

Surface Water Resources in River Basins

River basin	Catchment Area (Sq.km)	Mean annual flow (BCM)	Utilizable flow (BCM)	Storage	
				Volume (BCM)	% of Annual flow
Indus	321289	73.31	46.0	16.28	22.21
Ganga	861452	525.02	250.0	42.06	8.01
Brahmaputra	194413	537.24	24.0	2.36	0.40
Barak & others	41723	48.36			
Godavari	312812	110.54	76.3	25.12	22.72
Krishna	258948	78.12	58.0	41.80	53.51
Cauvery	81155	21.36	19.0	8.59	40.22
Pennar	55213	6.32	6.9	2.64	41.77
East flowing: between Mahanadi and Pennar	86643	22.52	13.1	1.42	6.31
East flowing: between Pennar and Kanyakumari	100139	16.46	16.5	1.83	11.12
Mahanadi	141589	66.88	50.0	12.33	18.44
Brahmani-Baitarni	51822	28.48	18.3	4.64	16.29
Subernarekha	29196	12.37	6.8	0.67	5.42
Sabarmati	21674	3.81	1.9	1.30	34.12
Mahi	34842	11.02	3.1	4.72	42.83
West flowing: Kachchh, Saurashtra and Luni	321851	15.10	15.0	4.72	31.26
Narmada	98796	45.64	34.5	16.97	37.18
Tapi	65145	14.88	14.5	9.40	63.17
West flowing: Tapi to Tadri	55940	87.41	11.9	11.26	12.88
West flowing: Tadri to Kanyakumari	56177	113.5	24.3	10.23	9.01
Minor rivers draining into Bangladesh and Myanmar	36202	31.0	-	0.31	1.00
Total	1808144	1869.35	690.1	218.90	11.71

Source: Central Water Commission, Ministry of Water Resources

Status of Ground Water Development

Sl.	Name of State	Net Annual Availability (BCM)	Annual Draft (BCM)			Stage of Development (%)
			Irrigation	Domestic & Industry	Total	
1	Andhra Pradesh	30.76	12.61	1.54	14.15	46
2	Arunachal Pradesh	4.01	0.002	0.001	0.003	0.07
3	Assam	27.81	5.333	0.69	6.026	22
4	Bihar	26.21	9.79	1.56	11.36	43
5	Chhattisgarh	11.58	3.08	0.52	3.60	31
6	Delhi	0.29	0.14	0.26	0.40	138
7	Goa	0.133	0.014	0.030	0.044	33
8	Gujarat	17.35	11.93	1.05	12.99	75
9	Haryana	9.80	11.71	0.72	12.43	127
10	Himachal Pradesh	0.53	0.23	0.08	0.31	58
11	Jammu & Kashmir	3.33	0.15	0.58	0.73	22
12	Jharkhand	5.41	1.17	0.44	1.61	30
13	Karnataka	14.81	9.01	1.00	10.01	68
14	Kerala	6.03	1.30	1.50	2.81	47
15	Madhya Pradesh	32.25	16.66	1.33	17.99	56
16	Maharashtra	33.81	15.91	1.04	16.95	50
17	Manipur	0.40	0.0033	0.0007	0.0040	1
18	Meghalaya	1.1109	0.0015	0.0002	0.0017	0.15
19	Mizoram	0.039	0.000	0.0004	0.0004	1
20	Nagaland	0.38	-	0.008	0.008	2.14
21	Orissa	16.69	3.47	0.89	4.36	26
22	Punjab	20.35	33.97	0.69	34.66	170
23	Rajasthan	10.79	12.86	1.65	14.52	135
24	Sikkim	0.046	0.003	0.007	0.010	21
25	Tamil Nadu	20.65	14.71	1.85	16.56	80
26	Tripura	2.74	0.09	0.07	0.16	6
27	Uttar Pradesh	68.57	46.00	3.49	49.48	72
28	Uttarakhand	2.07	1.01	0.03	1.05	51
29	West Bengal	27.58	10.11	0.79	10.91	40
	Total States	395.52	221.29	21.83	243.14	61
	Union Territories					
1	Andaman & Nicobar	0.298	0.0006	0.010	0.011	4
2	Chandigarh	0.020	0.000	0.000	0.000	0.000
3	Dadar & Nagar Haveli	0.06	0.001	0.007	0.009	15
4	Daman & Diu	0.011	0.008	0.003	0.011	99
5	Lakshdweep	0.003	0.0000	0.003	0.003	74
6	Pondicherry	0.154	0.121	0.029	0.150	98
	Total UTs	0.54	0.13	0.05	0.18	34
	Grand total	396.06	221.42	21.89	243.32	61

