

CHAPTER 5 WATER RESOURCES

5.01 Water is a prime natural resource and a basic need of all living organism. Orissa is endowed with abundant water resources around 11% of total water resources of the country, unevenly distributed over time and space. The State depends largely upon monsoon for its water resources. The long term average annual rainfall of the State is 1452 mm, which is equivalent to 230.76 billion cubic meters (BCM) of water. About 78% of the quantity is received during the monsoon season (June to September). The water resources scenario of Orissa and India are shown in Table 5.1.

Table 5.1
Water Resources: Orissa & India.
(In BCM)

| Description | Orissa | India |
|---|---------|-------|
| Annual precipitation | 230.76 | 4000 |
| Average Annual Water Resources | 141.408 | 1869 |
| Utilizable water resources | 108.147 | 1122 |
| Utilizable Resources (% of precipitation) | 47% | 28% |

Source: E.I.C. (Water Resources), Orissa.

* Include resources available from outside the State.

5.02 Water is a replenishable but finite resource. As per the assessment made in

2001, the average annual availability of surface water is about 120.397 BCM, out of which 75% can be utilised. Similarly, the total annual replenishable ground water resource of the State is about 21.011 BCM, out of which 60% is safe and usable.

5.03 As per 2001 population Census, the population of the State is about 4% of the population of the Country, while the State is endowed with 11% of the water resources of the Country. The per capita availability of water in the State during 2001 was 3359 cubic meters (cum) as compared to national average of 1820 cum. With increasing population and rapid industrialisation, the demand for water is showing an increasing trend and is likely to increase to 84.463 BCM with per capita availability of 2218 cum by 2051. The requirement of water for different riparian purposes have been assessed and presented in Table 5.2 as below.

Table - 5.2
Water Requirement for different uses over years

(In BCM)

| Type of uses | Year 2001 | | | Year 2051 | | |
|--------------|-----------|--------|--------|-----------|--------|--------|
| | Surface | Ground | Total | Surface | Ground | Total |
| Domestic | 0.798 | 1.198 | 1.996 | 1.202 | 1.803 | 3.005 |
| Agriculture | 18.000 | 4.688 | 22.688 | 40.000 | 9.408 | 49.408 |
| Industry | 0.606 | 0.100 | 0.706 | 1.750 | 0.200 | 1.950 |
| Environment | 21.000 | 8.400 | 29.400 | 21.000 | 8.400 | 29.400 |
| Others | 0.100 | 0.100 | 0.200 | 0.200 | 0.200 | 0.400 |
| Total | 40.504 | 14.486 | 54.990 | 64.152 | 20.011 | 84.163 |

Source: E.I.C. (Water Resources), Orissa.

5.04 In Orissa, a water storage capacity of 17.00 BCM has so far been developed through 7 major, 38 medium and 2340 minor (flow) completed projects. Besides, 4 major and 9 medium irrigation projects are in progress and on completion of these ongoing projects, 1.47 BCM storage capacities will further be added.

Irrigation Development

5.05 Orissa is primarily an Agrarian State. Irrigation sector holds the key to increase productivity and an integral part of development of the State. The State has a cultivable land of 61.65 lakh ha. It has been assessed that 40.90 lakh ha. can be brought under irrigation through major, medium and minor irrigation projects. Nearly 183.07 thousand ha. of net irrigation potential was created before plan period, which has been increased to 2828.44 thousand ha. by the end of March, 2008. Out of these, 2232.44 thousand ha. has been created through major, medium and minor irrigation projects and the balance 596 thousand ha. has been created through other sources viz. dug-wells, water harvesting structures, small check dams etc. Table 5.3 presents the source-wise net irrigation potential created and actual area irrigated in the State by the end of 2007-08.

Table – 5.3

Net Irrigation Potential Created in Orissa

(In Th. ha.)

| Sources | Potential Created | | | Actual area irrigated |
|----------------|-------------------|---------|---------|-----------------------|
| | 2000-01 | 2006-07 | 2007-08 | |
| Major & Medium | 1177.89 | 1250.50 | 1260.90 | N.A. |
| Minor (flow) | 450.37 | 519.03 | 529.23 | 407.16 |
| Minor (lift) | 336.05 | 421.97 | 442.31 | 110.68 |
| Other sources | 557.92 | 621.55 | 596.00 | 156.40 |
| Total | 2522.23 | 2813.05 | 2828.44 | |

Source: E.I.C. (Water Resources), Orissa.

5.06 The State Government has given top priority for providing irrigation facilities to at least 35% of the cultivable area of every Block. It has been assessed that out of 314 Blocks of the State, 116 Blocks have already been provided with 35% irrigation facilities. It is planned that 469 Th. Ha. (Annex-5.1) will be covered in the 11th Five Year Plan period and 119.93 th. ha. during 2008-09 Source-wise breakup is given in table 5.4.

