5.01 Irrigation is the only potent instrument for counteracting the vagaries of monsoon in the tradition bound agrarian system in Orissa. Agriculture is the mainstay of Orissa economy, which is a perpetual gamble of monsoon. Hence, in order to sustain economic development of Orissa in the way of increasing agricultural production, the necessity for providing assured water supply to the cultivable lands need no emphasis. Creation of additional irrigation facilities is vital not only for achieving higher agricultural production but also stabilizing production under uncertain weather conditions.

5.02 In Table 5.1 below an attempt has been made to throw light on the irrigation scenario of Orissa through different sources from 2000-01 to 2004-05.

**Table 5.1**

*Net Irrigation Potential in the State through different Types of Sources*

(Area in 000’ Hectare)

<table>
<thead>
<tr>
<th>Sl.No.</th>
<th>Irrigation source</th>
<th>Irrigation potential created upto end of</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Major and medium</td>
<td>1,177.89</td>
</tr>
<tr>
<td>2</td>
<td>Minor (flow)</td>
<td>450.37</td>
</tr>
<tr>
<td>3</td>
<td>Minor (lift)</td>
<td>336.05</td>
</tr>
<tr>
<td>4</td>
<td>Other sources *</td>
<td>557.92</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>2,522.23</td>
</tr>
</tbody>
</table>

* : 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, Panchayati Raj Department, Bhubaneswar, Directorate of Soil Conservation, Bhubaneswar. Orissa Lift Irrigation Corporation, Bhubaneswar.
MAJOR AND MEDIUM IRRIGATION PROJECTS

5.03 Development of irrigation facilities has assumed paramount importance for the development of the State. In the irrigation map of Orissa, Major and medium irrigation occupies the key position. Among all the sources of irrigation, only major and medium irrigation will provide irrigation to 39.49 lakh hectares, in its ultimate stage. By the end of 2004-05 (Mar’05), 1236.55 thousand hectares of cultivated land have been brought under irrigation through major and medium irrigation in the Kharif season. During Rabi season it also covers 535.95 thousand hectares. By the end of June 2005, major and medium projects have covered 1238.87 thousand hectares in Kharif season and 563.23 thousand hectares in Rabi season. For the year 2004-05 an amount of Rs. 506.83 crore was provided.

MINOR IRRIGATION (FLOW)

5.04 Through minor (flow) irrigation an additional irrigation potential of 6.44 thousand hectares were created during 2004-05. By end of 2003-04 (Mar’04), irrigation potential of 4.98 lakh hectare were created under minor irrigation (flow). Thus, the total irrigation potential has been raised to 5.04 lakh hectare by the end of 2004-05. Upto the end of June during the year 2005-06, additional irrigation potential of above 2 thousand hectares has been created through M.I (Flow) projects. The total number of Minor Irrigation Projects in the State was 3646 by the end of 2004-05, out of which 2,082 were functioning fully, 844 were partly derelict, 540 were completely derelict and 180 were ongoing projects. The potential created through Minor Irrigation (Flow) constitutes 18.69% of the total net irrigation potential created in the State up to 2004-05 through different types of sources. It has been assessed that 9.70 lakh hectares of land in the State can be irrigated through Minor Irrigation Projects at it’s ultimate stage.

MINOR IRRIGATION (LIFT)

5.05 It has been assessed that 8.87 lakh hectares of land can be irrigated through lift irrigation points at its ultimate stage. Till the end of 2004-05 irrigation potential of about 3.76 lakh hectare was created. This potential increased to 3.98 lakh hectare by June, 2005. 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. At present there is a proposal for setting up new LIPs with
the financial assistance from various agencies like DRDA, ITDA, WODC, BKVY and OSFDC. As on 31.3.2005 the total number of LIPs installed and energized in different districts of the State was 16,097 with designed ayacut of 3.58 lakh hectares in Kharif and 2.15 lakh hectares in Rabi. During 2004-05 (by March 2005) further 801 new LIPs have been energized with designed ayacut of 0.18 hectares in Kharif and 0.11 lakh in Rabi season. For the current irrigation year 2005-06, the tentative programme is to install and energise 1000 new LIPs and create additional irrigation potential of 20,000 hectares in Kharif and 12,000 in Rabi. By the end of June 2005, Pani Panchayats have been formed and registered in 10,239 LIPs, out of which 9,297 LIPs have been handed over to the Pani Panchayats for operation and maintenance.

