

Flood Control & Drainage

Flood

Orissa falls under a tropical climatic zone and has 476.40 kms of coastline on the west of Bay of Bengal. The floods in the state occur mostly during monsoon season due to heavy rainfall caused by synoptic scale monsoon disturbances. Almost every alternate year, vast areas of the state are inundated due to flood or flood coupled with cyclone. Five major rivers namely Mahanadi, Brahmani, Baitatani, Subarnarekha and Rushikulya

cause high floods in their delta. The rivers like Vamsadhara and Budhabalanga also cause flash floods due to instant runoff from their hilly catchments. The flood-prone area of the state has been assessed to be 33,400 km² & the State is ranked as the 5th most flood-prone state of the country after Uttar Pradesh, Bihar, Assam and West Bengal. Flood experienced by the State in the recent past are indicated in the table below.

History of Floods

Sl. No.	Year	Month of Occurrence	Rivers	Affected District / Area	Loss/Damage Reported		
					Human	Live Stock	Public Utility
1	2	3	4	5	6	7	8
1.	1960	August	Mahanadi, Brahmani, Baitarani, Budhabalanga & Subarnarekha	Cuttack, Puri, Dhenkanal, Balasore, Mayurbhanj & Keonjhar – 6 Districts	Not Available	Not Available	18.65 Lakh Ac. Of Cropped area damaged & Loss of Rs. 11.70
2.	1961	July-September	Mahanadi, Brahmani, Baitarani, Budhabalanga & Subarnarekha	Cuttack, Puri, Dhenkanal, Balasore, Mayurbhanj & Keonjhar – 6 Districts	Not Available	Not Available	1.429 lakhs Ac. Of cropped area damaged with a loss of Rs. 2.54 crores.
3.	1964	July-August	Mahanadi, Brahmani, Baitarani & Rushikulya	Cuttack, Puri, Bolangir, Dhenkanal, Balasore, Sambalpur, Ganjam, Phulbani & Keonjhar - 9 Districts.	Not Available	Not Available	4.08 lakh Ac. Of cropped area damaged
4.	1971	July-October	Mahanadi, Brahmani, Baitarani & Subarnarekha	Cuttack, Balasore, Puri, Mayurbhanj, Bolangir, Sundargarh & Keonjhar – 7 Districts.	26	265	11.719 lakh Ac. Of cropped area damaged. 95043 no. of houses damaged. Total loss of Rs. 31.71 crores.
5.	1974	August	Mahanadi, Brahmani, Baitarani, Budhabalanga & Subarnarekha	Cuttack, Balasore, Puri, Dhenkanal & Keonjhar – 5 Districts.	Not Available	Not Available	5.40 lakh ha. of cropped area damaged.
6.	1980	September	Mahanadi, Brahmani,	Balasore, Bolangir,	82	16669	3.19 lakh ha. of cropped

Sl. No.	Year	Month of Occurrence	Rivers	Affected District / Area	Loss/Damage Reported		
					Human	Live Stock	Public Utility
1	2	3	4	5	6	7	8
			Baitarani & Vamsadhara	Cuttack, Dhenkanal, Ganjam, Kalahandi, Koraput, Phulbani, Puri, Sambalpur - 10 Districts.			area damaged. Rs. 65.00 crores of PU damaged.
7.	1982	August-September	Mahanadi, Rushikulya	Cuttack, Puri, Bolangir, Phulbani, Ganjam, Sambalpur, Dhenkanal & Kalahandi – 8 Districts.	126	26359	12.00 lakh ha. of cropped area damaged. Rs. 616.00 crore of PU damaged.
8.	1984	June-September	Subarnarekha, Brahmani, Baitarani, Mahanadi, Vamsadhara, Indrabati	Cuttack, Balasore, Puri, Phulbani, Koraput, Ganjam, Dhenkanal & Keonjhar – 8 Districts.	27		3.92 lakh ha of cropped area damaged.
9.	1985	August-September	Mahanadi, Rushikulya, Baitarani, Brahmani, Subarnaekha & Budhabalanga	Balasore, Bolangir, Cuttack, Ganjam, Puri, Phulbani, Keonjhar, Kalahandi, Sambalpur – 9 Districts.	22	5281	3.10 lakh ha of cropped area damaged.
10.	1986		Mahanadi, Subarnarekha & Indravati	Balasore, Bolangir, Cuttack, Dhenkanal, Koraput, Mayurbhanj, Puri, Phulbani, Sambalpur – 9 Districts.	24	337	1.08 lakh ha. of cropped area damaged. Rs. 55.31 crore of PU damaged.
11.	1991	July-August	Mahanadi, Brahmani, Baitarani, Subarnarekha, Vamsadhara	Cuttack, Puri, Balasore, Ganjam, Phulbani, Dhenkanal, Sambalpur, Kalahandi, Koraput, Keonjhar – 10 Districts.	52	1145	6.62 lakh ha. of cropped area damaged.
12.	1992	June-August	Mahanadi, Subarnarekha & Vamsadhara	Cuttack, Puri, Bolangir, Balasore, Ganjam, Koraput, Phulbani, Sambalpur,	43	1397	4.17 lakh ha. of cropped area damaged. Rs. 184.48 crore of PU damaged.

