa	3652.52	1289.86	1748.46	0.00	6690.84
8	Gujarat	6165.38	0.00	5081.41	0.00	11246.79
9	Haryana	13327.21	0.00	0.00	0.00	13327.21
10	Himachal Pradesh	4778.70	0.00	0.00	0.00	4778.70
11	Jammu & Kashmir (incl. Ladakh)	17668.18	0.00	-0.54	0.00	17667.64
12	Jharkhand	1585.73	0.00	0.00	0.00	1585.73
13	Karnataka	2024.02	645.74	0.00	0.00	2669.76
14	Kerala	4458.67	818.96	0.00	0.00	5277.63
15	Madhya Pradesh	661.77	0.00	0.00	0.00	661.77
16	Maharashtra	2208.83	2370.00	1950.99	0.00	6529.82
17	Manipur	9942.83	0.00	0.00	0.00	9942.83
18	Meghalaya	713.29	0.00	0.00	0.00	713.29
19	Mizoram	0.00	115.65	0.00	0.00	115.65
20	Nagaland	0.00	0.00	0.00	0.00	0.00
21	Odisha	21130.04	1704.61	8949.54	0.00	31784.19
22	Puducherry	543.80	0.00	1284.73	0.00	1828.53
23	Punjab	12192.16	0.00	3328.50	0.00	15520.66
24	Rajasthan	184.63	0.00	0.00	0.00	184.63
25	Sikkim	614.94	0.00	241.05	0.00	855.99
26	Tamil Nadu	92976.43	301.39	80.51	0.00	93358.33
27	Tripura	2430.25	0.00	0.00	0.00	2430.25
28	Union Government	17285.17	1689.33	0.00	0.00	18974.50
29	Uttar Pradesh	41400.08	0.00	2079.79	0.00	43479.87
30	Uttarakhand	1867.65	0.00	0.00	0.00	1867.65
31	West Bengal	37606.33	393.89	5027.45	88.23	43115.90
	Total (99)	**524592.91**	**9329.43**	**57445.86**	**88.23**	**591456.43**

Source: Annual Report of "Combined Finance and Revenue Accounts of the Union & State Governments" for the year 2011-12, Comptroller and Auditor General of India (CAG)

Table A-3: Distribution of Expenditure (Revenue + Capital) by Sub-Major Head of Accounts of the Union and State/UT Governments for the year 2012-13

(₹ in Lakh)

Sl. No.	Name of States/UTs	Flood Control (01)	Anti-Sea Erosion (02)	Drainage (03)	General (80)	Total (99)
1	Andhra Pradesh	16826.33	0.00	14415.57	0.00	31241.90
2	Arunachal Pradesh	2093.75	0.00	0.00	0.00	2093.75
3	Assam	55811.19	0.00	0.00	0.00	55811.19
4	Bihar	113499.20	0.00	2294.70	0.00	115793.90
5	Chhattisgarh	487.77	0.00	0.00	0.00	487.77
6	Delhi	3930.90	0.00	13625.47	0.00	17556.37
7	Goa	2583.37	1436.63	1328.45	0.00	5348.45
8	Gujarat	5562.45	0.00	5689.07	0.00	11251.52
9	Haryana	16329.90	0.00	0.00	0.00	16329.90
10	Himachal Pradesh	6150.79	0.00	0.00	0.00	6150.79
11	Jammu & Kashmir (incl. Ladakh)	17226.31	0.00	14.63	0.00	17240.94
12	Jharkhand	1747.78	0.00	0.00	0.00	1747.78
13	Karnataka	6077.29	694.16	0.00	0.00	6771.45
14	Kerala	15054.09	4210.44	0.00	0.00	19264.53
15	Madhya Pradesh	621.79	0.00	0.00	0.00	621.79
16	Maharashtra	3240.99	4396.54	1595.48	0.00	9233.01
17	Manipur	10489.64	0.00	0.00	0.00	10489.64
18	Meghalaya	383.79	0.00	0.00	0.00	383.79
19	Mizoram	0.00	0.00	0.00	0.00	0.00
20	Nagaland	0.00	0.00	0.00	0.00	0.00
21	Odisha	27600.88	2563.26	9279.86	0.00	39444.00
22	Puducherry	327.49	0.00	1134.30	0.00	1461.79
23	Punjab	17131.71	0.00	10483.79	0.00	27615.50
24	Rajasthan	1020.42	0.00	0.00	0.00	1020.42
25	Sikkim	1090.60	0.00	232.38	0.00	1322.98
26	Tamil Nadu	35860.50	4080.84	80.51	0.00	40021.85
27	Tripura	2598.41	0.00	0.00	0.00	2598.41
28	Union Government	19836.15	2131.64	0.00	0.00	21967.79
29	Uttar Pradesh	49752.61	0.00	10898.68	0.00	60651.29
30	Uttarakhand	4364.15	0.00	0.00	0.00	4364.15
31	West Bengal	58517.38	283.16	8989.76	60.06	67850.36
	Total (99)	**496217.63**	**19796.67**	**80062.65**	**60.06**	**596137.01**

