

CHAPTER 5

WATER RESOURCES

5.01 It is a paradox that Orissa is ravaged by occurrence of drought at regular intervals despite its abundant water resources.

Sl. No.	Source	Additional irrigation potential proposed to be created in Tenth Plan (2002-07) (In lakh hectares)
1	2	3
1	Major and Medium Irrigation Projects	2.74
2	Minor (Flow)	0.46
3	Minor (Lift)	0.50
4	B.K.V.Y. (Biju Krusak Vikas Yojana)	1.70
Total		5.40

5.02 The irrigation potential created in the State during 1999-2000 to 2003-04 through different sources has been presented in Table 5.1.

Table 5.1
Net Irrigation Potential in the State through different Types of Sources

(Area in 000' Hectare)

Sl.No.	Irrigation source	Irrigation potential created upto end of				
		1999-2000	2000-01	2001-02	2002-03	2003-04 (P)
1	2	3	4	5	6	7
1	Major and medium	1,155.67	1,177.89	1,190.54	1,220.71	1,234.86
2	Minor (flow)	441.35	450.37	455.63	471.16	497.49
3	Minor (lift)	330.54	336.05	338.72	347.39	383.80
4	Other sources *	557.72	557.92	557.92	570.47	572.58
Total		2,485.28	2,522.23	2,542.81	2,609.73	2,688.73

P : Provisional

* Includes water harvesting structures, irrigation sources created under Million Wells Scheme and other schemes of Panchayati Raj Department, minor (lift) sources created from loans from co-operative institutions etc.

Source: Engineer-in-Chief, Major and Medium Irrigation, Bhubaneswar,
Chief Engineer, Minor Irrigation (Flow), Bhubaneswar,
Orissa Lift Irrigation Corporation, Bhubaneswar,
Panchayati Raj Department, Bhubaneswar,
Directorate of Soil Conservation, Bhubaneswar.

MAJOR AND MEDIUM IRRIGATION PROJECTS

5.03 By the end of Ninth Plan (2001-02) 11.91 lakh hectare in Kharif and 5.36 lakh hectare in Rabi season has been brought under irrigation by major and medium irrigation projects in the State with a total investment of Rs.5,047.87 crore. During 2003-04 (6/2004), an additional area of 14.15 thousand hectare have been brought under irrigation in Kharif raising the irrigation potential to 12.35 lakh hectare by end of 2003-04. It has been targeted to create another 46.49 thousand hectare irrigation potential during 2004-05 with an outlay of Rs.384.32 crore.

MINOR IRRIGATION (FLOW)

5.04 By end of 2002-03, irrigation potential of 4.71 lakh hectare were created under minor irrigation (flow). An additional irrigation potential of 0.26 lakh hectare were created during 2003-04. Thus, the total irrigation potential has been raised to 4.97 lakh hectare by the end of 2003-04. The total number of Minor Irrigation Projects in the State was 3,696 by the end of 2003-04, out of which 2,200 were functioning fully, 740 were partly derelict, 582 were completely derelict and 174 were ongoing projects. The potential created through Minor Irrigation (Flow) constitutes 18.64% of the total net irrigation potential created in the State up to 2003-04 through different types of sources. It is targeted to create additional irrigation potential to the extent of 10,833 hectares during 2004-05. An outlay of Rs.422.04 crore has been proposed for Minor Irrigation (Flow) sector in the Tenth Plan and an amount of Rs.88.92 crore during 2004-05.

MINOR IRRIGATION (LIFT)

5.05 Orissa Lift Irrigation Corporation (OLIC) is a State Government Undertaking engaged in installation, maintenance and operation of lift irrigation points in the State. Government have decided in principle to hand over lift irrigation points to "Pani Panchayats" for their operation and maintenance. The OLIC will only take up construction of new LIPs and render technical support to Pani Panchayats on payment. By end of 2002-03 (up to 6/03), there were 15,642 LIPs with irrigation potential of 347.388 thousand hectare in Kharif and 208.436 thousand hectare in Rabi. During 2003-04 (up to 6/04), OLIC has set up 728 new LIPs with designed ayacut of 16,920 hectare in Kharif and 10,152 hectares in Rabi. This raised the number of LIPs to 16,370 with irrigation potential of 383.80 thousand hectare