Sl. No.	Year	Month of Occurrence	Rivers	Affected District / Area	Loss/Damage Reported		
					Human	Live Stock	Public Utility
1	2	3	4	5	6	7	8
				Kalahandi, Dhenkanal & Sundargarh - 11 Districts.			
13.	1994	July-September	Mahanadi, Brahmani, Subarnarekha & Vamsadhara	Angul, Balasore, Bhadrak, Boudh, Cuttack, Jagatsinghpur, Jajpur, Jharsuguda, Khurda, Kendrapara, Kalahandi, Koraput, Malkanagiri, Nayagarh, Nawarangpur, Puri, Sambalpur, Sundargarh, Sonapur – 20 Districts.	50		10.17 lakh ha of cropped damaged.
14.	1995	May-November	Mahanadi, Subarnarekha, Vamsadhara & Rushikulya	Angul, Balasore, Bhadrak, Boudh, Cuttack, Dhenkanal, Ganjam, Gajapati, Jagatsinghpur, Jajpur, Khurda, Koraput, Kalahandi, Kendrapara, Keonjhar, Kandhamal, Malkanagiri, Nawarangpur, Nayagarh, Puri, Rayagada, Sambalpur, Sonapur – 23 Districts.	76	372	16.09 lakh ha of cropped area damaged. Rs. 112.42 crore of PU damaged
15.	1997	June-August	Mahanadi	Balasore, Bhadrak, Cuttack, Dhenkanal, Jagatsinghpur, Jajpur, Khurda, Kalahandi, Kendrapara, Kandhamal, Keonjhar, Mayurbhanj, Nuapara, Nawarangpur, Nayagarh, Puri, Sundargarh, & Sambalpur – 18 Districts.	29	52	5.27 lakh ha of cropped area damaged.
16.	1999	July-	Mahanadi,	Cuttack,	10		1.49 lakh ha

Sl. No.	Year	Month of Occurrence	Rivers	Affected District / Area	Loss/Damage Reported		
					Human	Live Stock	Public Utility
1	2	3	4	5	6	7	8
		August	Brahmani, Baitarani, Subarnarekha & Rushikulya	Jagatsinghpur, Kendrapara, Jajpur, Bhadrak, Balasore, Mayurbhanj - 7 Districts.			of cropped area damaged. Rs. 54.00 crores of PU damaged.
17.	2001	July-August	Mahanadi, Brahmani, Baitarani, Subarnarekha, Budhabalanga, Vamsadhara, Rushikulya & Indravati	Angul, Balasore, Bhadrak, Boudh, Bolangir, Bargarh, Cuttack, Dhenkanal, deogarh, Jagatsinghpur, Jajpur, Jharsuguda, Khurda, Koraput, Kalahandi, Kendrapara, Nuapara, Nawarangpur, Nayagarh, Puri, Rayagada, Sundargarh, Sambalpur & Sonapur - 24 Districts.	102	18149	7.99 lakh ha of cropped area damaged. Rs. 883.42 crores of PU damaged.
18.	2003	July-October	Baitarani, Mahanadi, Rushikulya, Vamsadhara, Budhabalanga & Indrabati	Angul, Balasore, Bhadrak, Boudh, Bolangir, Bargarh, Cuttack, Deogarh, Ganjam, Gajapati, Jagatsinghpur, Jajpur, Jharsuguda, Khurda, Koraput, Kalahandi, Keonjhar, kendrapara, Malkanagiri, Nuapara, Nawarangpur, Nayagarh, Puri, Rayagada, Sambalpur & Sonapur - 26 Districts.	92	2956	5.03 lakh ha. of cropped area damaged. More than Rs. 1000.00 crores of PU damaged.
19.	2006	July-August	Mahanadi, Brahmani, Baitarani, Subarnarekha, Budhabalanga, Vamsadhara & Rushikulya.	Angul, Balasore, Bargarh, Bhadrak, Bolangir, Boudh, Cuttack, Dhenkanal, Gajapati, Ganjam, Jagatsinghpur,	90	1656	3.104 lakh ha. crop damaged, 0.27 lakh ha. sandcast, house damaged 1,20,446 nos. Loss of P.U.