IRRIGATION IN TRIBAL AREA SUB-PLAN (TASP)

5.06 Government has decided to give priority for creation of irrigation facility in areas covered under Tribal Area sub-plan. By the end of 2003-04, irrigation facility for 404.04 thousand hectares has been created under TASP through Major and medium, Minor (flow + lift) irrigation projects. It has been proposed to create additional irrigation, potential of 2,665 hectares in TASP through minor irrigation, 2,000 hectares through major and medium irrigation and 4,400 hectares through lift irrigation by June 2006.

CREEK IRRIGATION PROJECTS

5.07 Seven Creek Irrigation Projects have been taken in the first phase with CGWB assistance and provided irrigation facilities to 8,353 hectares. Similarly, in its second phase 5,332 hect. have been provided irrigation facilities. Through RIDF-VIII assistance, 2 numbers of creek irrigation projects “Malibasa-Tantiapal” creek in Kendrapara district and “Kathilogotha creek” in Khurda district are under execution with an estimated cost of Rs. 6.74 crore and Rs.3.60 crore respectively. After completion of these projects, irrigation potential of 4,000 hect in Kendrapara district and 1,070 hect in Khurda district will be created. Another creek irrigation project “Weeikhia creek” in Khurda district with an estimated cost of Rs. 4.78 crore has been sanctioned under RIDF-X. The implementation of the project is continuing during 2005-06 and after its completion it will create an irrigation potential of 1,700 hect.

SOIL CONSERVATION

5.08 The Soil conservation organization is implementing various anti-
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erosion measures through different schemes funded by State and Central Government to tackle the problem of soil erosion. 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 are under operation in the State.

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

5.09 Watershed Development Programmes focus on harnessing and conserving land and water through various soil and water conservation interventions for increasing and sustaining the productivity of land. This scheme is in operation in the State since 1990-91. 329 number of watersheds were taken up during 9th plan period and 110 watersheds have been saturated as per old cost norms. 7 watersheds could not be started during the 9th plan period. 212 recasted watersheds of the 9th plan period were carried over to10th plan period 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 with an area of 33,315 hectares for treatment and 153 watersheds in Non-KBK districts with an area 1,04,929 hectares for treatment. It is proposed to continue the same 212 ongoing watersheds during 2005-06 for treatment of 5,555 hectares at an estimated cost of Rs. 250.00 lakh.

(ii) River Valley Project (RVP)

5.10 The River Valley Project Scheme (RVP) aims at treating degraded catchment area of Multipurpose Interstate Reservoirs with appropriate soil and water conservation measures to check silt inflow into the reservoirs and to enhance the productivity of degraded land. The Scheme is in operation in four catchments in the state viz-Hirakud, Rengali-Mandira, Machkund-Sileru and Upper Kolab. The catchment treatment of Upper Indravati is also proposed to be included under the Programme. During 2004-05, 7 ongoing watersheds were being implemented and a sum of Rs. 80.00 lakh was spent and 1,231 hectares of area was treated. It is proposed to continue the scheme during 2005-06 with an estimated cost of Rs. 82.00 lakh to treat 1,408 hectares.

(iii) Watershed Developments under RLTAP for KBK districts

5.11 314 Micro Watershed Projects are taken up under the RLTAP for KBK districts since 2002-03. During 2004-05 (by Dec-2004), Rs. 526.53 lakh was utilized for treating 12,747 hectares area. The cumulative expenditure on watershed development under RLTAP by end of
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Dec., 2004 was Rs. 2,969.46 lakh and an area of 0.46 lakh hectares was treated.

During 2005-06, the treatment of above 314 watersheds will be continued with a programme for treating 32,200 hectares with a provision of Rs. 1937.45 lakh.