* Dynamic Ground Water Resources of India (as on 31 March, 2009), CGWB, November, 2011

Surface & Ground Water Resources in River Basins

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Mahanadi	141589	66.88	50.0	12.33	18.44	17.72
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Subernarekha	29196	12.37	6.8	0.67	5.42	5.13
Sabarmati	21674	3.81	1.9	1.30	34.12	2.98
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Narmada	98796	45.64	34.5	16.97	37.18	12.90
Tapi	65145	14.88	14.5	9.40	63.17	7.36
West flowing: Tapi to Tadri	55940	87.41	11.9	11.26	12.88	12.38
West flowing: Tadri to Kanyakumari	56177	113.5	24.3	10.23	9.01	-
Minor rivers draining into Bangladesh and Myanmar	36202	31.0	-	0.31	1.00	0.40
Total	1808144	1869.35	690.1	218.90	11.71	432.64

Source: Central Water Commission, Ministry of Water Resources

Water Resources in India, Indian National Committee on Irrigation and Drainage

State Wise Irrigation Potential Created

Area in million hectares

Sl.	States	IPC upto March, 2010
1.	Andhra Pradesh	7.45
2	Arunachal Pradesh	0.13
3	Assam	1.08
4	Bihar	8.02
5	Chhattisgarh	2.62
6	Goa	0.07
7	Gujarat	4.57
8	Haryana	3.87
9	Himachal Pradesh	0.23
10	Jharkhand	1.12
11	Jammu & Kashmir	1.83
12	Karnataka	3.04
13	Kerala	3.41
14	Madhya Pradesh	2.32
15	Maharashtra	7.30
16	Manipur	0.22
17	Meghalaya	0.07
18	Mizoram	0.03
19	Nagaland	0.10
20	Orissa	3.91
21	Punjab	6.10
22	Rajasthan	5.59
23	Sikkim	0.04
24	Tamil Nadu	4.47
25	Tripura	0.16
26	Uttar Pradesh	33.57
27	Uttranchal	0.86
28	West Bengal	5.97
29	UTs	0.06
	Total	108.21

Source: Ministry of Water Resources

State-wise extent of Net Sown Area and Rainfed Area (2009-10)				
<i>(in thousand hectares)</i>				
SI	States	Net Sown Area	Net irrigated area	Rainfed area
1	Andhra Pradesh	9991	4214	5777
2	Arunachal Pradesh	212	56	156
3	Assam	2811	197	2614
4	Bihar	5332	3394	1938
5	Chattisgarh	4683	1323	3360
6	Goa	132	29	103
7	Gujarat	10302	4336	5966
8	Haryana	3550	3069	481
9	Himachal Pradesh	542	108	434
10	Jammu & Kashmir	735	317	418
11	Jharkhand	1250	102	1148
12	Karnataka	10404	3390	7014
13	Kerala	2079	386	1693
14	Madhya Pradesh	14972	6892	8080
15	Maharashtra	17401	3254	14147
16	Manipur	233	52	181
17	Meghalaya	283	62	221
18	Mizoram	123	10	113
19	Nagaland	361	73	288
20	Orissa	5574	2180	3394
21	Punjab	4158	4073	85
22	Rajasthan	16974	5850	11124
23	Sikkim	77	14	63
24	Tamil Nadu	4892	2864	2028
25	Tripura	280	58	222
26	Uttarakhand	741	338	403
27	Uttar Pradesh	16589	13457	3132
28	West Bengal	5256	3112	2144
29	A & N Island	15	0	15
30	Chandigarh	1	1	0
31	D&N Haveli	20	4	16
32	Daman & Diu	4	0	4
33	Delhi	22	22	0
34	Lakshadweep	3	1	2
35	Pondicherry	19	16	3
	Total	140021	63254	76767