Sl. No.	Year	Month of Occurrence	Rivers	Affected District / Area	Loss/Damage Reported		
					Human	Live Stock	Public Utility
1	2	3	4	5	6	7	8
				Jajpur, Kalahandi, Kandhamal, Kendrapara, keonjhar, Khurda, Koraput, Malkanagiri, Mayurbhanj, Nawarangpur, Nayagarh, Nuapara, Puri, Rayagada, Sambalpur & Sonapur - 27 Districts.			Rs. 2043.00 crore.
20	2008	June & Sept	Mahanadi, Brahmani, Baitarani, Subarnarekha, Budhabalanga, Vamsadhara & Rushikulya	Angul, Balasore, Bargarh, Bhadrak, Bolangir, Boudh, Cuttack, Gajapati, Jagatsinghpur, Jajpur, Kalahandi, Kendrapara, Keonjhar, Khurda, Nayagarh, Nuapara, Puri, Rayagada, Sambalpur & Sonapur, Mayurbhanj - 21 Districts.	110	51840	3.82 lakh ha. crop damaged, 0.14 lakh ha. sandcast, house damaged 3,82,080 nos.

Flood Management

Total control of flood is not practicable from economic considerations & therefore flood management is essential. Flood management rationally refers provision of reasonable degree of protection against floods by structural /non-structural measures to mitigate the recurring havoc caused by floods. During the last five decades, a number of structural and non-structural measures have been taken to minimize flood. As a part of structural measures, reservoirs namely Hirakud on the Mahanadi river, Rengali on the Brahmani river, Upper Kolab in Kolab river & Upper Indravati in Indravati river have been constructed. Chanduli dam & Icha dam (under

construction) in Jharkhand will control flood to some extent in Subarnarekha delta. Similarly, Kanupur Dam under construction in Keonjhar will also moderate flood to some extent in Baitarani delta. Rivers namely Rushikulya, Vamsadhara, Nagabali, Bahuda and Budhabalanga do not have flood control reservoirs. Besides, in the deltaic area, floods are being controlled by flood protection embankments constructed on both sides of the rivers. Total 6515 kms of protective embankments, 1952 spurs & 253 kms of stone packing have been constructed in different basins particularly in the deltaic areas to control the flood & saline

ingress which is given in the following table.

Status as on 31.03.2009

Sl. No.	Name of Basin	Capital Embankment (in Km.)	Other Agricultural Embankment (in Km.)	Test Relief Embankment (in Km.)	Saline Embankment (in Km.)	Total (in Km.)
1.	Mahanadi	1281.14	1205.78	428.69	961.72	3877.33
2.	Brahmani	144.21	218.67	258.35	323.20	944.43
3.	Baitarani	127.87	122.13	184.54	161.80	596.34
4.	Rushikulya	-	486.46	-	30.00	516.46
5.	Subernarekha	30.00	28.70	225.60	28.00	312.30
6.	Budhabalanga	-	20.50	144.85	12.95	178.30
7.	Vamsadhara	4.98	1.70	82.91	-	88.59
	Total	1588.20	2083.94	1324.94	1517.67	6514.75

For long term solution of flood problems, construction of reservoir with adequate flood cushion is required. Under the present circumstances, constructions of flood control reservoirs are difficult due to large scale submergence and other environmental and ecological aspects. Therefore, the Department has planned other measures such as construction of cascade reservoirs and to reframe the rule curves of existing reservoirs in such a way that effective flood moderation is achieved. Besides, raising and strengthening of flood protective embankments, clearance of river mouths, inter basin transfer of water in the State, Flood plain regulation / Flood plain zoning & Flood forecasting & warning systems have also been planned for effective flood management.