(iv) The Western Orissa Rural Livelihoods Project (WORLP)

5.12 The Western Orissa Rural Livelihoods Project (WORLP) was launched during 2000-01 with the assistance from DFID to cover 4 project districts of the State viz-Bolangir, Nuapada, Kalahandi and Bargarh over a period of 10 years. The project is currently under operation in 14 blocks of Bolangir and 5 blocks of Nuapada districts. During 2004-05, the programme is being implemented in 174 watersheds with a treatable area of 87,662 hectares. 40 more micro watersheds has been sanctioned during the current year with the treatable area of 0.20 lakh hectare.

SOURCE OF FUNDING OF IRRIGATION PROJECTS

5.13 As irrigation holds the key to optimum farm income, funding of the irrigation projects is the principal factor to achieve the goal of agricultural growth. 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.

A. Externally Aided Projects

5.14 There are several irrigation projects working in the State, which are financed by external sources. Some of these projects are: Rengali irrigation project, National Hydrology Project and Orissa Water Resource Consolidation Project. Rengali irrigation project has been taken up since 1997 with an appraisal cost of Rs. 426.93 crore from Japan Bank of International Co-operation (JBIC). On completion of this project, it will create an additional irrigation potential of 29,176 ha. The National Hydrology Project (NHP) has been taken up by World Bank in two phases. An amount of Rs. 4.20 crore has been proposed for budgetary allocation for the financial year 2005-06. Another externally aided project namely, Orissa water Resources Consolidation Projects (OWRCP) was implemented in the state under World Bank assistance. This scheme included the completion of incomplete 3 major and 5 medium irrigation projects and renovations work of 26 existing projects.
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The World Bank funding for the project has been closed in Sept.2004.

B. Internally Funded Project

5.15 Apart from the above-mentioned externally aided projects there are some irrigation projects, which are also under implementation with internal funding. Some of them are:

i. NABARD Assisted Projects

5.16 The Rural Infrastructure Development Fund (RIDF) has been launched by NABARD with an objective to provide financial assistance to State Govt. for infrastructure development. So far 44 projects have been sanctioned in major and medium irrigation Sector by NABARD under RIDF-I to X at an appraisal cost of Rs. 547.85 crore to create an additional irrigation potential of 73,419 hect Out of these, 28 nos. have been completed and 16 are under progress. By the end of Feb'2005, an amount of Rs. 426.84 crore has been spent and an additional irrigation potential of 47,310 hectare has been created. For the financial year 2005-06, Rs. 24.04 crore has been proposed under this scheme.

ii. Accelerated Irrigation Benefit Programme (AIBP)

5.17 Government of India have launched AIBP for accelerating the pace of irrigation development in the country. 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 since 2004-05. While for the KBK area Government of India provided 100 percent assistance (90% grant and 10% loan). For other areas the assistance from Government of India was limited to 80% of the project cost. Out of this 80% assistance, 30% was grant and 70% loan. From the year 2005-06, the loan component of the assistance is expected to be raised by the State Government. But for KBK areas, full cost of the project will be provided by Government of India as ACA. So far 18 number of irrigation projects have been approved under the scheme in different categories. Under general category, the projects executed in the non-KBK districts are included. So far 5 number of such projects have been taken up with a latest cost estimate of Rs. 2,438.02 crore. Under Special category, the projects executed in the KBK districts are included. So far 8 number of projects have been taken up with a latest cost estimate of Rs. 1,821.31 crore. On completion of these projects an additional irrigation facilities covering CCA of 1, 39,226 ha. will be created. By the end of Dec'2004, a sum of
Rs. 617.49 crore has been spent under these projects. The third category of AIBP is Fast Track, which has been introduced by Government of India during 2002-03 as an economic reform measure in irrigation sector. So far, 5 projects have been taken up with latest cost estimate of Rs.137.04 crore to provide irrigation facility covering an area of 7,684 hectare besides stabilizing the existing 41,173 hectare. By the end of Dec.’2004, Rs. 117.05 crore has been spent and an additional irrigation potential of 5,434 hect has been created and stabilization of 30,210 hect has been achieved.

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.86.47 crore. A sum of Rs.50.93 crore has been spent on these projects by the end of November’ 2004 and a sum of Rs10.00 crore has been proposed to be provided for these projects during 2005-06 with a target to create additional irrigation potential of 1,724 hectares.

