STATE'S WATER RESOURCES: AN OVERVIEW

Odisha depends largely upon monsoon for its water resources. South west monsoon triggers rainfall in the state. About 78% of total annual rainfall occurs during the period from June to September and the balance 22% in the remaining period from October to May. In addition to seasonal availability, the rain fall in the state also shows spatial variation i.e. from about 1200 mm in southern coastal plain to about 1700 mm in northern plateau. The long-term average annual rainfall in the state is of the order of 1452 mm, which corresponds to an annual precipitation of about 230.76 billion cubicmetres (BCM) of water. Out of the total precipitation, a part is lost by evaporation & transpiration, a part goes towards increasing ground water storage and the remaining appears as surface run off. The ground water reserve and surface run-off constitute the water resources of the state.

Surface Water Resources

The state is endowed with an extensive network of rivers & streams. As per an assessment made in 2001, the average annual availability of surface water from states own drainage boundary is estimated as 82.841 BCM. Considering the topography and geological limitations, it has been assessed that 65.679 BCM of water can be utilised. Besides, inflow of 37.556 BCM is also available annually from neighbouring states through interstate rivers. Out of which, the utilisable surface water resources is assessed as 29.861 BCM. Due to increasing demands of water for various uses, an attempt has been made to assess the availability of water by the year 2051. The assessment reveals that the surface water availability from its own drainage boundary remains more or less fixed but the inflow of surface water from neighbouring states will be reduced from 37.556 BCM to 25.272 BCM. The following table shows the assessed inflow of surface water pertaining to the years 2001 & 2051 respectively.

Table - 2.1
Basin-wise availability of Surface Water (Scenario: 2001)

Basin Name	Average Annual flow (in BCM)			75% dependable flow (in BCM)		
	Own	Outside State	Total	Own	Outside State	Total
Bahuda	0.438	-	0.438	0.213	-	0.213
Baitarani	7.568	-	7.568	5.434	-	5.434
Brahmani	11.391	7.186	18.577	8.849	5.521	14.011
Budhabalanga	3.111	-	3.111	2.521	-	2.521
Indravati	6.265	-	6.265	4.451	-	4.451
Kolab	11.089	-	11.089	8.885	-	8.885
Mahanadi	29.90	29.255	59.155	25.508	23.225	48.732
Nagavali	2.853	-	2.853	2.322	-	2.322
Rushikulya	3.949	-	3.949	2.782	-	2.782
Subernarekha	1.193	1.115	2.308	1.193	1.115	2.308
Vansadhara	5.083	-	5.083	3.881	-	3.881
Total	**82.841**	**37.556**	**120.397**	**65.679**	**29.861**	**95.540**

Table - 2.2
Basin-wise availability of Surface Water (Future Scenario: 2051)

Basin Name	Average Annual flow (in BCM)			75% dependable flow (in BCM)		
	Own	Outside State	Total	Own	Outside State	Total
Bahuda	0.438	-	0.438	0.213	-	0.213
Baitarani	7.568	-	7.568	5.434	-	5.434
Brahmani	11.391	3.118	14.509	8.849	2.395	10.884
Budhabalanga	3.111	-	3.111	2.521	-	2.521
Indravati	6.265	-	6.265	4.451	-	4.451
Kolab	11.089	-	11.089	8.885	-	8.885
Mahanadi	29.90	21.039	50.939	25.508	16.702	42.210
Nagavali	2.853	-	2.853	2.322	-	2.322
Rushikulya	3.949	-	3.949	2.782	-	2.782
Subernarekha	1.193	1.115	2.308	1.193	1.115	2.308
Vansadhara	5.083	-	5.083	3.881	-	3.881
Total	**82.841**	**25.272**	**108.113**	**65.679**	**20.212**	**85.891**

Source - State Water Plan

Water Storage

A storage capacity of 17.49 BCM has so far been developed through completed major, medium and minor (flow) projects. Besides, the projects under construction will contribute to an additional 1.77 BCM. The details are given in the table 2.3.

Table - 2.3
Storage capacity of Reservoirs (Qty. in BCM)

Category	Completed Projects		Projects under construction	
	No	Capacity	No	Capacity
Major	8	15.17	2	0.532
Medium	44	1.82	4	0.145
Minor	2728	0.50	71	-
Total	**2780**	**17.49**	**77**	**0.677**

Ground Water Resources

The natural recharge of ground water takes place through percolation from land after rain events. The quantum of dynamic ground water, which can be annually extracted, is generally reckoned as ground water potential. The ground water resources assessment are being carried out at an interval of five years following on the norms and methodology prescribed by the Ground Water Estimation Committee (GEC) of Government of India.

As per the latest assessment, the state has net dynamic ground water resources of 16.69 lakh ha.m (BCM). Out of which, exploration to the extent of 5.2 lakh ha.m (BCM) has been made for various uses. Basin wise ground water resources & its utilisation is given in the table no. 2.4.

Table - 2.4
Ground Water Resources and Sectoral utilisation

Sl. No.	Basin	GW Resources (HM)	Sectoral GW Draft in Basin as of March 2013				Stage of GW Development (%)
			Irrigation (HM)	Domestic (HM)	Industrial (HM)	Total Draft (HM)	
A.	**River Basin**						
1	Bahuda	11023	3090	571	-	3661	33.21
2	Baitarani	167215	59275	5675	2147	67097	40.13
3	Brahmani	198033	52686	9061	2483	64230	32.43
4	Budhabalanga	83957	27302	3263	1412	31977	38.09
5	Indravati	55912	6153	3136	20	9309	16.65
6	Jambhira	38634	16705	1378	-	18083	46.81
7	Kolab	75343	6673	2585	-	9258	12.29
8	Mahanadi	685477	152628	37254	2262	192144	28.03
9	Nagavali	26167	3109	1336	49	4494	17.17
10	Rushikulya	117910	28068	6275	484	34827	29.54
11	Subernarekha	59855	19303	2123	-	21426	35.80
12	Vansadhara	72402	13102	2225	8	15335	21.18
B	**Area draining directly to sea**						
13	Chilika	27372	4460	1254	37	5751	21.01
14	Kansabansa	49614	22034	1565	711	24310	49.00
State Total		**16,68,914**	**4,14,588**	**77,701**	**9,613**	**5,01,902**	**30.07**

G.W.- Ground Water, HM- Hectare Metre

Table - 2.5

Unit - BCM

State	Annual Replenishable Ground Water Resource					Natural discharge during Non-moonson season	Net annual ground water availa bility	Projected demand for domesitc & industrial uses upto 2025	Ground water availability for future irrigation use
	Moonsoon Season		Non-Monsoon season		Total				
	Recharge from rain fall	Recharge from other source	Recharge from rain fall	Recharge from other source					
Odisha	11.29	2.53	1.33	2.63	17.78	1.09	16.69	1.27	11.94