Source: Annual Report of "Combined Finance and Revenue Accounts of the Union & State Governments" for the year 2012-13, Comptroller and Auditor General of India (CAG)

Table A-3: Distribution of Expenditure (Revenue + Capital) by Sub-Major Head of Accounts of the Union and State/UT Governments for the year 2013-14

(₹ in Lakh)

Sl. No.	Name of States/UTs	Flood Control (01)	Anti-Sea Erosion (02)	Drainage (03)	General (80)	Total (99)
1	Andhra Pradesh	12396.93	0.00	13936.20	0.00	26333.13
2	Arunachal Pradesh	3979.80	0.00	0.00	0.00	3979.80
3	Assam	43014.81	0.00	0.00	0.00	43014.81
4	Bihar	95957.75	0.00	2490.15	0.00	98447.90
5	Chhattisgarh	915.39	0.00	0.00	0.00	915.39
6	Delhi	4032.36	0.00	13409.99	0.00	17442.35
7	Goa	3420.94	1483.04	1310.54	0.00	6214.52
8	Gujarat	12206.77	0.00	6056.67	0.00	18263.44
9	Haryana	21910.03	0.00	0.00	0.00	21910.03
10	Himachal Pradesh	4106.95	0.00	0.00	0.00	4106.95
11	Jammu & Kashmir (incl. Ladakh)	11536.00	0.00	0.00	0.00	11536.00
12	Jharkhand	901.09	0.00	0.00	0.00	901.09
13	Karnataka	4054.28	1266.06	0.00	0.00	5320.34
14	Kerala	7065.30	4544.06	0.00	0.00	11609.36
15	Madhya Pradesh	678.10	0.00	0.00	0.00	678.10
16	Maharashtra	3943.16	2480.80	1522.64	0.00	7946.60
17	Manipur	11018.14	0.00	0.00	0.00	11018.14
18	Meghalaya	492.61	0.00	0.00	0.00	492.61
19	Mizoram	0.00	13.00	0.00	0.00	13.00
20	Nagaland	0.00	0.00	0.00	0.00	0.00
21	Odisha	51749.00	3963.17	9260.61	0.00	64972.78
22	Puducherry	385.06	0.00	1150.96	0.00	1536.02
23	Punjab	15832.05	0.00	5515.17	0.00	21347.22
24	Rajasthan	881.49	0.00	0.00	0.00	881.49
25	Sikkim	460.35	0.00	129.06	0.00	589.41
26	Tamil Nadu	20414.73	4480.69	80.51	0.00	24975.93
27	Telangana	0.00	0.00	0.00	0.00	0.00
28	Tripura	1535.41	0.00	0.00	0.00	1535.41
29	Union Government	20850.57	2015.66	0.00	0.00	22866.23
30	Uttar Pradesh	47446.39	0.00	5091.30	0.00	52537.69
31	Uttarakhand	9202.29	0.00	0.00	0.00	9202.29
32	West Bengal	67935.43	90.00	8539.41	186.45	76751.29
	Total (99)	**478323.18**	**20336.48**	**68493.21**	**186.45**	**567339.32**

Source: Annual Report of "Combined Finance and Revenue Accounts of the Union & State Governments" for the year 2013-14, Comptroller and Auditor General of India (CAG)

Table A-3: Distribution of Expenditure (Revenue + Capital) by Sub-Major Head of Accounts of the Union and State/UT Governments for the year 2014-15

(₹ in Lakh)

Sl. No.	Name of States/UTs	Flood Control (01)	Anti-Sea Erosion (02)	Drainage (03)	General (80)	Total (99)
1	Andhra Pradesh	18021.06	0.00	8956.03	0.00	26977.09
2	Arunachal Pradesh	3076.37	0.00	0.00	0.00	3076.37
3	Assam	77548.19	0.00	0.00	0.00	77548.19
4	Bihar	65054.42	0.00	2485.98	0.00	67540.40
5	Chhattisgarh	824.47	0.00	0.00	0.00	824.47
6	Delhi	4282.38	0.00	16546.41	0.00	20828.79
7	Goa	3578.43	1631.61	2115.02	0.00	7325.06
8	Gujarat	14880.25	0.00	4394.64	0.00	19274.89
9	Haryana	22152.36	0.00	0.00	0.00	22152.36
10	Himachal Pradesh	36665.82	0.00	0.00	0.00	36665.82
11	Jammu & Kashmir (incl. Ladakh)	16166.65	0.00	0.00	0.00	16166.65
12	Jharkhand	2923.03	0.00	0.00	0.00	2923.03
13	Karnataka	2978.90	2342.99	0.00	0.00	5321.89
14	Kerala	8994.13	4997.68	0.00	0.00	13991.81
15	Madhya Pradesh	697.62	0.00	0.00	0.00	697.62
16	Maharashtra	13758.75	2122.50	1756.21	0.00	17637.46
17	Manipur	4829.19	0.00	0.00	0.00	4829.19
18	Meghalaya	277.98	0.00	0.00	0.00	277.98
19	Mizoram	0.00	38.40	0.00	0.00	38.40
20	Nagaland	0.00	0.00	0.00	0.00	0.00
21	Odisha	53880.61	4391.24	11750.99	0.00	70022.84
22	Puducherry	1766.83	0.00	1641.97	0.00	3408.80
23	Punjab	19021.82	0.00	16583.94	0.00	35605.76
24	Rajasthan	256.87	0.00	0.00	0.00	256.87
25	Sikkim	442.84	0.00	142.77	0.00	585.61
26	Tamil Nadu	30920.37	1434.71	80.51	0.00	32435.59
27	Telangana	1966.51	0.00	31.59	0.00	1998.10
28	Tripura	2358.53	0.00	0.00	0.00	2358.53
29	Union Government	23642.99	1606.27	0.00	0.00	25249.26
30	Uttar Pradesh	74133.38	0.00	6751.40	0.00	80884.78
31	Uttarakhand	31553.86	0.00	0.00	0.00	31553.86
32	West Bengal	100257.10	19.29	11292.10	78.06	111646.55
	Total (99)	**636911.71**	**18584.69**	**84529.56**	**78.06**	**740104.02**