Schemes / Programmes implemented under Flood Control Sector are:

1. Flood Management Programme(FMP)
2. RIDF
3. State Plan Scheme

1. Flood Management Programme Background

Devastation by flood is a recurrent annual phenomenon in India. Almost every year, some or other part of the country is affected by floods. Floods cause enormous damage to life, public

property and disruptions to infrastructure besides psychological and emotional instability amongst the people. To address these problems, during X plan, four schemes namely Critical Anti-erosion works in Ganga Basin States, Critical Anti-erosion works in Coastal areas, Critical Flood Control and Anti-erosion schemes in Brahmaputra and Barrack valley States and Improvement of Drainage in critical areas in the country were sanctioned to provide central assistance to the flood prone states to take up flood control and river management works in critical areas. The above schemes have been merged together and a restructured scheme namely "Flood Management Programme" has been approved in principle, for XI Plan period during 2007-08.

Scope of the Scheme

The scheme covers critical flood control, river management, anti-river erosion, drainage development, anti-sea erosion, flood proofing works besides flood prone area development programme in critical regions. It would also include restoration of damaged flood control / management works.

Eligibility Criteria and Financial Arrangements

The proposals, which are appraised by the competent authority and secured all mandatory clearances from the specified Committees including State TAC, State Flood Control Board, Planning Commission, etc. would be considered and finalized for central assistance under this scheme by an Empowered Committee headed by Secretary (Expenditure), Ministry of Finance, Government of India. The Empowered Committee will have representatives from Ministry of Water Resources, Ministry of Finance, Planning Commission, Ministry of DONER, Ministry of Environment & Forests and other concerned organizations, as required.

Under the scheme, central assistance to the States would be provided for taking up flood management works in an intergrated manner covering entire river / tributary or a major segment. In case of emergent situation arising due to high floods, the works in critical reaches would be taken up immediately after flood season. Funding pattern of central assistance would be as under:

- (a) Special Category States (North Eastern States, Sikkim, Himachal Pradesh, Jamu & Kashmir and

Uttarakhand) : 90% (Centre Share), 10 % (State Share).

- (b) Other States : 75% (Centre Share), 25% (State Share).

Sector Status

Twenty nine (29) project proposals of various categories such as construction of new embankment, raising and strengthening of existing embankment, anti sea erosion and river erosion works with estimated cost of Rs. 63.31 crore have been approved and taken up during 2008-09. These projects are scheduled for completion during March 2010. All the works are in progress and expenditure to a tune of Rs.28.559 crore incurred during 2008-09.

Programme for 2009-10:

An outlay of Rs.54.00 crore (central share-Rs.46.50 crore & state Share-Rs.7.50 crore.) has been provided for the year 2009-10 under this scheme.

2. RIDF:

During 2003-04, NABARD has agreed to provide loan for flood control & drainage works. So far, thirty six (36) flood control works have been taken up. The expenditure incurred and budget provision of 2009-10 of these projects is given in the following table.

Status of RIDF projects as on 31.03.2009

Tranche	Projects (nos.)		Financial (Rs. in Cr.)		
	Taken up	Completed	Estimated Cost	Expdr. incurred ending 03/2009	Outlay for 2009-10
RIDF-IV	1	1	3.26	3.00	Completed
RIDF-VII	1	1	0.87	1.00	Completed
RIDF-IX	1	1	1.03	1.22	Completed
RIDF-X	3	2	10.29	9.48	In progress
RIDF-XII	16	13	19.48	16.67	In progress
RIDF-XIII	5	-	38.72	9.07	In progress
RIDF-XIV	9	-	60.25	2.4	In progress
Total	36	22	133.90	42.84	

Flood Damage Restoration Works

Restoration of damaged assets normally requires resources well beyond those available with the Department. These DoWR :: Annual Report 2008-09

works are taken up through CRF/NCCF/NFCR grant. The allotments received under different schemes for 2004-05,2005-06,2006-07,2007-08 &

2008-09 are given in the following table. During 2009-10 Rs.70.57 crore budget allocation has been made on State Plan

for flood damage restoration work of "Flood 2008"

CRF/NFCR/NCCF Grant

Year	Allotment Received (in Cr.)	Expenditure incurred (in Cr.)
2004-05	55.38	55.38
2005-06	71.56	71.56
2006-07	113.72	113.72
2007-08	45.10	45.10
2008-09	113.13	113.13