in Kharif by the end of 2003-04 (up to 6/2004). It has been proposed to set up 500 new LIPs and to create additional irrigation potential of 10,000 hectares in Kharif and 6,000 hectares in Rabi during 2004-05, under BKVY and WODC funding as well as financial assistance received from other agencies. During the Tenth Plan, there is a proposal to instal 2,500 LIPs with irrigation potential of 0.50 lakh hectare with financial assistance from various agencies like DRDA, ITDA, Western Orissa Development Council (WODC) and others. An outlay of Rs.550.00 lakh has been proposed in the Tenth Plan for the Orissa Lift Irrigation Corporation. An amount of Rs.7.00 crore has been allocated under State Plan for OLIC for the year 2004-05 towards water rate subsidy.

IRRIGATION IN KBK DISTRICTS

5.06 The KBK districts namely Koraput, Malkangiri, Rayagada, Nawarangpur, Bolangir, Sonapur, Kalahandi and Nuapada are chronically affected by drought due to low and erratic rainfall. By the end of 2003-04, the net irrigation potential created in the KBK districts was 460.63 thousand hectare constituting 17.26% of total irrigation potential created in the State through all sources. It has been targeted to create 23.865 thousand hectare more irrigation potential during 2004-05 through Major & Medium, Minor (flow) and Minor (lift) irrigation projects. An amount of Rs.127.55 crore has been allocated for the KBK districts during 2004-05.

DRIP IRRIGATION / SPRINKLER IRRIGATION

5.07 Drip and sprinkler irrigation systems have been promoted for maintaining optimum moisture regime of the soil and effective use of available water for maximization of growth and production of fruit and vegetable crops in the drought prone conditions. During 2003-04, subsidy has been provided @ Rs.1300.00 per hectare for 285 hectares under drip irrigation and 100 hectares under sprinkler irrigation @ Rs.7500.00 per hectare in the Work Plan.

5.08 During 2004-05, there is a programme to cover an area of 250 hectares under drip irrigation and 50 hectares under sprinkler irrigation with a financial outlay of Rs.36.25 lakh under Work Plan.

SOIL CONSERVATION

5.09 To tackle the problem of soil erosion, the Soil Conservation Organisation is implementing various anti-erosion measures through different schemes funded by the State and Central Government. Soil conservation measures and other land-based programmes are being implemented on watershed basis in a comprehensive manner. The following integrated watershed development schemes funded through the Ministry of Agriculture, Government of India is under operation in the State.

i. National Watershed Development Project for Rainfed Areas in the State (NWDPA)

5.10 The scheme is in operation in the State since 1990-91 with broad objective of sustainable natural resource management for enhancement of agricultural productivity and increased production of bio-mass and restoration of ecological balance in rain-fed areas through Watershed approach. The ongoing 212 number of recast watersheds of 9th Plan were carried over to 10th Plan for implementation to treat 1,38,244 hectares at an estimated cost of Rs.6,211.15 lakh. Out of 212 watersheds, there are 59 watersheds in KBK districts covering an area of 33,315 hectares and 153 watersheds in non-KBK districts with an area of 1,04,929 hectares for treatment. During 2003-04, Rs.617.80 lakh has been utilized. It is proposed to continue the same 212 ongoing watersheds during 2004-05 for treatment of 4,889 hectares at an estimated cost of Rs.220.00 lakh.

ii. River Valley Project (RVP)

5.11 The River valley Project scheme is being implemented in the catchments of inter-State projects namely, Hirakud, Machkund – Silera, Rengali, Mandira and Upper Kolab catchments with a view to prevent sedimentation of the reservoirs of multi purpose dams. By the end of the Ninth Plan Period, an area of 17,986 hectares has been treated incurring an expenditure of Rs.614.24 lakh. It is proposed to continue treatment to saturate the existing Water-sheds and start development of 10 new Water-sheds covering an area of 5,215 hectares with an outlay of Rs.3.29 Crore. During the Tenth Plan Period, it is proposed to treat an area of 17,231 hectares with an outlay of Rs.11.20 Crore. During 2003-04, 29 watersheds were being implemented with an expenditure of Rs.42.48 lakh and 979 hectares of area was treated. It is proposed to treat an area of 1,231 hectares over 7 number of new watersheds in 2 catchments in the State with an outlay of Rs.80.00 lakh.

iii. Indo Danish Comprehensive Watershed Development Project

5.12 This scheme is being implemented in Koraput and Malkangiri districts since 1993-94 for treatment of 12 watersheds, 5 in Koraput and 7 in Malkangiri covering an area of 32,894 hectares spread over 85 villages. In the Annual Plan for 2003-04 and 2004-05, Rs.27.84 lakh and Rs.12.83 lakh respectively have been proposed for the project.

