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DEPARTMENT OF WATER RESOURCES

RESOLUTION

The 16th March 2007

Subject:— STATE WATER POLICY - 2007

INTRODUCTION

Water is a prime natural resource, a basic human need and a precious national asset. Planning, development and management of Water Resources therefore need to be governed by a national perspective. The National Water Policy was first formulated in 1987. Based on the national policy, the State Water Policy was formulated in 1994. Since then a number of developments have taken place; new information and knowledge have been generated and new issues and challenges have emerged in the field of development and management of water resources. The National Water Policy-1987 has been reviewed, updated and a new policy titled National Water Policy-2002 has been adopted by the Government of India. It was therefore felt necessary by the State Government to review the State Water Policy-1994. After due consideration, the State Government have prepared a new Water Policy called "Orissa State Water Policy-2007" in keeping with the National Water Policy - 2002, and this has been approved by the State Water Resources Board after taking the outcome of the meeting with all stakeholders and administrative departments into account. It aims at laying down the principles of equitable and judicious use of water for survival of life, welfare of human beings and sustained as well as balanced growth of the State.

The State Water Policy-2007 is given below.

Water is a replenishable but finite resource. The annual overall availability of surface water in Orissa is about 85.89 billion cubic meters. The population of Orissa is 4% of that of the country, according to 2001 census. The State has 11% of the water resources of the country. The per-capita availability of water in 2001 was 3359 cubic meters. By 2051, it is likely to reduce to 2218 cubic meters. With increasing population and the consequential increase in demand for food and

water and with the growth in mining and industrial activities, the demand for water from various sectors is likely to increase to 55 billion cubic meters by 2051. The degradation in quality of water resources by direct and indirect human interference such as discharge of untreated/partially treated industrial and municipal waste water, organic and inorganic wastes and runoff from agriculture, mining, etc makes this resource increasingly scarce.

The seasonality of water availability in peninsular India causes significant variations in availability of water, both in space and time. The vagaries of monsoon cause droughts and floods in different parts of the State on a regular basis. From 1958 to 2005, rain-related natural calamities have visited the State 27 times.

The State Water Policy of Orissa, 2007 takes into account all these emerging factors and aims at laying down principles for wise and judicious use of water for survival of life, welfare of human beings and sustained as well as balanced growth of the State.

1. State Water Plan

1.1. The hydrological unit should be the unit of development and management of water resources, starting from primary watersheds to sub-catchments and catchments, integrated into sub-basins and basins. The State of Orissa has 11 river basins. The salient features of these basins are placed in the Annexure. The State has developed a State Water Plan for a period covering up to 2051 AD when the population of the State is expected to stabilize. With competing demands for water from the same sources, it is necessary to lay down the priorities in its allocation. The State of Orissa adopts the following order of priority in water allocation in tune with the National Policy:

- (a) Drinking water and domestic use (human and animal consumption)
- (b) Ecology
- (c) Irrigation, Agriculture and other related activities including Fisheries.
- (d) Hydro Power
- (e) Industries including Agro Industries.
- (f) Navigation and other uses such as tourism.

Any alteration in the above-mentioned priorities will demand formulation of a new policy.

1.2. The State Water Plan will not only allocate the water resource to different sectors of priority, it will also have a perspective plan for development of these resources in important areas like drinking water, irrigation, hydro-power, etc. While developing these resources, people's needs, preservation of the ecological balance and enrichment of the ecosystem would receive adequate attention. The plan will be holistic, participatory and environmentally sustainable.

2. Institutional Mechanism

2.1. The preparation of the State Water Plan and development of the water resources require an appropriate institutional and legal framework to support the activities. The Orissa Water Planning Organisation under the Engineer-in-Chief, Water Resources shall prepare macro-level multi-sectoral River Basin Plans. The OWPO will interact with various

stakeholders for preparation of these plans. The plans prepared by OWPO will be ground-truthed through the River Basin Organisations (R.B.Os), which are to be established for planning and management of water resources of different basins. Adequate representation would be provided to various stakeholders of water in the RBOs. The RBOs will also take on board P.R.I.s, legislators, civil society organisations and experts for a holistic water resource plan for the basin.