Source: Annual Report of "Combined Finance and Revenue Accounts of the Union & State Governments" for the year 2014-15, Comptroller and Auditor General of India (CAG)

Table A-3: Distribution of Expenditure (Revenue + Capital) by Sub-Major Head of Accounts of the Union and State/UT Governments for the year 2015-16

(₹ in Lakh)

Sl. No.	Name of States/UTs	Flood Control (01)	Anti-Sea Erosion (02)	Drainage (03)	General (80)	Total (99)
1	Andhra Pradesh	16592.78	0.00	4593.88	0.00	21186.66
2	Arunachal Pradesh	11280.81	0.00	0.00	0.00	11280.81
3	Assam	42411.10	0.00	0.00	0.00	42411.10
4	Bihar	84230.19	0.00	2237.03	0.00	86467.22
5	Chhattisgarh	515.23	0.00	0.00	0.00	515.23
6	Delhi	4420.35	0.00	14459.88	0.00	18880.23
7	Goa	3504.11	1581.51	1615.87	0.00	6701.49
8	Gujarat	7682.04	0.00	5261.36	0.00	12943.40
9	Haryana	20519.10	0.00	0.00	0.00	20519.10
10	Himachal Pradesh	5174.10	0.00	0.00	0.00	5174.10
11	Jammu & Kashmir (incl. Ladakh)	24380.10	0.00	0.00	0.00	24380.10
12	Jharkhand	5080.83	0.00	0.00	0.00	5080.83
13	Karnataka	2606.59	3180.23	0.00	0.00	5786.82
14	Kerala	22390.92	6645.35	0.00	0.00	29036.27
15	Madhya Pradesh	623.76	0.00	0.00	0.00	623.76
16	Maharashtra	8661.59	253.33	1709.47	0.00	10624.39
17	Manipur	3833.20	0.00	0.00	0.00	3833.20
18	Meghalaya	217.27	0.00	0.00	0.00	217.27
19	Mizoram	0.00	146.00	0.00	0.00	146.00
20	Nagaland	0.00	0.00	0.00	0.00	0.00
21	Odisha	70873.27	5086.90	18099.93	0.00	94060.10
22	Puducherry	336.92	0.00	2475.47	0.00	2812.39
23	Punjab	21061.55	0.00	17512.59	0.00	38574.14
24	Rajasthan	4241.03	0.00	0.00	0.00	4241.03
25	Sikkim	1125.46	0.00	0.00	0.00	1125.46
26	Tamil Nadu	19277.67	312.89	0.00	0.00	19590.56
27	Telangana	6583.56	0.00	0.00	0.00	6583.56
28	Tripura	1391.44	0.00	0.00	0.00	1391.44
29	Union Government	26473.14	1449.19	0.00	0.00	27922.33
30	Uttar Pradesh	76535.32	0.00	4976.49	0.00	81511.81
31	Uttarakhand	32736.85	0.00	0.00	0.00	32736.85
32	West Bengal	85273.05	0.00	11568.59	58.76	96900.40
	Total (99)	**610033.33**	**18655.40**	**84510.56**	**58.76**	**713258.05**

Source: Annual Report of "Combined Finance and Revenue Accounts of the Union & State Governments" for the year 2015-16, Comptroller and Auditor General of India (CAG)

Table A-3: Distribution of Expenditure (Revenue + Capital) by Sub-Major Head of Accounts of the Union and State/UT Governments for the year 2016-17

(₹ in Lakh)