Flood Forecast and Warning

Non-structural measures like flood forecasting and warning of incoming floods have also played a significant role in reducing the loss of life and movable property apart from alerting the civil and engineering authorities in-charge of various works to take appropriate advance action to fight the onslaught of floods. There are eleven flood forecasting stations managed by CWC located in our state at Naraj, Alipingal, Nimapada in Mahanadi Basin, Jenapur in Brahmani Basin, Anandapur & Akuapada in Baitarani Basin, NH5(Gobindapur) in Budhabalanga Basin, Rajghat in Subernarekha Basin, Purusottampur in Subernarekha Basin and Gunupur, Kashinagar in Vamsadhara Basin. Apart from that one inflow forecasting station is functioning at Burla in Mahanadi Basin. In Upper Mahanadi Basin, modern technique such as telemetry system was installed for flood forecasting. CWC collects daily readings of river gauges, discharge and rainfall etc. of various water bodies in all basins. They also collect daily hydro meteorological data from State Departments, IMD and other agencies. CWC maintains wireless communication network between their gauge stations in Orissa. Basing on the field information and IMD forecast, they

prepare the forecast message and warnings and communicate them to different departments including Water Resources Department. This message is immediately communicated to the field functionaries/ Collectors including Revenue Department to take precautionary measures.

Real Time Forecast System

Travel times of flood in different rivers have been worked out so that advance warning of flood in the delta region can be given. The basin-wise list of travel time from control structures / from important gauge station to station is given in the table below.

A Flood Management Information Cell (FMIS) was established during 2007, which will provide real time information on early

flood warning, possible flood inundation and its impact by using advanced space technology (Remote Sensing & Geographical Information system). At present, FMIS cell is collecting flood related data of Mahanadi Basin. National Remote Sensing Agency, Hyderabad has been requested to establish linkage for operational support and providing application software for the said purpose.

Travel time between gauge Stations of Different Rivers

Station to Station	Travel Time	Distance in Km.
Mahanadi Basin		
i. Ghorari to Seorinarayan	14 hrs.	102
ii. Nandaghat to Seorinarayan	08 hrs.	104
iii. Seorinarayan to Saradihi	08 hrs.	56
iv. Hasdeo to saradihi	10 hrs.	80
v. Saradihi to Hirakud Dam	12 hrs.	97
vi. Tarapur to Hirakud Dam	14 hrs.	103
vii. Deogaon to Hirakud Dam	09 hrs.	90
viii. Hirakud to Khairmal	12-18 hrs.	115
ix. Khairmal to Barmul	12-16 hrs.	109
x. Barmul to Mundali	12-16 hrs.	125
Brahmani Basin		
Rengali Dam to Talcher	6-7 hrs.	40
Talcher to Jenapur	18-20 hrs.	100
Baitarani Basin		
Champua to Swampatana	10 hrs.	65
Swampatana to Anandapur	07 hrs.	52
Anandapur to Akhupada	7-9 hrs.	40
Burhabalanga Basin		
Chandanpur to Baripada	06 hrs.	41
Baripada to NH5	08 hrs.	69
Subarnarekha Basin		
Jamshedpur to Jamsolaghat	13 hrs.	90
Jamsolaghat to Rajghat	20 hrs.	90
Rajghat to Bhogarai	07 hrs.	25
Rushikulya Basin		
Sorada to Purusottampur	11 hrs.	67
Madhabarida to Purusottampur	12 hrs.	60
Vamsadhara Basin		
Gudari to Gunupur	05 hrs.	35
Gunupur to Kashinagar	02 hrs.	27

Flood 2008

During the year 2008, Orissa experienced floods due to heavy rainfall in most of the major river basins of the State. Floods occurred in different spells in different rivers. Flood embankments / canal embankments and river banks

were damaged. There were 651 breaches in river embankments and 1276 breaches in canal embankments. For repair and restoration of breaches and partial damages caused to the river embankments, canal banks, MIP, and drainage, FDR reports amounting to Rs.

848.74 crores was submitted. Temporary closings to breaches were done immediately with sand bags and

bullahs. In the meantime all the breaches have been closed permanently.