Table – 5.4

Source wise irrigation potential to be created during 11th Plan period

| Sources | Potential to be created (in th.ha.) | |
|----------------|-------------------------------------|---------|
| | During 11th plan period | 2008-09 |
| Major & Medium | 321.73 | 79.97 |
| Minor (flow) | 47.27 | 19.96 |
| Minor (Lift) | 100.00 | 20.00 |
| Total | 469.00 | 119.93 |

Source: E.I.C. (Water Resources), Orissa.

State Water Policy

5.07 “State Water Policy” was first formulated in 1994 following the principle enunciated in National Water Policy, 1987. After due consideration of various new issues,

challenges and developmental activities, and keeping with the National Water Policy, 2002 in view, the State Government have prepared “Orissa State Water Policy, 2007” which has been approved by the State Water Resources Board. The highlights of the Policy are:

- *The hydrological unit should be the unit of development and management of water resources, starting from primary watersheds to sub-catchments and catchments, integrated in to sub-basins and basins.*
- *State Water Plan will be prepared for development of these resources in important areas like drinking water, irrigation, hydro-power etc. The Plan will be holistic, participatory and environmentally sustainable.*
- *The State of Orissa adopts the following order of priority in water allocation in tune with the National Policy.*
 1. *Drinking water and domestic use*
 2. *Ecology*
 3. *Irrigation, agriculture and other related activities including fisheries.*
 4. *Hydropower*
 5. *Industries including agro-industries*
 6. *Navigation and other uses such as tourism.*
- *The Orissa Water Planning Organisation (OWPO) under the Engineer -in- Chief, Water Resources, shall prepare macro-level multi-sectoral River Basin Plans in consultation with stake holders. The plan prepared by OWPO will be grounded through the River Basin Organizations which are to be established for planning and management of water resources of different basins.*
- *The State shall provide adequate safe drinking water for human beings and livestock both in urban and rural areas. Irrigation and multi-purpose projects should invariably include component for domestic use, which should override the demands from other sectors. Maintenance of water quality and reduction of population load will be an integral part of the strategy.*
- *Development of Water Resources will take into account all the available options such as surface water, ground water and rain water harvesting for the most cost effective and sustainable combination. The overall goal would be water security for all Inter-State inter-basin transfer of water from surplus areas to deficit areas will be planned taking into account the riparian rights of the population and the environmental impact of such transfer.*
- *Hydropower being a clean source of energy, steps would be taken to identify the potential Hydropower projects and prepare a perspective plan for their development. Feasibility of establishing mini and micro hydropower units utilizing canal falls will be explored.*
- *Water will be supplied to industries within the overall purview of the State Water Plans. Encouragement / incentives will be given to industries for recycling of water. Disincentives will be prescribed for non-recycling of water.*
- *The importance of water for maintaining the ecological balance of the river systems would be an integral part of the State Water Policy. The environmental impact of the irrigation projects will be carefully evaluated before the projects are cleared. Wetlands like lakes, lagoons, mangroves, marshes etc. would be sustained and adequate conservation measures would be undertaken through systematic planning.*
- *The ground water potential of the State would be harnessed in a sustainable manner for supply of drinking water and irrigation, especially in water-scare areas.*
- *A master plan for flood control and management for each flood-prone area of the basin would be prepared and future investments in flood control measures would be guided by such master plan. River Training Works will be taken up for protection of embankments and for maintenance of the rivers’ regime.*
- *Sustainability in water resources development and management depends upon the participation of the Water Users in Irrigation Management. Orissa has promulgated the Orissa Pani Panchayat*

Act, 2002 and Orissa Pani Panchayat Rules, 2003 to provide a legal framework for such participation. The State shall develop a time bound programme for transfer of operation and management of all irrigation projects to the Farmers Organisation. The State shall, however, continue to provide necessary support to these institutions by way of their capacity buildings on a continuous basis and also by financial assistance to them as a proportion of water rates collected.

- *The cost of operation and management will be fully recovered from the beneficiaries. Norms will be established for ensuring water rights commensurate with water rates. The State will explore the possibility of setting up a Regulatory Authority for fixation of water rates in order to achieve full cost recovery of the operation and management charges.*
- *The State Government would welcome the participation of NGOs in campaigns for water management, water conservation and participatory irrigation management. They may also be associated with the resettlement and rehabilitation of displaced persons for bringing about greater transparency and stake holders' participation.*

Major & Medium Irrigation

5.08 Major and medium irrigation sources hold the key position in the irrigation map of Orissa. It has been assessed that about 31.30 lakh ha. cultivable land can be brought under irrigation through major and medium irrigation projects. But by the end of March, 2008, about 12.61 lakh ha. of net irrigation potential has been created through 118 projects including 33 ongoing projects. On completion of these ongoing projects, an additional 343.15 thousand hectares of irrigation potential will be created. Table 5.5 represents the status of major and medium irrigation

projects in the State by the end of 31.03.2008.