SOURCE OF FUNDING OF IRRIGATION PROJECTS

5.13 The State Government have been giving utmost importance to complete the ongoing projects and start new projects in the backward KBK and Tribal areas and other needy areas by way of availing assistance from different agencies such as external donors, NABARD, and Government of India under Accelerated Irrigation Benefit Programme. In fact, a number of Irrigation projects in operation are being funded by these agencies.

i. Externally Aided Projects

5.14 Several irrigation projects namely, Water Resources Consolidation Projects (WRCP), Rengali Irrigation Project, National Hydrology Projects and some Minor Irrigation Projects have been taken up in the State with the assistance of external agencies namely, World Bank, Japan Bank for International Co-operation (JBIC), and European Community. These projects aim at improving the productivity of Water Resources in Orissa on sustainable basis and also augmentation of existing irrigation potential. After completion of these projects, there will be a substantial addition of irrigation potential in the State.

ii. NABARD Assisted Projects

5.15 The State Government has been availing loan assistance from Rural Infrastructure Development Fund (RIDF) sponsored by NABARD, to create further irrigation infrastructure. 35 M.I. Projects were funded under RIDF at an estimated cost of Rs.412.38 crore with a view to create ayacut of 78.71 thousand hectare by the end of 2001-02. During 2002-03, 5 projects have been taken up under RIDF - VIII with an estimated cost of Rs.29.33 crore. An outlay of Rs.178.50 crore has been proposed during the Tenth Plan for NABARD assisted projects. Besides, during 2003-04, 2 new projects have been proposed to be executed under RIDF – IX with an estimated cost of Rs.38.59 crore. Apart from that, 19 No.

of projects have been submitted to NABARD authorities for sanction during 2004-05. An outlay of Rs.40.78 crore has been proposed for the Annual Plan 2004-05.

iii. Accelerated Irrigation Benefit Programme (AIBP)

5.16 With a view to augmenting irrigation potential of the State Government of India have been providing Additional Central Assistance (ACA) under this programme. The funding pattern has been modified to 1:4 between the State and the Central Government for general areas from 2001-02. But for KBK areas, full cost of the project will be provided by Government of India as ACA.

5.17 So far Government of India has approved 18 no. of projects under this scheme, out of which during 2003-04 alone 4 new projects (2 each in KBK and non-KBK) along with one extension project namely, Upper Indravati Extension and one modernization project namely, improvement of Salaki have been sanctioned by Government of India amounting to Rs.821.87 crore for creating an additional irrigation potential of 76,062 hectares. Central Loan Assistance (CLA) has been released to start these works. By the end of March, 2004, a sum of Rs.1,225.03 crore has been spent under this scheme and an additional irrigation potential of 56,174 hectares has been created. During 2004-05, an amount of Rs.190.00 crore has been proposed to be allocated under this scheme out of which Rs.90.00 crore is earmarked for KBK districts. In KBK districts, 8 no. of projects have been taken up under long term action Plan of AIBP. The latest cost of these projects is Rs.1,156.63 crore and on completion, an additional irrigation potential of 1,47,556 hectares will be created. By the end of March, 2004, a sum of Rs.569.38 crore has been spent under these projects and an additional irrigation potential of 38,850 hectares has been created. In non-KBK districts, 5 no. of projects have been taken up with a latest cost of Rs.1,253.42 crore. On completion of these projects, an additional irrigation potential of 95,948 hectares will be created. By the end of March 2004, a sum of Rs.557.80 crore has been spent under these projects and an additional irrigation potential of 11,890 hectares has been created. Apart from this, in the year 2002-03, as an economic reform in irrigation sector, Government of India proposed to fund 100% loan assistance under Fast Track Programme of AIBP to the projects which can be completed within two working seasons. Under this programme, five irrigation projects namely, Gate Work of Naraj Barrage, Potteru Irrigation Project,