Statement showing occurrence of peak flood of different rivers during the year 2008

River	Period	Station	Danger level	Peak Gauge	Date/Time
Subarnarekha river	15.06.08 to 21.06.08	Rajghat	10.36 mtr.	12.69 mtr.	19.06.08/0400 hrs.
Baitarani river	17.06.08 to 19.06.08	Anandapur	38.36 mtr.	40.18 mtr.	18.06.08/1300 hrs
	17.09.08 to 18.09.08	Anandapur	38.36 mtr.	38.82 mtr.	17.09.08/2300 hrs
	15.06.08 to 21.06.08	Akhuapada	17.83 mtr.	19.63 mtr.	19.06.08/0200 hrs.
	17.09.08 to 19.08.08	Akhuapada	17.83 mtr.	18.84 mtr.	18.09.08/1600 hrs.
Rushikulya river	18.09.08	Purushotampur	16.835 mtr.	16.85 mtr.	18.09.08/1200 hrs.
Vamsadhara river	17.09.08 to 18.09.08	Gunupur	84.00 mtr.	85.84 mtr.	17.09.08/2300 hrs
	17.09.08 to 19.09.08	Kasinagar	54.60 mtr.	56.60 mtr.	18.09.08/0400 hrs.
Mahanadi	18.09.08 to 23.09.08	Naraj I.B	26.41 mtr.	27.18 mtr.	20.09.08/1200 hrs
Kathajori	19.09.08 to 22.09.08	Bellevue	22.50 ft.	26.70 ft.	20.09.08/1200 hrs
Devi river	19.09.08 to 23.09.08	Alipingal	11.76 mtr.	13.05 mtr.	20.09.08/0500 hrs
Kushabhadra river	19.08.08 to 22.08.08	Nimapada	10.76 mtr.	11.40 mtr.	20.09.08/0800 hrs

Drainage

The natural topographical factor (flat terrain) is the primary cause of drainage congestion in coastal belts of Orissa. Therefore, disposal of run-off resulting from rainfall takes considerable time. Further, the problem gets aggravated due to formation of sand bars across the river mouths and tidal lockage. The drainage congestion affects crop yield. It

has been estimated that 30% of the CCA i.e 2.17 lakh ha suffers from poor drainage and water logging problems. To harness the potential for increased agricultural growth, a Master plan amounting to Rs.856.46 Cr. to retrieve 1.90 lakh ha. of waterlogged area has been prepared & submitted to CWC for necessary clearance. The doab-wise abstract of Master Plan is given in the table below.

Drainage Sector Status

Sl no	Name	Area can be retrieved (Th.ha.)	Length of Drainage System (Km.)			
			Primary Drain	Secondary Drain	Link Drain	Total
1	Doab-I (Mahanadi- Kathajodi-Devi)	20.50	388.99	421.99	302.24	1113.22
2	Doab-II (Mahanadi-Chitrotpala-Luna-Birupa)	29.50	113.00	452.00	342.00	907.00
3	Doab-III (Luna –Chitrotpala)	2.60	33.65	22.62	46.00	102.27
4	Doab-IV (Area to east of HLC Range-I)	3.00	165.40	168.70	39.20	373.30
5	Doab-V (Kathajodi-Kusabhdra)	20.00	204.48	246.33	559.65	1010.46
6	Doab-VI (Kusabhadra-Bhargavi)	11.00	84.20	234.87	171.50	490.57
7	Doab-VII (Daya-Bhargabi)	20.00	67.70	249.65	580.11	897.46
8	Doab-VIII (Area west of Daya)	4.00	37.00	59.35	89.00	185.35
9	Doab-IX (Subernarekha-Budhabalanga)	16.057	229.13	240.49	40.60	510.22
10	Doab-X (Budhabalanga-Kansabansa)	3.228	200.30	192.55	12.00	404.85
11	Doab-XI (kansabansa-Montei)	10.50	37.20	144.40	139.55	321.15
12	Doab-XII (Montei-Salandi)	8.50	61.80	224.15	350.20	636.15
13	Doab-XIII(Salandi-Baitarani)	5.80	104.70	166.10	160.60	431.40
14	Doab –XIV (Baitarani-Brahmani)	19.50	190.00	0.00	607.50	797.50
15	Doab-XV (West of Daya-Salia)	6.55	123.40	88.00	21.50	232.90
16	Doab-XVI(Salia-Rushikulya)	4.29	88.00	92.00	61.00	241.00
17	Doab-XVII (Rushikulya-Vamsadhara)	5.23	207.00	51.00	75.00	333.00
	Total	190.255	2353.00	3030.17	3547.65	8930.82

Present Status:

To address drainage congestion and waterlogging problems, a separate drainage organization was created during 2001 to look after the drainage work. As there is no specific scheme for drainage development, most of the works are being carried out through

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RIDF, NCCF, SGRY funds. Scheme-wise details are given below.