Table – 5.5
Status of major & Medium Irrigation projects in Orissa as on 31.03.2008

(in 000' hectares)

| Category | Completed Projects | | On going projects | | Balance potential to be created |
|--------------|--------------------|-------------------|-------------------|-------------------|---------------------------------|
| | Nos. | Potential created | Nos. | Potential created | |
| Major | 10 | 817.11 | 8 | 111.91 | 274.15 |
| Medium | 49 | 280.03 | 12 | 13.20 | 48.45 |
| Creek | 14 | 23.90 | 6 | - | 13.23 |
| ERM | 12 | 14.75 | 7 | - | 7.32 |
| Total | 85 | 1135.79 | 33 | 125.11 | 343.15 |

Source: E.I.C. (Water Resources), Orissa.

5.09 It has been targeted to create additional irrigation potential of 321.73 thousand hectares during 11th Five Year Plan including 79.97 thousand hectares during 2008-09 through major and medium irrigation projects. Two mega projects namely Orissa Water Sector Improvement Project (OWSIP) previously known as Mahanadi Basin Development Plan (MBDP) and Orissa Integrated Irrigated Agriculture and Water Management Project (OIIAWMP) are likely to be implemented during 11th Plan period. The estimated project cost of these two projects is about Rs.4690.30 crore. An out lay of Rs.1582.89 crore have been proposed in the 11th Five Year Plan including Rs.61.45 crore for 2008-09. Besides, another project “Rengali Ph-II” is expected to be implemented during 11th Five Year Plan with an out lay of Rs.50.00 crore with assistance from Japan Bank for International Co-operation (JBIC).

Bharat Nirman Yojana:

5.10 It is a time bound programme (2005-2009) launched for building rural infrastructure in the areas of irrigation, road, housing, water supply etc. The irrigation components of this programme aims at creation of irrigation potential of 100 lakh hectares at National Level. Orissa has proposed to create 3.923 lakh ha. of additional irrigation potential with projected investment of Rs.2649.29 crore. All ongoing projects executed under existing schemes such as AIBP, RIDF, SCA and RR&R are clubbed up under this programme. No separate funding is available for this programme.

5.11 Further, 392.35 Th. ha. irrigation potential has to be created under this programme with an investment of Rs. 2649.29 Crore. Out of these 131.77 Th. ha. irrigation potential has been created with utilization of Rs. 2074.89 crore by end of 2007-08 of which 63.427 Th. ha. of irrigation potential with an expenditure of Rs. 1004.15 Cr. has been done in 2007-08. It has been proposed to create 129.93 Th. ha. irrigation potential during 2008-09 with an outlay of Rs. 835.58 Crore. The status of the programme by the end of 2007-08 is given in Table 5.6.

Table - 5.6
Status of Bharat Nirman Yojana

| Sector | Scheme | Project (Nos) | Project cost (Rs. in cr.) | Potential to be created (Th.ha.) | Potential created by 2007-08 (Th. ha.) | Financial Achievement by 2007-08 (Rs. in cr.) |
|--------------------|------------------------------|---------------|---------------------------|----------------------------------|--|---|
| Major & Medium | AIBP, RIDF, JBIC, State plan | 26 | 2081.22 | 259.40 | 35.37 | 1751.63 |
| Minor (Flow) | AIBP, RIDF, RRB, RSVY, ACA. | 652 | 242.29 | 52.03 | 48.45 | 177.43 |
| Minor (River lift) | ACA, RIDF, WODC | 3006 | 255.55 | 62.36 | 42.65 | 129.61 |
| Ground Water | BKVY | 63 Blocks | 70.23 | 18.56 | 5.33 | 16.22 |
| Total | | | 2649.29 | 392.35 | 131.77 | 2074.89 |

Source: E.I.C. (Water Resources), Orissa.

Minor Irrigation (Flow)

5.12 Minor Irrigation (Flow) Scheme has its own importance due to low gestation, less investment and quick benefit. The minor irrigation projects have contributed substantially to augment the irrigation potential in the State. It has been assessed that 970.00 Th. Ha. of irrigation potential can

be created through M.I. (flow) projects. By the end of 31st March 2008, about 529.23 thousand hectares of irrigation potential have been created as against 519.027 thousand hectares potential created by the end of 2006-07. At present, Minor Irrigation organization is looking after construction, operation & maintenance of Minor Irrigation (Flow)

projects having ayacut above 40 hectares. Projects having ayacut below 40 hectares were transferred to Panchayati Raj Department for operation and maintenance. Further, some old dilapidated MIPs which cannot be revived at all had been deleted from the account. The status of MIP (Flow) projects as on 31st March 2008 is given in Table 5.7.

Table – 5.7
Status of MI (Flow) Projects
(As on 31.03.2008)

| Category | No. of projects | | Designed ayacut (000'ha.) | Certified ayacut (000'ha.) |
|-----------------------------|-----------------|------------|---------------------------|----------------------------|
| | Total | KBK region | | |
| a) Functional MIPs | 2082 | 243 | 337.00 | 324.00 |
| b) Partly derelict MIPs | 844 | 239 | 103.00 | 68.00 |
| c) Completely derelict MIPs | 540 | 41 | 44.00 | 1.00 |
| d) Ongoing MIPs | 180 | 70 | 63.00 | 8.00 |
| Total | 3646 | 593 | 547.00 | 401.00 |

Source: Chief Engineer (M.I), Orissa.