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, chaus under Eleventh Finance Commission grant.

**COMMAND AREA DEVELOPMENT**

5.21 To use irrigation water judiciously and equitably to enhance agricultural production, a centrally sponsored plan scheme, i.e. Command Area Development Programme is being implemented in the State. The main objectives under CAD are topographical survey, investigation and planning, construction of field channels, reclamation of water logged and saline lands, farmers training etc. 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 845.06 thousand hectare. Under Command Area Development (CAD), 150 ha. of field channel, 357 ha. of field drain and 840 ha. of topographical survey has been achieved in the year 2004-05 (by January’2005). 2,300 no. of farmers were trained during that period. It is targeted to
complete 11,000 ha. of field channel, 10,000 ha. of field drains and 30,000 ha. of topographical survey and to train 14,000 farmers during 2005-06. For the financial year 2005-06 an outlay of Rs.400 lakh has been proposed towards state share for this programme.

5.22 After experiencing the success of participatory irrigation management, the Govt., have extended the programme to all commands of Major, medium, minor and lift projects. Direct participation of farmers 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. As many as 13,254 number of Pani Panchayats have been formed by 31.12.2005 covering an area of 10.44 lakh hectare out of which 7.77 lakh hectare have been handed over to 11,343 Pani Panchayats for operation and maintenance.

5.23 Biju Krushak Vikas Yojana has been launched for taking up the MIPs (flow & lift) in a Participatory mode. The salient feature 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. Under BKVY it has been targeted to create additional irrigation potential of 2,38,400 ha. within a period of 5 years. The State Level Screening Committee has approved 3,636 number of LIPs and 226 nos. of MIPs with total ayacut of 95,640 ha. with an estimated cost of Rs. 306.18 crore. Out of the above 1,818 LIPs and 52 MIPs with an ayacut of 47,047 ha. In KBK districts 804 nos. of LIPs and 250 nos. of LIPs in non-KBK districts have been completed and 15,338 ha. irrigation potential has been created. For the year 2005-06, it has been programmed to set up 1,000 new lift irrigation projects with budget allocation of Rs. 17.67 crore.

FLOOD CONTROL

5.24 Different flood control measures have been taken up by Govt. of Orissa to face the natural calamities like, flood, cyclone, drought etc. through “Flood Control Scheme”. Orissa is a 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. About 1,588.20 k.m. long Capital Embankment, 3.94 k.m. long other Agricultural Embankment, 1,324.94 k.m. long Test Relief Embankment and 1,517.67 k.m. of Saline Embankment totaling to 6,614.75 k.m. have been constructed. During 2005-06, it is proposed to take up some critical flood control works and anti sea / river erosion works. During the flood of 2004, the Subamarekha and Bairatani basin sustained extensive flood damage. After allocation of funds out of CRF, the works will be taken up. In addition to the above, the on-going works of FDR-2003 is proposed to be completed during 2005.

DRAINAGE

5.25 Nearly 30% of C.C.A. of coastal belt in the state, i.e. the undivided district of Balasore, Puri,,Ganjam and Cuttack suffer from poor drainage and water logging problems. Under drainage improvement works 39,590 ha. land has been retrieved and Govt., of India has sanctioned Rs. 14.46 crore for improvement of drainage system in Balasore district. 8 drainage Projects have been taken up at an estimated cost of Rs. 3.5 crore out of Additional Central Assistance (ACA)

MINOR IRRIGATION CENSUS
5.26 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, deep 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

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Scheme Type</th>
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<tbody>
<tr>
<td></td>
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</tr>
<tr>
<td>1</td>
<td>Dug well</td>
</tr>
<tr>
<td>2</td>
<td>Shallow tube well</td>
</tr>
<tr>
<td>3</td>
<td>Deep tube well</td>
</tr>
<tr>
<td>4</td>
<td>Surface flow</td>
</tr>
<tr>
<td>5</td>
<td>Surface lift</td>
</tr>
</tbody>
</table>

5.27 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 breakdown 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 2\textsuperscript{nd} 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 3\textsuperscript{rd} 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.