Source: Directorate of Economics & Statistics, Department of Agriculture & Cooperation, Ministry of Agriculture

State wise Ultimate Irrigation Potential

(Unit: '000 Hectares)

Sl.	State/UT	Major & Medium Surface Water	Minor Irrigation		Total
			Surface Water	Ground Water	
1	2	3	4	5	7
1.	Andhra Pradesh	5000	2300	3960	11260
2.	Arunanchal Pradesh	0	150	18	168
3.	Assam	970	1000	900	2870
4.	Bihar	5224	1544	4120	10888
5.	Chhatisgarh	1147	81	490	1718
6.	Goa	62	25	-	87
7.	Gujrat	3000	347	2756	6103
8.	Haryana	3000	50	1462	4512
9.	Himachal Pradesh	50	235	68	353
10.	Jammu & Kashmir	250	400	708	1358
11.	Jharkhand	1276	354	830	2460
12.	Karnataka	2500	900	2574	5974
13.	Kerala	1000	800	879	2679
14.	Madhya Pradesh	4853	2111	9250	16214
15.	Maharashtra	4100	1200	3652	8952
16.	Manipur	135	100	369	604
17.	Meghalaya	20	85	63	168
18.	Mizoram	0	65	5	70
19.	Nagaland	10	70	5	85
20.	Orissa	3600	1000	4203	8803
21.	Punjab	3000	50	2917	5967
22.	Rajasthan	2750	600	1778	5128
23.	Sikkim	20	50	0	70
24.	Tamil Nadu	1500	1200	2832	5532
25.	Tripura	100	100	81	281
26.	Uttar Pradesh	12154	1186	16295	29635
27.	Uttrakhand	346	14	504	864
28.	West Bengal	2300	1300	3318	6918
Total States		58367	17317	64066	139750
Total UTs		98	20	26	144
Grand Total		58465	17337	64092	139894