5.13 From the total 3646 M.I. (flow) projects, 593 projects are in the KBK region out of which 243 are completed, 239 are partly derelict and 41 are completely derelict projects. By the end of 2007-08, about 529.23 thousand hectares of irrigation potential have been created by these projects including 10.20 Th. ha. created during 2007-08.

Lift Irrigation

5.14 Orissa Lift Irrigation Corporation came in to existence in 1973 with an aim to exploit the surface and ground water resources on a

massive scale by pooling funds from all sources. Prior to that, lift irrigation projects were executed by the Directorate of Lift Irrigation. During 2002, the State Government decided to restructure OLIC claiming to execute new L.I. Projects (LIPs) to create additional irrigation potential and handing over the same to Pani Panchayat for operation and maintenance in the State. After implementation of Pani Panchayat Act, 2002, OLIC is no more collecting water charges from the cultivators of the Pani Panchayats.

5.15 It has been assessed that lift irrigation facilities can be provided to about 890 th. ha. cultivable land in Orissa. By the end of 2007-08, net irrigation potential of 442.306 th. ha. has been created through 19042 nos. of LIPs. Out of these, 4457 LIPs have been installed in KBK districts with net irrigation potential of 107.108 th. ha. In addition to these, 806 LIPs are under progress which will provide additional irrigation potential of 17.18 th. ha. The status of LIPs in the State as on 31.03.2008 is given in table 5.8.

Table – 5.8
Status of Lift Irrigation Projects in Orissa as on 31.03.2008.

| Description | KBK districts | Non-KBK districts | Total | Net irrigated potential created (th.ha.) |
|------------------------------|---------------|-------------------|--------------|--|
| No. of operable L.I.Projects | 3076 | 8407 | 11483 | 266.726 |
| No. of defunct L.I.Projects | 1381 | 6178 | 7559 | 175.580 |
| Total | 4457 | 14585 | 19042 | 442.306 |

Source: OLIC, Orissa.

SOIL CONSERVATION

5.16 Watershed Development Programme (WDP) focuses on harnessing and conserving land and water through various soil and water conservation interventions for increasing and sustaining productivity of land and improving livelihood of the community. These programmes are being implemented in the State under various Centrally Sponsored Schemes like Drought Prone Area Programme (DPAP), Integrated Waste Land Development Programme (IWDP), River Valley Project (RVP) etc. Besides, WDP are also being implemented under Western Orissa Rural Livelihood Project (WORLP) for Baragarh, Bolangir, Nuapada and Kalahandi Districts. The Orissa Watershed Development Mission (OWDM) has been set-up for co-ordination, monitoring and strengthening the implementation mechanism of all Watershed Programmes in the State. By the end of 2007-08, about 165.405 Th.ha. irrigation potential have been created in Kharif season through 15358 Water Harvesting Structures (WHS) including 9.235 Th.,ha. irrigation potential created in Kharif season through 703 Water Harvesting Structure completed during 2007-08. It has been targeted to create 9.407 Th. ha. irrigation potential by constructing 942 Water Harvesting Structures during 2008-09.

Schemes / Programmes

5.17 A number of Schemes / Programmes are being implemented in the State for development of irrigation. They are as follows:

- *Accelerated Irrigation Benefit Programme (AIBP).*
- *Rural Infrastructure Development Fund (RIDF).*
- *Externally Aided Projects (JBIC, Hydrology Ph-II).*
- *Repair, Renovation & Restoration of Water Bodies.*
- *Biju Krushak Vikash Yojana (BKVY)*
- *Orissa Water Sector Improvement Programme (OWSIP)*

Details of the above mentioned schemes are as follows:

Accelerated Irrigation Benefit Programme (AIBP)

5.18 Government of India launched the Accelerated Irrigation Benefits Programme (AIBP) during 1996-97 to provide financial assistance to State Governments for accelerating the pace of irrigation development in the Country. The primary objectives of AIBP are:

- ◆ *To accelerate implementation of large irrigation projects which are beyond the resource capability of the State Government.*
- ◆ *To realize bulk benefits from irrigation projects.*
- ◆ *Expeditious completion of the projects which are in advanced stage of completion.*

5.19 Initially 50% of the project outlay was provided as Central Loan Assistance (CLA) under this programme while the balance 50%

was to be met by the State i.e. 1:1 basis. As per the modification made during 2006-07, the disbursement pattern has been modified and Central Assistance is being provided as Central Grant which is 90% of the project cost in case of special category States i.e. where projects benefit drought prone area, tribal area and flood prone area and it is 25% incase of non-special category States. At present, projects in KBK and tribal areas are availing 90% Central Assistance as grant.

5.20 Eighteen projects under major and medium irrigation sector and 42 projects under minor irrigation sector of the State have been included under this Programme. Out of which 7 projects under major and medium irrigation sector and 16 projects under minor irrigation sector have been completed by the end of 2007-08.