1. RIDF: During 2004-05, NABARD has agreed to provide loan for drainage works. So far, sixty three (63) drainage works have been taken up. During 2008-09, an amount of Rs.49.46 crore has been spent and 18775 ha of waterlogged

land has been retrieved. An outlay of Rs.27.27 crore has been provided for the year 2009-10 under this scheme.

Tranche-wise physical and financial status is given in the following table.

Status as on 31.03.2009

Tranche	Projects (nos.)		Financial (Rs. in Cr.)			Physical (in ha.)	
	Taken up	Completed	Estimated Cost	Expdr. incurred during 2008-09	outlay for 2009-10	Area affected	Area retrieved
RIDF-III	1	1	13.36	6.71	0	-	-
RIDF-XII	22	13	41.83	27.77	3.60	21574	10605
RIDF-XIII	11	2	17.75	6.59	5.60	7700	3060
RIDF-XIV	29	-	71.72	8.39	18.07	4910	3935
Total	63	16	144.66	49.46	27.27	34184	17600

2. Flood Management Programme:

In 2008-09, 42 projects were taken up at an estimated cost of Rs.124.32 (Central share-75%) under this scheme. The Projects are scheduled to be completed by March 2010. By the end of

March 2008, Central assistance of Rs.11.28 Cr. has been spent for these works. The physical and financial progress of the project is given in table below.

Status as on 31.03.2009

Appraisal Cost	Expdr. by 03/2009	Area to be retrieved	Area retrieved during 2008-09
Rs.124.32 crore	Rs.11.28 crore	26502 ha.	2900 ha.

Programme for 2009-10:

An outlay of Rs.77.00 Cr. (central share-Rs.63.00 Cr. & state Share-Rs.14.00 Cr.) has been provided for the year 2009-10 under Flood Management Programme.

3. State Fund:

River Mouth Clearance Work: The mouth of the rivers Daya, Luna, Bhargavi, Makara and their tributaries which outfall in to Chilika Lagoon, have been silted over a period of time causing water logging of vast cultivated land during rainy season and affecting the crop yields drastically. The State Government have decided to take up the

work entrusted Ocean Engineering Department of Madras IIT to study the drainage congestion and suggest remedial measures. In the meantime, Madras IIT has submitted project report. The total cost involved for this work is Rs.29.49 crore. During 2007-08, an amount of Rs.8.53 crore and during 2008-09, an amount of Rs.5.33 crore was spent for this work. An outlay of Rs.4.70 crore has been provided for the year 2009-10 for this project under State Plan.

4. Other Schemes: Emergent natures of works in selected patches are also being taken up through CRF/SGRY/NCCF/ACA. The details are given in the table below.

Total Status as on 31.03.2009

Year	Work Details			Allotment Received		Expdr. Incurred (Rs. in Cr.)	Area benefited (ha)
	Taken up (no)	Comp. (no)	Ongoing (no)	Grain (MT)	Cash (in Cr.)		
SGRY Grant							
2002-03	54	54	-	7734	2.337	6.707	7296
2003-04	452	452	-	38328	6.269	27.902	32294
2004-05	196	196	-	-	7.964	7.964	12540
2005-06	265	265	-	12500	10.25	17.851	6576
2006-07	281	281	-	12500	3.8363	11.7062	3843
Total	1248	1248	-	71062	30.6563	72.1302	62549
OSDMA							
2003-04	4	4	-	-	2.611	2.611	1700
2004-05	7	3	4	-	5.577	5.577	2300
Total	11	7	4	-	8.188	8.188	4000
CRF Grant							
2005-06	61	48	13	-	2.05	1.18	914
2006-07	225	193	32	-	8.05	7.29	3459
2007-08	71	49	22	-	5.00	2.08	720
2008-09	449	447	2	-	8.00	8.00	2152
Total	806	737	69	-	23.10	18.55	7245