improvement of Sasan Canal, improvement of Salki Canal and Salandi Left Main canal have been taken up with an appraisal cost of Rs.123.71 crore. On completion of these projects, additional irrigation potential to the extent of 7,684 hectare will be created and 41,173 hectares of existing ayacut will be stabilized. By the end of March, 2004, a sum of Rs.97.85 crore has been spent under these projects and an additional irrigation potential of 5,434 hectares has been created.

5.18 Apart from major and medium irrigation projects, twenty- two Minor irrigation projects are being executed under AIBP in KBK districts in two phases (15 MIPs in Ph-I and 7 MIPs in Ph-II) since 1999-2000 and 2001-02 with an estimated project cost of Rs.92.22 crore. A sum of Rs.44.91 crore has been spent on these projects by the end of February, 2004 and a sum of Rs.5.19 crore has been proposed to be provided for these projects during 2004-05 with a target to create additional irrigation potential of 3,322 hectares. Besides, 69 new Minor Irrigation Projects are proposed to be taken up under AIBP schemes with an estimated project cost of Rs.155.02 crore during 2004-05. A sum of Rs.30 lakh has been provided in the Annual Plan 2004-05 towards survey investigation and design work of MIPs under AIBP.

iv. Other Special Measures

5.19 The State Government has launched the following schemes with the objective of improving irrigation facilities in the State.

Augmentation of Traditional Water Resources

5.20 An outlay of Rs.10 crore has been proposed in the Tenth Plan for augmentation of traditional water sources such as ponds, tanks, chuas under Eleventh Finance Commission grant.

COMMAND AREA DEVELOPMENT

5.21 The Command Area Development Programme being a Centrally Sponsored Plan scheme is being implemented for scientific water management and modern methods of cultivation. This programme is now implemented in 17 irrigation projects under six Command Area Development Authorities (CADA) spread over 91 blocks in 20 districts with a culturable command area of 843.25 thousand hectare. Under Command Area Development (CAD), 10,814 ha. Of field channel, 2979 ha. Of field drain and 15,047 ha. of topographical survey has been achieved in the year 2003-04. There were 7200 no. of farmers' training centres by the end of 2003-04. It is targeted to complete 11,100 ha. of field channel, 9500 ha. of field drains and 30,000 ha. of topographical survey during 2004-05. The farmers' training centers are also targeted to be 17,600 by the end of 2004-05. An amount of Rs.12.20 crore was allocated during 2003-04 out of which Central share was Rs.6.10 crore. For the current financial year 2004-05, allocation to the tune of Rs.8.00 crore has been made for the scheme including Central share of Rs.4.00 crore.

PARTICIPATORY IRRIGATION MANAGEMENT

5.22 Farmers participation is necessary for equitable distribution of irrigation water and for management and maintenance of structures. For this purpose Government of India have introduced Participatory Irrigation Management Programme which has been implemented in the State since 1996. The State Government have decided to form Pani Panchayats from the year 2000-01 with the same objective in Non-Command Area and Command Area. 10,999 number of Pani Panchayats have been formed covering an area of 8.82 lakh hectare of which 5.58 lakh hectare have been handed over to 8,401 Pani Panchayats by the end of 31.03.2004.

BIJU KRUSHAK VIKAS YOJANA (BKVY)

5.23 Biju Krushak Vikas Yojana has been launched for taking up improvement of the MIPs (flow & lift) in a Participatory mode. The salient features of BKVY is that there shall be an open invitation to farmers to form themselves in to Registered Pani Panchayats to derive the benefits of irrigation assistance from the Government. For this scheme an amount of Rs. 367.69 crore has been proposed in the Tenth Plan including Rs. 117.69 crore earmarked for KBK districts. During 2004-05 an amount of Rs. 30.00 crore has been proposed for the scheme by the way of NABARD assistance. This includes Rs.2.00 crore for minor irrigation (flow) and Rs.28.00 crore for M.I. (lift). A sum of Rs.20.00 crore of

SCA has been provided for taking up irrigation programmes both under Minor Irrigation (flow and lift) in KBK districts under RLTA during the year 2004-05.