5.21 During 2006-07 about 9.30 th. ha. net irrigation potential have been created under AIBP with an expenditure of Rs.99.66 crore, including Rs.706.14 crore Central Assistance. It has been targeted to create additional irrigation potential of 58.68 th. ha. during 2008-09 with an outlay of Rs.800.00 crore. The status of projects under AIBP is shown in Table 5.9 given below.

Table – 5.9

Status of AIBP as on 31.03.2008

| Description | Major & Medium | | | Minor (flow) |
|-------------------------------------|----------------|--------|--------|--------------|
| | Non-KBK | KBK | Total | KBK only |
| 1. Projects taken up (Nos.) | 9 | 9 | 18 | 41 |
| 2. Projects Completed (Nos.) | 4 | 3 | 7 | 16 |
| 3. Projects under Progress (Nos.) | 5 | 6 | 11 | 25 |
| 4. Appraisal Potential (in Th. ha) | | | | |
| (a) Creation | 184.558 | 151.59 | 336.14 | 9.52 |
| (b) Stabilization | 61.62 | - | 61.62 | - |
| 5. Potential created (in Th. ha) | 13.39 | 45.384 | 58.774 | 7.701 |
| 6. Potential Stabilised (in Th. ha) | 54.508 | - | 54.508 | - |

Source: Source: E.I.C. (Water Resources), Orissa & Chief Engineer (M.I), Orissa

Rural Infrastructure Development Fund (RIDF):

5.22 Agriculture and Rural Infrastructure Sector not only play important role for growth of economy, but also it is the backbone of rural employment. A number of Rural Infrastructure Projects are lying incomplete for want of funds. Against this background, the Government of India in the Budget of 1995-96 announced the scheme for setting up Rural Infrastructure Development Fund (RIDF) to be operationalised by NABARD. This funding has emerged as a popular and effective scheme for financing Rural Infrastructure Projects. The primary objective is to assist State Governments for the completion of ongoing Rural Infrastructure Projects and also taking up new projects.

5.23 The Water Resources Department has availed loan under RIDF scheme since inception of the programme. Earlier the loan was extended for taking up new as well as completion of ongoing Major, Medium & Minor Irrigation projects. Later, during 2004-05, NABARD agreed to provide loan for Flood Control & Drainage Projects. The status of projects taken up under different RIDF tranches is given in table 5.10.

Table – 5.10
Status of RIDF projects as on 31.03.2008.

| Sector | Taken up | Completed | Under progress | Expenditure incurred (Rs. in Cr.) | Design potential (Th. Ha) | Potential Created (Th. Ha.) |
|----------------|----------|-----------|----------------|-----------------------------------|---------------------------|-----------------------------|
| Major & Medium | 55 | 35 | 20 | 635.65 | 96.41 | 57.13 |
| Minor Flow | 246 | 157 | 89 | 409.36 | 94.58 | 61.70 |
| Flood Control | 27 | 10 | 17 | 17.75 | - | - |
| Drainage works | 34 | 4 | 30 | 28.11 | - | - |

Source: E.I.C. (Water Resources), Orissa

5.24 It has been programmed to create additional irrigation potential of 58.192 th. ha. during 2008-09 with an investment of Rs.195.00 cr. from RIDF for major, medium and minor (Lift & flow) of BKVY Irrigation Projects.

Externally Aided Projects:

Japan Bank of International Co-operation (JBIC):

5.25 Japan is providing ODA (Overseas Development Assistance) loan to Developing Countries at low rates of interest and with

long repayment periods to develop and improve the economic and social infrastructure for sustainable economic development. JBIC's Overseas Economic Cooperation Operations are in charge of the major part of ODA loans. So far 3 Major Projects namely Upper Indravati Irrigation Project (RD 15.00 to 52.00 Km.), Upper Kolab Irrigation Project (RD14.00 to 41.78 Km) & Rengali Left Bank Canal (RD 29.177 to 71.313 km.) have been sanctioned under this scheme. Out of three sanctioned projects, two projects namely Upper Indravati and Upper Kolab have been completed. At present, Rengali Left Bank Canal (RD 29.177 to 71.313 Km.) is under progress since 1997. The project is scheduled to be completed by 2010-11. The physical and financial progress is given at table 5.11.

Table – 5.11
Status of EAP projects as on 31.03.2008.

| Latest Cost | Financial (Rs. in Cr.) | | | Physical (Th.ha.) | | | |
|-------------|------------------------|-----------------------|-------------------------|---------------------|------------------------------|----------------------------------|-------------------------------------|
| | Expdr. by 03/2007 | Expdr. during 2007-08 | Total Expdr. by 03/2008 | Appraisal potential | Potential created by 03/2007 | Potential created during 2007-08 | Total Potential created by 03/2008. |
| 686.4 | 477.3 | 174.7 | 652.00 | 29.2 | 0.6 | - | 0.6 |

N.B. = Rounded up to 1 decimal point.
Source: E.I.C. (Water Resources), Orissa

5.26 It has been targeted to create additional irrigation potential of 8.00 th. ha. during 2008-09 with investment of Rs.122.00 crore under the scheme.