- 2.2. The plans prepared by OWPO and vetted by the R.B.Os will be placed for approval of the State level Water Resource Board, which would provide necessary forum for inter-sectoral coordination and policy realignment.
- 2.3. The institutional capacity for development of new water resource will be suitably upgraded in the light of modern improvements in project planning, monitoring and evaluation. Time and cost overruns shall be minimized through appropriate systems of monitoring. The budgetary provision will be prioritized for achieving the maximum return on investment.
- 2.4. The human resource engaged in planning and development of water resources will be trained at suitable intervals in order to keep abreast of the latest developments in the field.
- 2.5. In order to facilitate planning and development of water resources, a modern hydrological information system would be developed which would include collection, processing, archiving and dissemination of water-related data. The water-related data would include hydrological, meteorological, topographical, geo-morphological, demographical and ecological data and those relating to land, soil, water quality, forest cover, crop cover etc. There will be a state of the art Data Storage Center for the purpose. Decision support systems will be developed making use of the data and geographical information system in the Water Resources field. There will be a certain degree of standardization and transparency in collection and dissemination of the data system.

3. Drinking Water

The State shall provide adequate safe drinking water for human beings and livestock both in urban and rural areas. Irrigation and multipurpose projects should invariably include components for domestic use, which should override the demands from other sectors. Maintenance of water quality and reduction of pollution load will be an integral part of the strategy. Monitoring and surveillance of water quality would also be an integral part of the strategy. This will be achieved through an appropriate combination of legislation and information, education and communication (IEC) measures. Mechanisms to maintain domestic water supply in case of emergency should be provided.

4. Development of Water Resources for Irrigation and Drainage.

- 4.1. 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. Intra-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.

- 4.2. The Action Plan for horizontal expansion of irrigation coverage would include Major, Medium, Minor and Lift Irrigation Projects depending upon their feasibility and financial viability. Traditional systems of irrigation such as Munda, Kata, Bandha, tanks, checkdams, etc will be given due importance. Attempts will be made to enrich these traditional sources by not only renovating them, but also involving people in their planning and management. Interlinking major and medium irrigation projects for a holistic development of the system would be kept in view. Development of water resources in tribal and hilly areas would be specially designed to suit the tribal ethos, agronomic system of the terrain and should be in tune with the ecology of the area.
- 4.3. The expansion of irrigation coverage would aim at balanced growth of the infrastructure throughout the State. Districts and blocks having irrigation coverage below the State average will receive greater attention than those above in matters of future investment in irrigation infrastructure. The projects will, as far as possible, be targeted to benefit the disadvantaged sections of the society. Appropriate strategy will be developed in order to achieve this objective.
- 4.4. Conservation of water would receive priority at par with horizontal expansion of irrigation coverage. Improvement of irrigation efficiency by way of reduction of transmission losses will form an important component of the State Water Plan.

Measures such as selective lining of the conveyance systems, modernization and rehabilitation of existing systems including tanks, recycling and reuse of treated effluents and adoption of new techniques like drip and sprinkler irrigation will be promoted. There would be coordination with the Agriculture Department for promoting suitable cropping patterns which would help efficient and equitable use of water.

- 4.5. Planning and development of water resources will encompass uniform development of field channels through command area development activities. Such activities will be carried out only through people's participation.
- 4.6. Irrigation and drainage are inter-twined and the development of one should take into account the development of the other. A master plan for improvement of the drainage system of the State has been prepared in order to retrieve 1.95 lakh Ha. of waterlogged land for agriculture. The plan would be further refined and converted into an action plan within the overall purview of the State Water Plan. The drainage improvement measures would not only include engineering interventions, it would also include adequate biological interventions and appropriate land-use plans for waterlogged areas with people's participation.
- 4.7. Planning for drainage will form an integral part of the project formulation in all the new projects.

- 4.8. There should be a dedicated organisation to deal with the problem of drainage for the entire State.

5. Hydropower Generation

- 5.1. 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.
- 5.2. Multipurpose projects will be planned in such a way that the power-released water is utilised for irrigation and other consumptive uses, keeping in view riparian rights of the people downstream.
- 5.3. Utilisation of water for pumped storage-scheme may be done subject to overall economy of the proposal.

6. Industrial Water Supply

Water will be supplied to industries within the overall purview of the State Water Plan. Encouragement/incentives will be given to industries for recycling of water. Disincentives will be prescribed for non-recycling of water.