Sl. No.	Name of States/UTs	Flood Control (01)	Anti-Sea Erosion (02)	Drainage (03)	General (80)	Total (99)
1	Andhra Pradesh	38761.74	0.00	3662.28	0.00	42424.02
2	Arunachal Pradesh	7606.20	0.00	0.00	0.00	7606.20
3	Assam	76772.53	0.00	0.00	0.00	76772.53
4	Bihar	113622.62	0.00	2278.13	0.00	115900.75
5	Chhattisgarh	2788.77	0.00	0.00	0.00	2788.77
6	Delhi	4212.71	0.00	16441.71	0.00	20654.42
7	Goa	4390.22	1673.85	1652.16	0.00	7716.23
8	Gujarat	4146.82	0.00	5627.30	0.00	9774.12
9	Haryana	22121.83	0.00	0.00	0.00	22121.83
10	Himachal Pradesh	7656.05	0.00	0.00	0.00	7656.05
11	Jammu & Kashmir (incl. Ladakh)	39184.56	0.00	0.00	0.00	39184.56
12	Jharkhand	1550.77	0.00	0.00	0.00	1550.77
13	Karnataka	3555.91	2670.73	0.00	0.00	6226.64
14	Kerala	21608.34	6016.88	0.00	0.00	27625.22
15	Madhya Pradesh	653.82	0.00	0.00	0.00	653.82
16	Maharashtra	3803.98	324.56	1498.93	0.00	5627.47
17	Manipur	11804.92	0.00	0.00	0.00	11804.92
18	Meghalaya	728.99	0.00	0.00	0.00	728.99
19	Mizoram	0.00	0.00	0.00	0.00	0.00
20	Nagaland	0.00	0.00	0.00	0.00	0.00
21	Odisha	88437.04	4872.70	25242.47	0.00	118552.21
22	Puducherry	189.98	0.00	3253.42	0.00	3443.40
23	Punjab	28405.14	0.00	25343.31	0.00	53748.45
24	Rajasthan	2420.53	0.00	0.00	0.00	2420.53
25	Sikkim	519.73	0.00	35.20	0.00	554.93
26	Tamil Nadu	20506.33	1821.08	80.51	0.00	22407.92
27	Telangana	13708.48	0.00	0.00	0.00	13708.48
28	Tripura	1989.12	0.00	0.00	0.00	1989.12
29	Union Government	24105.41	743.94	0.00	0.00	24849.35
30	Uttar Pradesh	57647.05	0.00	8706.16	0.00	66353.21
31	Uttarakhand	18110.81	0.00	0.00	0.00	18110.81
32	West Bengal	98281.93	0.00	14942.06	-0.11	113223.88
	Total (99)	**719292.33**	**18123.74**	**108763.64**	**-0.11**	**846179.60**

Source: Annual Report of "Combined Finance and Revenue Accounts of the Union & State Governments" for the year 2016-17, Comptroller and Auditor General of India (CAG)

Table A-3: Distribution of Expenditure (Revenue + Capital) by Sub-Major Head of Accounts of the Union and State/UT Governments for the year 2017-18

(₹ in Lakh)

Sl. No.	Name of States/UTs	Flood Control (01)	Anti-Sea Erosion (02)	Drainage (03)	General (80)	Total (99)
1	Andhra Pradesh	20384.11	0.00	4941.12	0.00	25325.23
2	Arunachal Pradesh	8460.12	0.00	0.00	0.00	8460.12
3	Assam	60440.09	0.00	0.00	0.00	60440.09
4	Bihar	167498.26	0.00	0.00	0.00	167498.26
5	Chhattisgarh	1100.95	0.00	0.00	0.00	1100.95
6	Delhi	4272.79	0.00	17283.01	0.00	21555.80
7	Goa	4692.16	1098.98	1533.99	0.00	7325.13
8	Gujarat	4114.19	0.00	5711.35	0.00	9825.54
9	Haryana	19962.41	0.00	0.00	0.00	19962.41
10	Himachal Pradesh	5128.20	0.00	0.00	0.00	5128.20
11	Jammu & Kashmir (incl. Ladakh)	25667.34	0.00	0.00	0.00	25667.34
12	Jharkhand	930.71	0.00	0.00	0.00	930.71
13	Karnataka	1563.21	5875.25	0.00	0.00	7438.46
14	Kerala	16586.83	4601.74	0.00	0.00	21188.57
15	Madhya Pradesh	1161.41	0.00	0.00	0.00	1161.41
16	Maharashtra	-1387.38	226.25	1490.28	0.00	329.15
17	Manipur	5319.46	0.00	0.00	0.00	5319.46
18	Meghalaya	1032.62	0.00	0.00	2.61	1035.23
19	Mizoram	0.00	0.00	0.00	0.00	0.00
20	Nagaland	0.00	0.00	0.00	0.00	0.00
21	Odisha	81158.45	5026.23	28048.36	0.00	114233.04
22	Puducherry	90.24	0.00	2661.08	0.00	2751.32
23	Punjab	15617.87	0.00	3667.80	0.00	19285.67
24	Rajasthan	7388.23	0.00	0.00	0.00	7388.23
25	Sikkim	1981.30	0.00	141.02	0.00	2122.32
26	Tamil Nadu	19514.40	4702.14	80.51	0.00	24297.05
27	Telangana	4082.89	0.00	0.00	0.00	4082.89
28	Tripura	2395.33	0.00	0.00	0.00	2395.33
29	Union Government	29670.28	742.94	0.00	0.00	30413.22
30	Uttar Pradesh	65377.03	0.00	5435.48	0.00	70812.51
31	Uttarakhand	14505.79	0.00	0.00	0.00	14505.79
32	West Bengal	111681.92	0.00	13439.67	32.15	125153.74
	Total (99)	**700391.21**	**22273.53**	**84433.67**	**34.76**	**807133.17**