Orissa Integrated Irrigated Agriculture & Water Management Investment Project (OIIAWMIP):

5.27 OIIAWMIP was conceptualized with the support of the Asian Development Bank (ADB). The project aims to develop four contiguous river basins viz. Subaranarekha, Budhabalanga, Baitarani and Brahmani. This project also aims to reduce Regional Imbalances in infrastructure development, increase in productivity in tribal areas through sustainable water management with Participatory Irrigation Management (PIM) and Integrated Water Resources Management (IWRM), increase in income and reduction of poverty through productive irrigation and minimize under-utilization of completed schemes.

5.28 The Project will stabilize more than 3 lakh hectares of existing ayacut and create 33,122 ha. additional irrigation potential by extending existing projects and completing the work in some of the new ones.

Orissa Community Tank Management Project (OCTMP):

5.29 State Government, in partnership with Government of India, has initiated the Project to repair and rehabilitate about 900 M.I. tanks having command area of 40 to 2000 ha. and covering 1.20 lakh ha. with World Bank Assistance. The 'Orissa Community Tank Development and Management Society' (OCTDMS) has been formed as a Special Purpose Vehicle (SPV) under the Department

of Water Resources to conceptualize and operationalise the project.

5.30 The project was appraised by the World Bank in January, 2008 and has sanctioned PHRD grant of US \$ 3,95,000 for operationalisation of the Society, to be paid as reimbursement of expenditure. The State Government also remitted Rs.2 crore for the expenditure of the society.

5.31 The Project is being implemented on a pilot basis in Rayagada, Gajapati, Ganjam, Jajpur and Mayurbhanj districts and has been initiated in 59 tanks.

Repair, Renovation & Restoration of Water Bodies (RR&R):

5.32 The water bodies, both traditional & constructed, have been a part and parcel of minor irrigation in the Country, under which even today two-thirds of irrigated agriculture is covered in our Country. Such Minor Irrigation Schemes generally suffer from the problem of loss of storage capacity due to silting of the tanks, poor maintenance and management, encroachment, etc. Damage to various structures, inadequate surplus arrangements & silting are some of the reasons for deteriorating conditions in these irrigation systems. It is necessary to restore the storage capacity of water bodies with the purpose of recovering their lost irrigation potential. With this goal in view, a new Scheme called "National Project for Repair, Renovation and

Restoration of Water Bodies directly linked to Agriculture” has been launched on pilot basis by Govt. of India during 2004-05. The main objectives are-

- (a) *To restore and augment storage capacities of water bodies.*
- (b) *To recover and extend their lost irrigation potential.*

5.33 The funding pattern of the Scheme will be in the ratio of 75:25 (centre: State) and the Central Funding will be in the form of grants to the State.

5.34 Under this pilot scheme, 127 nos. of MIPs in the district of Ganjam & Gajapati at a cost of Rs.18.84 cr. have been taken up to restore lost ayacut of 9,619 hectares. By the end of 2007-08, all the 127 MIPs have been restored and irrigation potential of 9.615 th. ha. have been revived. The physical and financial performance is given in Table 5.12.

Table – 5.12

Status of Repair, Renovation & Restoration of Water Bodies as on 31.03.2008.

| District | Project (Nos.) | | Potential to be revived (Th.ha.) | Potential revived (Th.ha.) |
|--------------|----------------|------------|----------------------------------|----------------------------|
| | Taken up | Completed | | |
| Ganjam | 68 | 68 | 6.081 | 6.08 |
| Gajapati | 59 | 59 | 3.538 | 3.535 |
| Total | 127 | 127 | 9.619 | 9.615 |

Source: E.I.C. (Water Resources), Orissa

BIJU KRUSHAK VIKASH YOJANA (BKVY):

5.35 This novel scheme was launched by State Government in 2001 with an objective to revive derelict projects & construction of new projects particularly in minor irrigation sector through people’s participation. The assistance will be limited to 80% of the estimated capital cost and contribution of Pani Panchayat shall be 20% of the cost. In case of tribal sub-plan areas and KBK Districts, the assistance may be raised to 90% of the capital cost. The Pani Panchayat may contribute its share either in cash or in terms of labour or in the form of land etc. The assistance to a Pani Panchayat towards the capital cost shall be given only after it is registered as a Society under the Societies Registration Act, 1860 for which a model bye-law will be furnished by the DOWR. At present the funding for execution of MIPs & LIPs in KBK districts are basically met from Special Central Assistance (SCA) received under RLTA. Similarly, loan assistance from NABARD is being availed under RIDF scheme for execution of MIPs & LIPs in non-KBK Districts. Up to the end of 10th meeting, the State Level Screening Committee (SLSC) has approved 233 MIPs and 4997 LIPs including 56 MIPs and 2262 LIPs of KBK districts. The status of BKVY is given in table 5.13.