7. Ecology and Water Quality

- 7.1. 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.
- 7.2. The preparation of the project plan will take into account the requirement of environmental flow in the river as a mandatory consideration.
- 7.3. Studies will be conducted in order to analyze the requirement of water for maintenance of the riverine ecosystems. Periodic reports would be brought out on the basis of these studies.
- 7.4. Industrial and municipal effluents should be treated to acceptable levels and standards before discharging them into natural streams.
- 7.5. Both surface water and ground water should be regularly monitored for quality. Top priority will be given to addressing water quality problems. The information should be continuously shared with people.
- 7.6. Use of non-biodegradable materials should be discouraged by suitable mechanisms.
- 7.7. The principle of "Polluters must pay" will be applied to meet the expenses of maintaining water quality.

- 7.8. Necessary and adequate steps(including legislation) should be taken for preservation of existing water bodies and their sustainable use.

8. Resettlement and Rehabilitation

- 8.1. Development of water resources sometimes causes displacement of people.
- 8.2. The Resettlement and Rehabilitation component will form an integral part of every water resource development project in keeping with the latest R&R Policy of the State. The cost of R&R would be the first charge on the project and resettlement of the displaced persons will precede completion of a project.

9. Ground Water Development

- 9.1. The State has a utilizable ground water potential of 21.01 billion cubic meters, out of which the utilisation has been to the extent of 14.79%. The ground water potential of the State would be harnessed in a sustainable manner for supply of drinking water and irrigation, especially in water- scarce areas.
- 9.2. Artificial recharge of ground water including roof-top rainwater harvesting would be encouraged to replenish the utilisable ground water resources and improve its quality. The ground water recharge would be a conscious policy of all stakeholders . It would be the focus of the State Watershed Mission's activities.
- 9.3. Exploitation of ground water resources would be done with adequate attention to the quality and quantity of ground water. There should be a periodical assessment of the ground water potential on a scientific basis in every Block of the State. The information should be shared with people on continuous basis.
- 9.4. Overexploitation of ground water would be effectively prevented by legislation.
- 9.5. Degradation of Watershed (catchment) leads to reduction in the retention of water in the catchment, which increases the frequency and intensity of floods. Concerted efforts would be made for proper management of watersheds as a non- structural measure of flood control and drought mitigation.
- 9.6. Along with flood-proofing, there should be strict regulation of settlements and economic activities in the flood plain zones alongwith flood-proofing to minimize the loss of life and property on account of floods. Necessary legislation will be enacted for this purpose.
- 9.7. The flood-forecasting methods, forecast of inflow into reservoirs, etc. would be modernised with the objective of effective management of reservoirs.

10. Flood Control and Management

- 10.1. A master plan for flood control and management for each flood-prone area of the basins 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 river regime.

- 10.2. Adequate flood storage should be provided in water reservoir projects, wherever feasible, to facilitate better flood management. In highly flood-prone areas, flood control would be given overriding consideration in the reservoir regulation policy even at the cost of sacrificing some irrigation or power benefits.
- 10.3. Increased emphasis would be laid on non-structural flood-control measures such as flood forecasting and warning, flood-plain zoning and flood-proofing for the minimization of losses and reduction of recurring expenditure on flood relief and rehabilitation.
- 10.4. Control of urban flooding would be given due consideration.

11. Management of Saline Ingress

- 11.1. The threat of saline ingress through tidal action will be tackled by suitable structural interventions such as construction of sluices and embankments. They will also be handled by maintenance of low flows in rivers in the normal monsoon period. Studies will be conducted in order to ascertain the proper balance of sea and river water for maintenance of an estuarial ecosystem on the entire Orissa coast. Experience- sharing with other states and countries would be given due importance.
- 11.2. Overexploitation of ground water in coastal areas brings in its wake a distinct possibility of permanent contamination of the ground water reserve through saline ingress. Adequate measures will be taken to prevent such a hazard.
- 11.3. Important habitations facing the threat of tidal action will be protected through strengthening of embankments, suitable shelter-belt plantation and mobilising community action for such purposes.
- 11.4. Salt production in the State would be encouraged.