Source: Annual Report of "Combined Finance and Revenue Accounts of the Union & State Governments" for the year 2017-18, Comptroller and Auditor General of India (CAG)

Table A-3: Distribution of Expenditure (Revenue + Capital) by Sub-Major Head of Accounts of the Union and State/UT Governments for the year 2018-19

(₹ in Lakh)

Sl. No.	Name of States/UTs	Flood Control (01)	Anti-Sea Erosion (02)	Drainage (03)	General (80)	Total (99)
1	Andhra Pradesh	11995.45	0.00	3316.39	0.00	15311.84
2	Arunachal Pradesh	14927.63	0.00	0.00	0.00	14927.63
3	Assam	76611.84	0.00	0.00	0.00	76611.84
4	Bihar	163911.05	0.00	0.00	0.00	163911.05
5	Chhattisgarh	2736.70	0.00	0.00	0.00	2736.70
6	Delhi	5682.68	0.00	18638.17	0.00	24320.85
7	Goa	5008.94	1173.25	1728.53	0.00	7910.72
8	Gujarat	5032.94	0.00	5770.21	0.00	10803.15
9	Haryana	18678.51	0.00	0.00	0.00	18678.51
10	Himachal Pradesh	15605.33	0.00	0.00	0.00	15605.33
11	Jammu & Kashmir (incl. Ladakh)	30318.47	0.00	0.00	0.00	30318.47
12	Jharkhand	1822.49	0.00	0.00	0.00	1822.49
13	Karnataka	2080.14	3519.08	0.00	0.00	5599.22
14	Kerala	8050.99	1916.97	0.00	0.00	9967.96
15	Madhya Pradesh	215.28	0.00	0.00	0.00	215.28
16	Maharashtra	7073.80	787.35	1873.25	0.00	9734.40
17	Manipur	6606.80	0.00	321.07	0.00	6927.87
18	Meghalaya	1386.83	0.00	0.00	0.00	1386.83
19	Mizoram	0.00	0.00	0.00	0.00	0.00
20	Nagaland	0.00	0.00	0.00	0.00	0.00
21	Odisha	92912.88	5147.15	22487.29	0.00	120547.32
22	Puducherry	137.56	0.00	1587.25	0.00	1724.81
23	Punjab	13756.83	0.00	433.23	0.00	14190.06
24	Rajasthan	1565.95	0.00	0.00	0.00	1565.95
25	Sikkim	5197.43	0.00	0.00	0.00	5197.43
26	Tamil Nadu	20631.07	208.54	80.51	0.00	20920.12
27	Telangana	1790.71	0.00	0.00	0.00	1790.71
28	Tripura	2562.40	0.00	0.00	0.00	2562.40
29	Union Government	22816.99	664.23	0.00	0.00	23481.22
30	Uttar Pradesh	78517.63	0.00	5639.13	0.00	84156.76
31	Uttarakhand	8345.78	0.00	98.75	0.00	8444.53
32	West Bengal	108651.19	0.00	25693.14	0.00	134344.33
	Total (99)	**734632.29**	**13416.57**	**87666.92**	**0.00**	**835715.78**

Source: Annual Report of "Combined Finance and Revenue Accounts of the Union & State Governments" for the year 2018-19, Comptroller and Auditor General of India (CAG)

Table A-3: Distribution of Expenditure (Revenue + Capital) by Sub-Major Head of Accounts of the Union and State/UT Governments for the year 2019-20

(₹ in Lakh)

Sl. No.	Name of States/UTs	Flood Control (01)	Anti-Sea Erosion (02)	Drainage (03)	General (80)	Total (99)
1	Andhra Pradesh	2941.45	0.00	3189.27	0.00	6130.72
2	Arunachal Pradesh	12867.26	0.00	0.00	0.00	12867.26
3	Assam	102356.04	0.00	0.00	0.00	102356.04
4	Bihar	25413.98	0.00	-41.80	0.00	25372.18
5	Chhattisgarh	1021.48	0.00	0.00	0.00	1021.48
6	Delhi	5078.53	0.00	25651.01	0.00	30729.54
7	Goa	4281.32	721.84	810.86	0.00	5814.02
8	Gujarat	3763.29	0.00	6683.41	0.00	10446.70
9	Haryana	29357.32	0.00	0.00	0.00	29357.32
10	Himachal Pradesh	35606.04	0.00	0.00	0.00	35606.04
11	Jammu & Kashmir (incl. Ladakh)	0.00	0.00	0.00	0.00	0.00
12	Jharkhand	546.95	0.00	0.00	0.00	546.95
13	Karnataka	8665.90	1641.87	0.00	0.00	10307.77
14	Kerala	5034.61	3288.50	0.00	0.00	8323.11
15	Madhya Pradesh	499.42	0.00	0.00	0.00	499.42
16	Maharashtra	4350.92	3935.68	1949.05	0.00	10235.65
17	Manipur	4214.21	0.00	77.00	0.00	4291.21
18	Meghalaya	75.28	0.00	0.00	0.00	75.28
19	Mizoram	0.00	0.00	0.00	0.00	0.00
20	Nagaland	0.00	0.00	0.00	0.00	0.00
21	Odisha	92726.11	4296.78	17894.16	0.00	114917.05
22	Puducherry	152.87	0.00	1187.91	0.00	1340.78
23	Punjab	19406.02	0.00	12388.04	0.00	31794.06
24	Rajasthan	2712.47	0.00	0.00	0.00	2712.47
25	Sikkim	89.38	0.00	0.00	0.00	89.38
26	Tamil Nadu	18050.84	47.35	80.51	0.00	18178.70
27	Telangana	101.10	0.00	0.00	0.00	101.10
28	Tripura	2354.34	0.00	0.00	0.00	2354.34
29	Union Government	20326.50	458.20	0.00	0.00	20784.70
30	Uttar Pradesh	87822.49	0.00	13297.27	0.00	101119.76
31	Uttarakhand	11159.56	0.00	0.00	0.00	11159.56
32	West Bengal	89429.85	0.00	21818.54	-0.10	111248.29
	Total (99)	**590405.53**	**14390.22**	**104985.23**	**-0.10**	**709780.88**