Table - 5.13

Achievement made under BKVY as on 31.03.2008.

| Project Particular | Minor (flow) | | | Lift Irrigation (OLIC & OAIC) | | |
|---|----------------|------------------------|-------|-------------------------------|------------------------|--------|
| | Non-KBK (RIDF) | KBK (SCA under RLTAAP) | Total | Non-KBK (RIDF) | KBK (SCA under RLTAAP) | Total |
| 1. Taken up (No) | 50 | 34 | 84 | 2549 | 1681 | 4230 |
| 2. Completed (No) | 46 | 27 | 73 | 1788 | 1592 | 3380 |
| 3. Ongoing (No) | 4 | 7 | 11 | 761 | 87 | 848 |
| 4. Appraisal Potential in Th. Ha. (Taken up Projects) | | | | | | |
| (a) Creation (New) | 2.167 | 4.172 | 6.339 | 49.18 | 32.832 | 82.012 |
| (b) Revival | 1.344 | 1.885 | 3.229 | 3.49 | 3.03 | 6.52 |
| 5. Potential created.(Th.ha.) | 1.175 | 2.558 | 3.733 | 35.09 | 31.042 | 66.132 |
| 6. Potential revived (Th.ha.) | 1.142 | 1.708 | 2.850 | 0.57 | 2.99 | 3.56 |

Source: Chief Engineer, M.I., Orissa and OLIC, Orissa

OTHER IMPORTANT ACTIVITIES:**Pani Panchayats, Participatory Irrigation Management (PIM)**

5.36 PIM concept has been introduced in the State during 1995, on pilot basis in four projects with the assistance of World Bank under the banner Framers' Organization & Turn Over (FOT). To motivate farmers as stakeholders in irrigation management, massive awareness campaign, training programmes & work shops have been done at regular intervals. Due to overwhelming response, during 2000, the programme was named "Pani Panchayat" and was extended to all commands of Major, Medium, Minor &

Lift Irrigation Projects. To make 'Pani Panchayat' programme successful, legal status has been provided by enacting the 'Orissa Pani Panchayat Act, 2002' & the 'Orissa Pani Panchayat Rule, 2003'.

Physical Projections and achievements:

5.37 Against the programme to form 16618 Pani Panchayats, 16196 nos. of Pani Panchayats have been formed by the end of 2007-08 and the irrigation system has been handed over to 14736 nos. of Pani Panchayats. The physical achievements for the year ending 2007-08 is given in table 5.14.

Table – 5.14

Status of Pani Panchayats in Orissa as on 31.03.2008

| Sector | Total Programme | | Registered / Formed | | Handed Over | | Delineation | |
|----------------|-----------------|-----------------|---------------------|-----------------|--------------|-----------------|--------------|-----------------|
| | Nos | Area (lakh ha.) | Nos | Area (lakh ha.) | Nos | Area (lakh ha.) | Nos | Area (lakh ha.) |
| Major & Medium | 2561 | 11.25 | 2139 | 9.40 | 1245 | 5.42 | 1816 | 7.85 |
| Minor (flow) | 1883 | 3.28 | 1883 | 3.26 | 1373 | 2.30 | 1883 | 3.26 |
| Minor (lift) | 12174 | 2.72 | 12174 | 2.72 | 12110 | 2.70 | 9017 | 1.80 |
| Total | 16618 | 17.25 | 16196 | 15.38 | 14736 | 10.42 | 12716 | 12.91 |

Source: E.I.C. (Water Resources), Orissa, OLIC, Orissa, and Chief Engineer, M.I., Orissa

Flood Control

5.38 Orissa falls under the Tropical Climatic Zone. Vast areas of the State are inundated due to flood or flood coupled with cyclone. The flood-prone area of the State has been assessed to be 33.40 lakh ha. which is about 21.5% of its geographical area. In order to control the flood, a number of structural and non-structural measures have been taken up. Flood Control Reservoirs like Hirakud on

Mahanadi and Rengali on Brahmani have been constructed. Similarly, some of the ongoing projects will also control the flood of the State up to some extent. Besides 6515 kms of protective embankment, 1952 nos. of spurs and 253 kms. of stone packing have been executed in different basins to control the flood and saline ingress in the deltaic / low lying area. Status of embankments as on 31st March, 2008 is as follows:

Table – 5.15
Status of Embankment Programme as on 31.03.2008.

| Name of Basin | Capital Embankment (in Km.) | Other Agricultural Embankment (in Km.) | Test Relief Embankment (in Km.) | Saline Embankment (in Km.) | Total (in Km.) |
|---------------|-----------------------------|--|---------------------------------|----------------------------|----------------|
| Mahanadi | 1281.14 | 1205.78 | 428.69 | 961.72 | 3877.33 |
| Brahmani | 144.21 | 218.67 | 258.35 | 323.20 | 944.43 |
| Baitarani | 127.87 | 122.13 | 184.54 | 161.80 | 596.34 |
| Rushikulya | - | 486.46 | - | 30.00 | 516.46 |
| Subernarekha | 30.00 | 28.70 | 225.60 | 28.00 | 312.30 |
| Budhabalanga | - | 20.50 | 144.85 | 12.95 | 178.30 |
| Vamsadhara | 4.98 | 1.70 | 82.91 | - | 88.59 |
| Total | 1588.20 | 2083.94 | 1324.94 | 1517.67 | 6514.75 |