12. Participatory Irrigation Management

- 12.1. 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' Organisations. The State shall, however, continue to provide necessary support to these institutions by way of their capacity-building on a continuous basis and also by financial assistance to them as a proportion of water rates collected. Periodic independent evaluations would be conducted to assess the impact of the Participatory Irrigation Management, and suitable measures would be taken on the basis of lessons learnt.
- 12.2. The Water and Land Management Institution (WALMI) will be strengthened to act as a centre of excellence for PIM activities. Knowledge and experience sharing with similar institutions in the country and abroad would be encouraged.

12.3. In suitable projects, the State will introduce Irrigation Management Transfer (IMT). This will, however, be done in tune with the capacity of the Pani Panchayats to shoulder the responsibility of management of the Projects.

13. Financial Sustainability

13.1. Development of water resources involves huge capital investment. Creation of necessary infrastructure will continue to remain in the domain of public investment. Participation of beneficiaries in the capital cost in suitable proportions will be encouraged through appropriate schemes.

13.2. There will be differential water rates for different categories of uses.

13.3. 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 O&M charges.

13.4. In case there is any public-private participation in water resources development, care will be taken to ensure that the riparian and traditional rights of the local communities are adequately protected. Prior consultation with P.R.I.s/communities would be mandatory.

13.5. The polluters of water will be made to pay so that adequate measures can be taken for pollution mitigation. However, pollution beyond a threshold (to be decided by the Orissa Pollution Control Board) would not be permissible.

14. Catchment treatment

The treatment of catchments of all reservoirs will be taken up in an expeditious, systematic and scientific manner in order to prevent premature siltation of the reservoirs. Action plans would be prepared for catchment treatment of all the major and medium reservoirs of the State with the help of satellite data as well as ground surveys. Afforestation and soil conservation measures should be dovetailed with measures for prevention of reservoir sedimentation. The effectiveness of such measures will be monitored and the impact evaluated at designated intervals. The catchment treatment plans, their implementation, their monitoring and evaluation should be with the full participation of local communities living therein.

15. Safety of Dams

The safety of large dams would receive the urgent attention of the State. Appropriate legislation would be enacted in order to ensure proper inspection and surveillance of existing dams and also to ensure proper maintenance and rehabilitation of the dams. The Dam Safety Organisation under Engineer-in-Chief, Water Resources would be suitably strengthened to discharge these functions effectively.

16. Role of NGOs. (Non - Government Organisations)

The State 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 stakeholder participation. NGOs will form an important medium for campaigns relating to information, education and communication with regard to management, conservation and development of water resources.

There will be adequate civil society engagement in the process of monitoring the implementation of the State Water Policy.

ORDER

Ordered that the Resolution be published in the next extraordinary issue of The *Orissa Gazette* and copies of the same forwarded to all Deptts. of Govt./All Heads of Departments/ Accountant General, Orissa.

By Order of the Governor.

AUROBINDO BEHERA

Principal Secretary to Government

ANNEXURE

Salient Feature of Subarnarekha Basin

	<u>Total</u>	<u>Inside Orissa</u>	<u>% of Geographical area of State</u>	
Basin Area (Sq.Km.)	19227	2983	1.92%	
Name of Districts:—	Mayurbhanj, Balasore			
Population (Nos.)	<u>2001</u>	<u>2051</u>		
	Total	1150904	1691650	
Arable Area (Ha.) : —	234114			
	<u>Present</u>	<u>Future</u>		
Net Sown Area (Ha.): —	175267	175267		
Irrigation Status (Ha.)	<u>Present</u>	<u>Future</u>		
Major & Medium : —	20450	32792		
Minor Flow : —	6978	8089		
Minor Lift : —	17843	19700		
Other sources : —	15083	16653		
Total Irrigation	60354	77234		
Rainfed Area (Ha.) : —	114913	98033		
	<u>Surface</u>		<u>Ground</u>	
	<u>Present</u>	<u>Future</u>	<u>Present</u>	<u>Future</u>
75 % Dependable Flow	2745	2745	597.47	597.47
(Mcum)				
Food (Lakh MT)	<u>2001</u>		<u>2051</u>	
	<u>Demand</u>	<u>Production</u>	<u>Demand</u>	<u>Production</u>
Cereal	2.91	3.96	4.27	4.03
Pulses	0.28	0.07	0.41	0.08
Oil Seed	0.53	0.15	0.78	0.20
Vegetables	0.81	1.24	1.18	1.40