Source: Annual Report of "Combined Finance and Revenue Accounts of the Union & State Governments" for the year 2019-20, Comptroller and Auditor General of India (CAG)

Table A-3: Distribution of Expenditure (Revenue + Capital) by Sub-Major Head of Accounts of the Union and State/UT Governments for the year 2005-2020

(₹ in Lakh)

Sl. No.	Name of States/UTs	Flood Control (01)	Anti-Sea Erosion (02)	Drainage (03)	General (80)	Total (99)
1	Andhra Pradesh	254662.64	0.00	145875.43	0.00	400538.07
2	Arunachal Pradesh	96916.65	0.00	0.00	0.00	96916.65
3	Assam	758730.46	0.00	0.00	0.00	758730.46
4	Bihar	1283440.43	0.00	23386.15	0.00	1306826.58
5	Chhattisgarh	14869.71	0.00	0.00	0.00	14869.71
6	Delhi	53729.27	0.00	193061.86	0.00	246791.13
7	Goa	47440.04	17098.11	18627.55	0.00	83165.70
8	Gujarat	101249.08	0.00	67333.16	0.00	168582.24
9	Haryana	230909.52	0.00	0.00	0.00	230909.52
10	Himachal Pradesh	148913.41	0.00	0.00	0.00	148913.41
11	Jammu & Kashmir (incl. Ladakh)	232305.76	40.29	15.73	0.00	232361.78
12	Jharkhand	19704.60	0.00	0.00	0.00	19704.60
13	Karnataka	40791.63	26932.96	0.00	0.00	67724.59
14	Kerala	124058.15	76215.23	0.00	0.00	200273.38
15	Madhya Pradesh	11733.16	0.00	0.00	0.00	11733.16
16	Maharashtra	53394.89	34715.39	22538.45	0.00	110648.73
17	Manipur	97131.35	0.00	398.07	429.22	97958.64
18	Meghalaya	7771.85	0.00	0.00	2.61	7774.46
19	Mizoram	0.00	2103.24	0.00	0.00	2103.24
20	Nagaland	0.00	0.00	0.00	0.00	0.00
21	Odisha	647778.49	44569.81	170280.58	0.00	862628.88
22	Puducherry	7723.14	303.29	28810.40	0.00	36836.83
23	Punjab	215944.97	0.00	129923.88	0.00	345868.85
24	Rajasthan	22416.89	0.00	0.00	0.00	22416.89
25	Sikkim	17040.76	0.00	1485.07	0.00	18525.83
26	Tamil Nadu	337536.00	28123.70	1542.21	0.00	367201.91
27	Telangana	28233.25	0.00	31.59	0.00	28264.84
28	Tripura	30649.81	0.00	0.00	0.00	30649.81
29	Union Government	292777.65	18408.10	0.00	0.00	311185.75
30	Uttar Pradesh	788199.68	0.00	95123.41	0.00	883323.09
31	Uttarakhand	147884.26	0.00	98.75	0.00	147983.01
32	West Bengal	891822.16	2106.55	170444.36	752.51	1065125.58
	Total (99)	**7005759.66**	**250616.67**	**1068976.65**	**1184.34**	**8326537.32**

Source: Annual Report of "Combined Finance and Revenue Accounts of the Union & State Governments" for the year 2005-2020, Comptroller and Auditor General of India (CAG)