Source: Central Water Commission, Ministry of Water Resources

CONCEPTS, DEFINITIONS & ESTIMATION PROCEDURE

A. TERMS RELATING TO LAND USES

- a) **Geographical Area** : The latest figures of geographical area of the State/Union Territories are those provided by the Office of the Surveyor General of India.
- b) **Reporting Area for Land Utilisation Statistics** : The Reporting area stands for the area for which data on land use classification of area are available. In areas where land utilization figures are based on land records, reporting area is the area according to village papers, i.e. the papers prepared by the village accountants. In some cases, the village papers may not be maintained in respect of the entire area of the State. For example, village papers are not prepared for the forest areas but the magnitude of such area is known. Also there are tracts in many States for which no village paper exists. In such cases, ad-hoc estimates of classification of area are derived to complete the coverage.
- c) **Forest Area** : This includes all land classified either as forest under any legal enactment, or administered as forest, whether State-owned or private, and whether wooded or maintained as potential forest land. The area of crops raised in the forest and grazing lands or areas open for grazing within the forests remain included under the "forest area".
- d) **Area under Non-agricultural Uses** : This includes all land occupied by buildings, roads and railways or under water, e.g. rivers and canals, and other land put to uses other than agriculture.
- e) **Barren and Un-culturable Land** : This includes all land covered by mountains, deserts, etc. Land which cannot be brought under cultivation except at an exorbitant cost is classified as unculturable whether such land is in isolated blocks or within cultivated holdings.
- f) **Permanent Pasture and other Grazing Land** : This includes all grazing land whether it is permanent pasture and meadows or not. Village common grazing land is included under this heading.
- g) **Land under Miscellaneous Tree Crops, etc.** : This includes all cultivable land which is not included in 'Net area sown' but is put to some agricultural uses. Land under casuring trees, bamboo bushes and other groves for fuel, etc. which are not included under 'Orchards' are classified under this category.
- h) **Culturable Waste Land** : This includes land available for cultivation, whether taken up or not taken up for cultivation once, but not cultivated during the last five years or more in succession including the current year for some reason or the other. Such land may be either fallow or covered with shrubs and jungles which are not put to any use. They may be accessible or unaccessible and may lie in isolated blocks or within cultivated holdings.
- i) **Fallow Land other than Current Fallows** : This includes all land which was taken up for cultivation but is temporarily out of cultivation for a period of not less than one year and not more than five years.
- j) **Current Fallows** : This represents cropped area which is kept fallow during the current year.
- k) **Net Area sown** : This represents the total area sown with crops and orchards. Area sown more than once in the same year is counted only once.
- l) **Total Cropped Area** : This represents the total area sown once and/or more than once in a particular year, i.e. the area is counted as many times as there are sowings in a year. This total area is known as gross cropped area.
- m) **Area Sown more than once** : This represents the areas on which crops are cultivated more than once during the agricultural year. This is obtained by deducting Net Area Sown from Total Cropped Area.
- n) **Irrigated Area** : The area is assumed to be irrigated for cultivation through such sources as canals (Govt. & Private), tanks, tube-wells, other wells and other sources. It is divided into two categories:
 - (i) **Net Irrigated Area** : It is the area irrigated through any source once in a year for a particular crop.

- (ii) **Total Net Un-irrigated Area** : It is the area arrived at by deducting the net irrigated area from net sown area.
- (iii) **Total/Gross Irrigated Area** : It is the total area under crops, irrigated once and/or more than once in a year. It is counted as many times as the number of times the areas are cropped and irrigated in a year.
- (iv) **Total/Gross Un-Irrigated Area** : It is the area arrived at by deducting the gross irrigated area from the gross sown area.
- (v) **Cropping Intensity** : It is the ratio of Net Area Sown to the Total Cropped Area.

B. SOME COMMONLY USED TERMS

- a) **Total Cultivable Area** : This consists of net area sown, current fallows, fallow lands other than current fallows, culturable waste and land under miscellaneous tree crops.
- b) **Total Un-cultivable Area** : It is the area arrived at by deducting the total cultivable area from the total reported area.
- c) **Total Cultivated Area** : This consists of net area sown and current fallows.
- d) **Total Uncultivated Area** : It is the area arrived at by deducting the total cultivated area from the total reported area.

Agricultural Land/Total Culturable Land : Same as cultivable area.

C. ESTIMATION PROCEDURE FOR MISSING INFORMATION

In the case of non-receipt of data on area under crops directly from Land Record Authorities, the estimates available from the State Agricultural Statistics Authorities are used; and in the remaining cases the latest available data are repeated for the current year as a matter of practice.

LAND USE CHANGES DURING LAST TWO DECADES

Area in Mha

Year	Agricultural Land	Net Sown Area	Non Agril Uses
1980-81	185.15	140.29	19.59
1990-91	185.18	142.99	19.39
2000-01	183.45	141.34	23.75
2009-10	182.46	140.02	26.17

During 1980-81 to 1990-91: Almost no change in agricultural land
And also under non-agricultural uses

During 1990-91 to 2000-01: Agricultural land reduced by 1.73 Mha
Non agri uses increased by 4.36 Mha

During 2000-01 to 2009-10: Agricultural land reduced by 0.99 Mha
Non agri uses increased by 2.42 Mha