Salient Feature of Budhabalanga & Jambhira Basins

A. Budhabalanga Basin

	<u>Total</u>	<u>Inside Orissa</u>	<u>% of Geographical area of State</u>	
Basin Area (Sq. Km.)	4838	4838	3.11%	
Name of Districts: —	Balasore, Mayurbhanj			
Population (Nos.)	<u>2001</u>	<u>2051</u>		
	Total	1432618	2137914	
Arable Area (Ha.) : —	252581			
	<u>Present</u>	<u>Future</u>		
Net Sown Area (Ha.): —	210052	210052		
Irrigation Status (Ha.):—	<u>Present</u>	<u>Future</u>		
Major & Medium : —	16060	87116		
Minor Flow : —	11025	13697		
Minor Lift : —	3550	3919		
Ground Water Lift : —	9694	10704		
Other sources : —	19796	21857		
Total	60125	137293		
	<u>Present</u>	<u>Future</u>		
Rainfed Area (Ha.) : —	149927	72759		
	<u>Surface</u>	<u>Ground</u>		
75 % Dependable Flow (Mcum)	3030.37	818.81		
Food (Lakh MT)	<u>2001</u>	<u>2051</u>		
	<u>Demand</u>	<u>Production</u>	<u>Demand</u>	<u>Production</u>
Cereal	3.62	3.66	5.40	5.75
Pulses	0.35	0.80	0.52	0.20
Oil Seed	0.66	0.26	0.98	0.28
Vegetables	1.00	2.76	1.50	3.81

B. Jambhira Basin

	<u>Total</u>	<u>Inside Orissa</u>	<u>% of Geographical area of State</u>	
Basin Area (Sq. Km.)	1853	1516	0.97%	
Name of Districts: —	Balasore, Mayurbhanj			
Population (Nos.)	<u>2001</u>	<u>2051</u>		
	426092	499849		
Arable Area (Ha.) : —	113555			
	<u>Present</u>	<u>Future</u>		
Net Sown Area (Ha.): —	100196	100196		
Irrigation Status (Ha.):—	<u>Present</u>	<u>Future</u>		
Major & Medium : —	3500	74333		
Minor Flow : —	3362	4151		
Minor Lift : —	1204	1330		
Ground Water Lift : —	4529	5000		
Other sources : —	8190	9042		
Total	20785	93856		
	<u>Present</u>	<u>Future</u>		
Rainfed Area (Ha.) : —	79411	6340		
	<u>Surface</u>	<u>Ground</u>		
75 % Dependable Flow (Mcum)	735.58	472.97		
Food (Lakh MT)	<u>2001</u>		<u>2051</u>	
	<u>Demand</u>	<u>Production</u>	<u>Demand</u>	<u>Production</u>
Cereal	1.08	1.68	1.26	3.23
Pulses	0.10	0.04	0.12	0.11
Oil Seed	0.20	0.06	0.23	0.14
Vegetables	0.30	1.12	0.35	2.40

Salient Feature of Baitarani Basin

	<u>Total</u>	<u>Inside Orissa</u>	<u>% of Geographical area of State</u>	
Basin Area (Sq. Km.)	14218	13482	8.66%	
Name of Districts: —	Balasore, Mayurbhanj, Bhadrak, Jajpur, Kendrapara, Angul, Keonjhar, Sundargarh			
Population (Nos.)	<u>2001</u>	<u>2051</u>		
	3829931	5614349		
Arable Area (Ha.) : —	832970			
	<u>Present</u>	<u>Future</u>		
Net Sown Area (Ha.): —	604270	604270		
Irrigation Status (Ha.):—	<u>Present</u>	<u>Future</u>		
Major & Medium : —	114440	305088		
Minor Flow : —	19970	74885		
Minor Lift : —	26822	28163		
Ground Water Lift : —	23754	24942		
Other sources : —	36710	40531		
Total	221696	473609		
	Present	Future		
Rainfed Area (Ha.) : —	382574	130661		
	<u>Surface</u>	<u>Ground</u>		
75 % Dependable Flow (Mcum)	5149.47	2388.53		
Food (Lakh MT)	<u>2001</u>		<u>2051</u>	
	<u>Demand</u>	<u>Production</u>	<u>Demand</u>	<u>Production</u>
Cereal	9.67	13.85	14.17	15.85
Pulses	0.94	0.40	1.37	0.55
Oil Seed	1.76	0.38	2.58	0.55
Vegetables	2.68	4.66	3.93	7.26