Table A-4: Quantum of Damage due to Floods /Heavy Rains during 1953 to 2021

Sl. No.	Year	Area affected (Mha)	Population affected (in million)	Damage to Crops		Damage to Houses		Cattle Lost (Nos.)	Human Lives Lost (Nos.)	Damage to Public Utilities (₹ in crore)	Total Damages (₹ in crore) (col.6+8+11)
				Area (Mha)	Value (₹ in crore)	(Nos.)	Value (₹ in crore)				
1	2	3	4	5	6	7	8	9	10	11	12
1	1953	2.29	24.28	0.93	42.08	264924	7.42	47034	37	2.90	52.40
2	1954	7.49	12.92	2.61	40.52	199984	6.56	22552	279	10.15	57.23
3	1955	9.44	25.27	5.31	77.80	1666789	20.95	72010	865	3.98	102.73
4	1956	9.24	14.57	1.11	44.44	725776	8.05	16108	462	1.14	53.63
5	1957	4.86	6.76	0.45	14.12	318149	4.98	7433	352	4.27	23.37
6	1958	6.26	10.98	1.40	38.28	382251	3.90	18439	389	1.79	43.97
7	1959	5.77	14.52	1.54	56.76	648821	9.42	72691	619	20.02	86.20
8	1960	7.53	8.35	2.27	42.55	609884	14.31	13908	510	6.31	63.17
9	1961	6.56	9.26	1.97	24.04	533465	0.89	15916	1374	6.44	31.37
10	1962	6.12	15.46	3.39	83.18	513785	10.66	37633	348	1.05	94.89
11	1963	3.49	10.93	2.05	30.17	420554	3.70	4572	432	2.74	36.61
12	1964	4.90	13.78	2.49	56.87	255558	4.59	4956	690	5.15	66.61
13	1965	1.46	3.61	0.27	5.87	112957	0.20	7286	79	1.07	7.14
14	1966	4.74	14.40	2.16	80.15	217269	2.54	9071	180	5.74	88.43
15	1967	7.12	20.46	3.27	133.31	567995	14.26	5827	355	7.86	155.43
16	1968	7.15	21.17	2.62	144.61	682704	41.11	130305	3497	25.37	211.10
17	1969	6.20	33.22	2.91	281.90	1268660	54.42	270328	1408	68.11	404.44

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Table A-4: Quantum of Damage due to Floods /Heavy Rains during 1953 to 2021

Sl. No.	Year	Area affected (Mha)	Population affected (in million)	Damage to Crops		Damage to Houses		Cattle Lost (Nos.)	Human lives Lost (Nos.)	Damage to Public Utilities (₹ in crore)	Total Damages (₹ in crore) (col.6+8+11)
				Area (Mha)	Value (₹ in crore)	(Nos.)	Value (₹ in crore)				
1	2	3	4	5	6	7	8	9	10	11	12
18	1970	8.46	31.83	4.91	162.78	1434030	48.61	19198	1076	76.44	287.83
19	1971	13.25	59.74	6.24	423.13	2428031	80.24	12866	994	129.11	632.48
20	1972	4.10	26.69	2.45	98.56	897301	12.46	58231	544	47.17	158.19
21	1973	11.79	64.08	3.73	428.03	869797	52.48	261016	1349	88.49	569.00
22	1974	6.70	29.45	3.33	411.64	746709	72.43	16846	387	84.94	569.02
23	1975	6.17	31.36	3.85	271.49	803705	34.10	17345	686	166.05	471.64
24	1976	11.91	50.46	6.04	595.03	1745501	92.16	80062	1373	201.50	888.69
25	1977	11.46	49.43	6.84	720.61	1661625	152.29	556326	11316	328.95	1201.85
26	1978	17.50	70.45	9.96	911.09	3507542	167.57	239174	3396	376.10	1454.76
27	1979	3.99	19.52	2.17	169.97	1328712	210.61	618248	3637	233.63	614.20
28	1980	11.46	54.12	5.55	366.37	2533142	170.85	59173	1913	303.28	840.50
29	1981	6.12	32.49	3.27	524.56	912557	159.63	82248	1376	512.31	1196.50
30	1982	8.87	56.01	5.00	589.40	2397365	383.87	246750	1573	671.61	1644.88
31	1983	9.02	61.03	3.29	1285.85	2393722	332.33	153095	2378	873.43	2491.61
32	1984	10.71	54.55	5.19	906.09	1763603	181.31	141314	1661	818.16	1905.56
33	1985	8.38	59.59	4.65	1425.37	2449878	583.86	43008	1804	2050.04	4059.27
34	1986	8.81	55.50	4.58	1231.58	2049277	534.41	60450	1200	1982.54	3748.53

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Table A-4: Quantum of Damage due to Floods /Heavy Rains during 1953 to 2021