FLOOD CONTROL

5.24 To face the natural calamities like flood, cyclone, drought and saline inundation, different measures have been taken through "Flood Control Scheme". Orissa is chronically flood affected State. Flood Prone areas in the State are estimated to be 3.34 million hectare. To minimise floods, Hirakud dam over the river Mahanadi and Rengali dam over the river Brahmani have been constructed. By the end of 2001-02, 3,464 K.M, of flood embankments, 2,714 K.M. of test relief embankments & saline embankments along with 1952 spurs and 253 K.M. of stone packing work have been completed. About 1,588.20 K.M. of capital embankments, 2,084 K.Ms. of other agricultural embankment, 1,325 K.M. of test relief embankment and 1,518 K.M. of saline embankment thus totaling to 6,416 K.M. have been constructed during 2002-03. During 2003-04, emphasis is being given to complete the ongoing critical nature of work such as Bank protection work of Subarnarekha at Dahamunda, Mahanadi at Singitali and Devi at Bauriakana etc. The proposed budget allocation for 2004-05 is Rs.200.00 lakh, out of which Rs.60.00 lakh is meant for improvement of drainage system in coastal belt of Orissa.

MINOR IRRIGATION CENSUS

5.25 The Minor Irrigation Census is being conducted by Government of India in every quinquennial period. The 3rd Minor Irrigation Census was conducted in the State during 2001-02 with reference year 2000-01. The Census report provides district level information on number of different minor irrigation schemes, culturable command area (C.C.A.), irrigation potential created (I.P.C.) and irrigation potential utilized in respect of five types of M.I. schemes viz. *dugwell, shallow tube well, surface flow and surface lift*. A comparative picture of 3rd Minor Irrigation Census and 2nd Minor Irrigation Census have been presented in Table 5.2.

Table 5.2

Gross Irrigation Potential Created and Utilised in the State during 2nd and 3rd Minor Irrigation Census.

Sl. No.	Scheme	Number of Scheme	Gross Irrigation Potential Created (in lakh hectare)	Gross Irrigation Potential Utilised (in lakh hectare)

		1993-94 (2 nd M.I. Census)	2000-01 (3 rd M.I. Census)	Percent changes	1993-94 (2 nd M.I. Census)	2000-01 (3 rd M.I. Census)	Percent changes	1993-94 (2 nd M.I. Census)	2000-01 (3 rd M.I. Census)	Percent changes
1	2	3	4	5	6	7	8	9	10	11
1	Dug well (in lakh numbers)	3.23	3.78	17.0	2.06	1.91	(-) 7.40	0.92	0.77	(-) 16.1
2	Shallow tube well (in numbers)	18095	43881	142.5	1.31	1.53	16.4	0.54	0.66	22.3
3	Deep tube well (in numbers)	2911	4592	57.8	0.82	0.94	14.7	0.14	0.11	(-) 20.6
4	Surface flow (in numbers)	24103	28303	17.4	6.98	6.90	(-) 1.3	4.31	3.64	(-) 15.5
5	Surface lift (in numbers)	20604	32844	59.4	2.83	3.03	7.1	1.13	1.03	(-) 8.5

5.26 Out of the total 3.78 lakh dug wells, 2.83 lakh are in use, 0.26 lakh are not in use permanently, and remaining 0.69 lakh are not in use temporarily. The gross irrigation potential created is under utilized in the case of 2.07 lakh dug wells out of 2.83 lakh in use due to less discharge of water, mechanical break down and inadequate power etc. The gross irrigation potential utilized during the 3rd M.I. Census through deep tube wells was 0.11 lakh hectares as against 0.14 lakh hectares during 2nd M.I. Census showing a diminishing trend of 20.6% over the 2nd M.I. Census. This may be due to large scale defunct, poor and irregular maintenance and inadequate power supply. The declining trend of surface flow during 3rd M.I. Census is due to siltation of storage tanks, breakdown of channels and inadequate storage due to erratic rainfall. In case of surface lift, the reasons for such under utilization were mostly due to inadequate power supply, mechanical breakdown and less discharge of water etc.

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