Salient Feature of Brahmani Basin

	<u>Total</u>	<u>Inside Orissa</u>	<u>% of Geographical area of State</u>	
Basin Area (Sq. Km.)	39116	22516	14.00%	
Name of Districts: —	Sundargarh, Sambalpur, Deogarh, Angul, Dhenkanal, Keonjhar, Jajpur, Kendrapara			
Population (Nos.)	<u>2001</u>	<u>2051</u>		
	5110660	7526383		
Arable Area (Ha.) : —	1106700			
	<u>Present</u>	<u>Future</u>		
Net Sown Area (Ha.): —	863250	953098		
Irrigation Status (Ha.): —	<u>Present</u>	<u>Future</u>		
Major & Medium : —	81671	467232		
Minor Flow : —	51917	157762		
Minor Lift : —	41614	97000		
Ground Water Lift : —	14519	23000		
Other sources : —	60870	67205		
Total	250591	812199		
	<u>Present</u>	<u>Future</u>		
Rainfed Area (Ha.) : —	612569	140898		
	<u>Surface</u>		<u>Ground</u>	
	<u>Present</u>	<u>Future</u>	<u>Present</u>	<u>Future</u>
75 % Dependable Flow (Mcum)	13996	13061.76	2601	2601
Food (Lakh MT)	<u>2001</u>		<u>2051</u>	
	<u>Demand</u>	<u>Production</u>	<u>Demand</u>	<u>Production</u>
Cereal	12.90	12.53	19.00	19.79
Pulses	1.25	0.72	1.84	0.89
Oil Seed	2.35	0.83	3.45	1.44
Vegetables	3.58	2.43	5.27	6.29

Salient Feature of Mahanadi Basin

	<u>Total</u>	<u>Inside Orissa</u>	<u>% of Geographical area of State</u>	
Basin Area (Sq. Km.)	141134	65628	42.15%	
Name of Districts: —	Angul, Bargarh, Bolangir, Boudh, Cuttack, Deogarh, Dhenkanal, Ganjam, Jagatsinghpur, Jajpur, Jharsuguda, Kalahandi, Kandhamal, Kendrapara, Khurdha, Nawarangpur, Nayagarh, Nuapada, Puri, Rayagada, Sambalpur, Sonapur, Sundargarh			
Population (Nos.)	<u>2001</u>	<u>2051</u>		
	16202133	20930123		
Arable Area (Ha.) : —	3105980			
	<u>Present</u>	<u>Future</u>		
Net Sown Area (Ha.): —	2278140	2640989		
Irrigation Status (Ha.): —	<u>Present</u>	<u>Future</u>		
Major & Medium : —	548747	1577855		
	182026	399692		
Minor Flow : —	120487	341948		
Minor Lift				
Ground Water Lift				
Other sources :-	219010	241805		
Total	1070270	2561300		
	<u>Present</u>	<u>Future</u>		
Rainfed Area (Ha.) : —	1207870	79669		
			<u>Surface</u>	<u>Ground</u>
	<u>Present</u>	<u>Future</u>	<u>Present</u>	<u>Future</u>
75 % Dependable Flow (Mcum)	43681.53	42500.81	10623.28	10623.28
Food (Lakh MT)	<u>2001</u>		<u>2051</u>	
	<u>Demand</u>	<u>Production</u>	<u>Demand</u>	<u>Production</u>
Cereal	40.91	50.35	52.84	72.52
Pulses	3.97	1.10	5.12	1.94
Oil Seed	7.44	2.48	9.61	4.64
Vegetables	11.34	14.05	14.65	15.47