N.B. : In addition, 1952 nos of spurs and 253 km of Stone packing have been constructed.
Source: E.I.C. (Water Resources), Orissa

5.39 Under Centrally Sponsored Scheme, construction of Sea-wall of Jamboo Saline Gherry and Gobari Left was taken up in 2004-05 with an estimated cost of Rs.3.14 cr. which has been completed during 2007-08. Besides, 59 project proposals of various category viz. construction of new embankment, raising and strengthening of existing embankment, anti sea erosion measures etc. have been submitted to MOWR for inclusion in the “Flood

Management Programme” which is under active consideration of MOWR.

5.40 Since 2003-04, 27 flood control works have been taken up in different phases under RIDF programme with NABARD assistance. The estimated cost of these projects is Rs.71.34 cr. By the end of March, 2008, 10 projects have been completed and an expenditure of Rs.17.75 cr. have been made so far.

Drainage:

5.41 The Natural Topographical Factor (flat terrain) is the primary cause of drainage congestion in coastal belt of Orissa. Therefore, the disposal of rain water takes considerable time. Again formation of sand bar across the river mouth and tidal lockage makes the problem more aggressive. To address drainage congestion and water logging problems, a separate Drainage Organisation was created in 2001. As there is no specific scheme for drainage development, most of the works are being carried out through RIDF, NCCF, SGRY funds.

5.42 There are 34 drainage works with an estimated cost of Rs.72.94 crore have been taken up under RIDF programme. Out of these, four works have been completed, an amount of Rs.28.11 crore have been spent and 4715 ha. of water logged land has been retrieved by the end of March, 2008.

5.43 “Improvement of Drainage System and Improvement of Coast Canal Range-III”, a Centrally Sponsored Scheme, was taken up in Bhogarai and Jaleswar Block of Balasore district in 2004-05 and was completed in 2007-08. Against the estimated cost of Rs.14.46 crore, an amount of Rs.19.91 crore has been spent for the scheme by the end of March, 2008 and total 9120 ha. water logged land has been retrieved.

5.44 A new scheme “Flood Management Programme” has been launched by Government of India. As of now, 45 projects with an estimated cost of Rs.109.06 crore have been submitted for inclusion in the programme, which are under active consideration of MOWR.

Table – 5.16
Status of Drainage project in Orissa as on 31.03.08.

| Scheme | Project taken up | Project completed | Estimated project cost (Rs. in Cr.) | Expd. Incurred ending 03/08 | Area retrieved by 03/08 (ha.) |
|--------|------------------|-------------------|-------------------------------------|-----------------------------|-------------------------------|
| RIDF | 34 | 4 | 72.94 | 28.11 | 4715 |
| CSP | 1 | 1 | 14.46 | 19.91 | 9120 |

Source: E.I.C. (Water Resources),Orissa.

MINOR IRRIGATION CENSUS

5.45 The Minor Irrigation Census is being conducted by Government of India in every quin-quennial 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 (I.P.U.) in respect of five types of M.I. Schemes viz. Dug Well, Shallow Tube Well, Deep Tube Well, Surface Flow and Surface Lift. A comparative picture of 3rd Minor Irrigation Census and 2nd Minor Irrigation Census has been presented in Table 5.17. Besides, the 4th Minor Irrigation Census is going on and the result is awaited.

Table 5.17
Gross Irrigation Potential Created and Utilised in the State
as per 2nd and 3rd Minor Irrigation Census

| Scheme (In numbers) | Number of Scheme | | | Gross Irrigation Potential Created (in lakh hectare) | | | Gross Irrigation Potential Utilized (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) | changes | 1993-94 (2 nd M.I.Census) | 2000-01 (3 rd M.I.Census) | changes |
| Dug well (lakh) | 3.23 | 3.78 | 17 | 2.06 | 1.91 | (-) 7.28 | 0.92 | 0.77 | (-) 16.3 |
| Shallow tube well | 18095 | 43881 | 142.5 | 1.31 | 1.53 | 16.79 | 0.54 | 0.66 | 22.2 |
| Deep tube well | 2911 | 4592 | 57.7 | 0.82 | 0.94 | 14.6 | 0.14 | 0.11 | (-)21.43 |
| Surface flow | 24103 | 28303 | 17.4 | 6.98 | 6.9 | (-) 1.1 | 4.31 | 3.64 | (-) 15.5 |
| Surface lift | 20604 | 32844 | 59.4 | 2.83 | 3.03 | 7.1 | 1.13 | 1.03 | (-) 8.8 |

Source: Directorate of Economics & Statistics, Orissa.

5.46 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

declining trend of 21.43% 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.