Sl. No.	Year	Area affected (Mha)	Population affected (in million)	Damage to Crops		Damage to Houses		Cattle Lost (Nos.)	Human Lives Lost (Nos.)	Damage to Public Utilities (₹ in crore)	Total Damages (₹ in crore) (col.6+8+11)
				Area (Mha)	Value (₹ in crore)	(Nos.)	Value (₹ in crore)				
1	2	3	4	5	6	7	8	9	10	11	12
35	1987	8.89	48.34	4.94	1154.64	2919380	464.49	128638	1835	950.59	2569.72
36	1988	16.29	59.55	10.15	2510.90	2276533	741.60	150996	4252	1377.80	4630.30
37	1989	8.06	34.15	3.01	956.74	782340	149.82	75176	1718	1298.77	2405.33
38	1990	9.30	40.26	3.18	695.61	1019930	213.73	134154	1855	455.27	1364.61
39	1991	6.36	33.89	2.70	579.02	1134410	180.42	41090	1187	728.89	1488.33
40	1992	2.65	19.26	1.75	1027.58	687489	306.28	78669	1533	2010.67	3344.53
41	1993	11.44	30.41	3.21	1308.63	1926049	528.32	211193	2864	1445.53	3282.49
42	1994	4.81	27.55	3.96	888.62	914664	165.21	52315	2078	740.76	1794.59
43	1995	5.25	35.93	3.25	1714.79	2001898	1307.89	62438	1814	679.63	3702.31
44	1996	8.05	44.73	3.83	1124.49	726799	176.59	73208	1803	861.39	2162.47
45	1997	4.57	29.66	2.26	692.74	505128	152.50	27754	1402	1985.93	2831.18
46	1998	10.85	47.44	7.50	2594.17	1932874	1108.78	107098	2889	5157.77	8860.72
47	1999	7.77	27.99	1.75	1850.87	1613260	1299.06	91289	745	462.83	3612.76
48	2000	5.38	45.01	3.58	4246.62	2628855	680.94	123252	2606	3936.98	8864.54
49	2001	6.18	26.46	3.96	688.48	716187	816.47	32704	1444	5604.46	7109.42
50	2002	7.09	26.32	2.19	913.09	762492	599.37	21533	1001	1062.08	2574.54
51	2003	6.12	43.20	4.27	7307.23	775379	756.48	15161	2166	3262.15	11325.87

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Table A-4: Quantum of Damage due to Floods /Heavy Rains during 1953 to 2021

Sl. No.	Year	Area affected (Mha)	Population affected (in million)	Damage to Crops		Damage to Houses		Cattle Lost (Nos.)	Human Lives Lost (Nos.)	Damage to Public Utilities (₹ in crore)	Total Damages (₹ in crore) (col.6+8+11)
				Area (Mha)	Value (₹ in crore)	(Nos.)	Value (₹ in crore)				
1	2	3	4	5	6	7	8	9	10	11	12
52	2004	5.31	43.73	2.89	778.69	1664388	879.60	134106	1813	1656.09	3314.38
53	2005	12.56	22.93	12.30	2370.92	715749	380.53	119674	1455	4688.22	7439.67
54	2006	1.10	25.22	1.82	2850.67	1497428	3636.85	266945	1431	13303.93	19791.44
55	2007	7.14	41.40	8.79	3121.53	3280233	2113.11	89337	3389	8049.04	13283.68
56	2008	3.43	29.91	3.19	3401.56	1566809	1141.89	101780	2876	5046.48	9589.94
57	2009	3.84	29.54	3.59	4232.61	1235628	10809.80	63383	1513	17509.35	32551.76
58	2010	2.62	18.30	4.99	5887.38	293830	875.95	39706	1582	12757.25	19520.59
59	2011	1.90	15.97	2.72	1393.85	1152518	410.48	35982	1761	6053.57	7857.89
60	2012	2.14	14.69	1.95	1534.11	174526	240.57	31558	933	9169.97	10944.65
61	2013	7.55	25.93	7.48	6378.08	699525	2032.83	163958	2180	38937.84	47348.75
62	2014	12.78	26.51	8.01	7255.15	311325	581.98	60196	1968	7710.95	15548.08
63	2015	4.48	33.20	3.37	17043.95	3959191	8046.97	45597	1420	32200.18	57291.10
64	2016	7.06	26.55	6.66	4052.72	278240	114.68	22367	1420	1507.93	5675.33
65	2017	6.08	47.34	4.97	8951.98	1252914	9384.02	26673	2063	12329.85	30665.85
66	2018	7.72	37.40	2.51	3708.19	913414	2508.66	60279	1839	12132.92	18349.76
67	2019	11.60	46.35	10.69	10902.35	656595	462.79	25852	2754	4498.39	15863.53
68	2020	6.90	26.79	6.55	5626.02	239539	272.10	46911	1474	5458.01	11356.13

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Table A-4: Quantum of Damage due to Floods /Heavy Rains during 1953 to 2021

Sl. No.	Year	Area affected (Mha)	Population affected (in million)	Damage to Crops		Damage to Houses		Cattle Lost (Nos.)	Human Lives Lost (Nos.)	Damage to Public Utilities (₹ in crore)	Total Damages (₹ in crore) (col.6+8+11)
				Area (Mha)	Value (₹ in crore)	(Nos.)	Value (₹ in crore)				
1	2	3	4	5	6	7	8	9	10	11	12
69	2021	16.75	38.56	7.40	29229.72	461205	3960.07	64880	1371	25243.61	58433.40
	TOTAL	**509.30**	**2236.71**	**283.17**	**160691.90**	**82988746**	**60977.97**	**6247271**	**114973**	**259392.94**	**481062.80**
	AVG	7.38	32.42	4.10	2328.87	1202735	883.74	90540	1666	3759.32	6971.92
	MAX (YEAR)	17.50 (1978)	70.45 (1978)	12.30 (2005)	29229.72 (2021)	3959191 (2015)	10809.80 (2009)	618248 (1979)	11316 (1977)	38937.84 (2013)	58433.40 (2021)

Source: FM-II Directorate, Central Water Commission
(Mha): Million Hectares