Salient Feature of Rushikulya Basin

	<u>Total</u>	<u>Inside Orissa</u>	<u>% of Geographical area of State</u>	
Basin Area (Sq. Km.)	8963	8963	5.76%	
Name of Districts: —	Ganjam, Gajapati, Kandhamala, Nayagarh, Khurda			
Population (Nos.)	<u>2001</u>	<u>2051</u>		
	Total	2942901	3868021	
Arable Area (Ha.) : —	432810			
	<u>Present</u>	<u>Future</u>		
Net Sown Area (Ha.): —	371560	371560		
Irrigation Status (Ha.):—	<u>Present</u>	<u>Future</u>		
Major & Medium : —	107270	124306		
Minor Flow : —	78555	106560		
Minor Lift : —	14298	23200		
Ground Water Lift : —	5424	8800		
Other sources : —	153030	52264		
Total	358577	315130		
	<u>Present</u>	<u>Future</u>		
Rainfed Area (Ha.) : —	229544	78397		
	<u>Surface</u>	<u>Ground</u>		
75 % Dependable Flow (Mcum)	3299.92	1147.59		
Food (Lakh MT)	<u>2001</u>	<u>2051</u>		
	<u>Demand</u>	<u>Production</u>	<u>Demand</u>	<u>Production</u>
Cereal	4.15	5.62	5.45	6.88
Pulses	0.70	0.63	0.93	0.82
Oil Seed	1.37	0.35	1.80	0.52
Vegetables	2.06	2.13	2.71	3.68

Salient Feature of Bahuda Basin

	<u>Total</u>	<u>Inside Orissa</u>	<u>% of Geographical area of State</u>	
Basin Area (Sq. Km.)	1118	890	0.57%	
Name of Districts: —	Ganjam, Gajapati			
Population (Nos.)	<u>2001</u>	<u>2051</u>		
	270937	310330		
Arable Area (Ha.) : —	44408			
	<u>Present</u>	<u>Future</u>		
Net Sown Area (Ha.): —	39449	39449		
Irrigation Status (Ha.): —	<u>Present</u>	<u>Future</u>		
Major & Medium : —	8485	12369		
Minor Flow : —	12785	13363		
Minor Lift : —	2045	2250		
Ground Water Lift : —	272	308		
Other sources : —	3023	3338		
Total	26610	31628		
	<u>Present</u>	<u>Future</u>		
Rainfed Area (Ha.) : —	12839	7821		
	<u>Surface</u>	<u>Ground</u>		
75 % Dependable Flow (Mcum)	407.48	104.6		
Food (Lakh MT)	<u>2001</u>		<u>2051</u>	
	<u>Demand</u>	<u>Production</u>	<u>Demand</u>	<u>Production</u>
Cereal	0.68	0.88	0.78	0.94
Pulses	0.07	0.02	0.08	0.02
Oil Seed	0.12	0.04	0.14	0.06
Vegetables	0.19	0.46	0.22	0.48

Salient Feature of Vansadhara Basin

	<u>Total</u>	<u>Inside Orissa</u>	<u>% of Geographical area of State</u>	
Basin Area (Sq. Km.)	11377	8960	5.75%	
Name of Districts: —	Kalahandi, Koraput, Kandhamal and Gajapati			
Population (Nos.)	<u>2001</u>	<u>2051</u>		
	1023338	1504148		
Arable Area (Ha.) : —	241100			
	<u>Present</u>	<u>Future</u>		
Net Sown Area (Ha.): —	192100	220915		
Irrigation Status (Ha.): —	<u>Present</u>	<u>Future</u>		
Major & Medium : —	8750	46790		
Minor Flow : —	29409	55929		
Minor Lift	12244	12856		
Ground Water Lift				
Other sources : —	11290	40105		
Total	61693	155680		
	<u>Present</u>	<u>Future</u>		
Rainfed Area (Ha.) : —	130407	65235		
	<u>Surface</u>		<u>Ground</u>	
	<u>Present</u>	<u>Future</u>	<u>Present</u>	<u>Future</u>
75 % Dependable Flow (Mcum)	3941.94	3941.94	666.63	666.63
Food (Lakh MT)	<u>2001</u>		<u>2051</u>	
	<u>Demand</u>	<u>Production</u>	<u>Demand</u>	<u>Production</u>
Cereal	2.308	2.373	3.390	3.546
Pulses	0.245	0.082	0.360	0.125
Oil Seed	0.460	0.136	0.670	0.246
Vegetables	0.720	0.940	1.052	1.886

Salient Feature of Nagavali Basin

	<u>Total</u>	<u>Inside Orissa</u>	<u>% of Geographical area of State</u>	
Basin Area (Sq. Km.)	9275	4500	2.89%	
Name of Districts: —	Kalahandi, Koraput, Rayagada			
Population (Nos.)	<u>2001</u>	<u>2051</u>		
	Total	578143	813442	
Arable Area (Ha.) : —	174171	174171		
	<u>Present</u>	<u>Future</u>		
Net Sown Area (Ha.): —	128233	141058		
Irrigation Status (Ha.): —	<u>Present</u>	<u>Future</u>		
Major & Medium : —	0	45400		
Minor Flow : —	10279	25779		
Minor Lift : —	4743	4980		
Ground Water Lift : —	2040	2142		
Other sources : —	11186	11186		
Total	28248	89487		
	<u>Present</u>	<u>Future</u>		
Rainfed Area (Ha.) : —	99985	51571		
	<u>Surface</u>		<u>Ground</u>	
	<u>Present</u>	<u>Future</u>	<u>Present</u>	<u>Future</u>
75 % Dependable Flow (Mcum)	2367	2367	396	396
Food (Lakh MT)	<u>2001</u>		<u>2051</u>	
	<u>Demand</u>	<u>Production</u>	<u>Demand</u>	<u>Production</u>
Cereal	1.303	1.576	1.834	2.286
Pulses	0.138	0.042	0.195	0.081
Oil Seed	0.260	0.021	0.366	0.105
Vegetables	0.404	0.912	0.569	1.237

Salient Feature of Kolab Basin

	<u>Total</u>	<u>Inside Orissa</u>	<u>% of Geographical area of State</u>	
Basin Area (Sq. Km.)	20427	10300	6.61%	
Name of Districts: —	Malkangiri, Koraput			
Population (Nos.)	<u>2001</u>	<u>2051</u>		
	1108684	1521209		
Arable Area (Ha.) : —	346000			
	<u>Present</u>	<u>Future</u>		
Net Sown Area (Ha.): —	284000	284000		
Irrigation Status (Ha.): —	<u>Present</u>	<u>Future</u>		
Major & Medium : —	117810	175300		
Minor Flow : —	4582	22571		
Minor Lift : —	6294	43035		
Other sources : —	35949	40000		
Total	164635	280906		
	<u>Present</u>	<u>Future</u>		
Rainfed Area (Ha.) : —	244190	136060		
	<u>Surface</u>			
75 % Dependable Flow (Mcum)	6509.06			
Food (Lakh MT)	<u>2001</u>		<u>2051</u>	
	<u>Demand</u>	<u>Production</u>	<u>Demand</u>	<u>Production</u>
Cereal	1.50	2.71	2.05	5.42
Pulses	0.28	0.11	0.38	0.18
Oil Seed	0.15	0.47	0.21	1.07
Vegetables	0.95	3.38	1.31	6.61

Salient Feature of Indravati Basin

	<u>Total</u>	<u>Inside Orissa</u>	<u>% of Geographical area of State</u>
Basin Area (Sq. Km.)	41700	7400	4.75%

Indravati River is a tributary of Godavari Basin of area 3,12,812 Sq. Km.

Name of Districts:- Kalahandi, Koraput, Rayagada, Nawarangpur

Population (Nos.)	<u>2001</u>	<u>2051</u>
	1191460	1420073

Arable Area (Ha.) : — 376260

	<u>Present</u>	<u>Future</u>
Net Sown Area (Ha.): —	270940	270940

Irrigation Status (Ha.): — Present Future

Major & Medium : — 4250 66106

Minor Flow : — 5266 46099

Minor Lift : — 8888 25293

Ground Water Lift : — 905 12646

Other sources : — 25425 38140

Total Irrigation 44734 188284

Present Future

Rainfed Area (Ha.) : — 226206 82565

Average Rainfall (mm.) 1582

	<u>Surface</u>		<u>Ground</u>	
	<u>Present</u>	<u>Future</u>	<u>Present</u>	<u>Future</u>
75 % Dependable Flow (Mcum)	5403	5403	692	692

Food (Lakh MT)	<u>2001</u>		<u>2051</u>	
	<u>Demand</u>	<u>Production</u>	<u>Demand</u>	<u>Production</u>
Cereal	3.01	3.27	3.59	5.65
Pulses	0.29	0.11	0.35	0.20
Oil Seed	0.55	0.15	0.65	0.32
Vegetables	0.83	0.88	0.99	1.64