

WATER POTENTIALITY IN KARNATAKA STATE

Dr. Y.P. CHANDRASHEKARA ¹

INTRODUCTION

Water is a unique form of naturally renewable resource gifted by nature it helps in the sustenance of all life forms and economic activities practiced by mankind that has no substitute for it. Multifaceted use of water due to increasing population and advancement in technology, pollution, etc., has resulted in the scarcity of water in many areas.

NEED TO STUDY

Karnataka possesses about 6% of the total country's surface water resources. Because of continuous growing population and their standard of living pressure on the water resources is increasing and per capita availability of water resources declining day to day. Water demand on the one hand for consumptive and productive uses has increased gradually. And also supply of water is declined with depletion and degradation of water resources causing water scarcity in the state.

STUDY AREA

Present work an attempt to water potentiality in Karnataka state. The state situated in Deccan plateau in India. The study area located 11degree 30 minutes to 78 degree 30 minutes north latitudes and 74 degree East and 78 degree 30 minutes East longitude. The total geographical area is 1,91,791sq.km. and its covered 5.91 percent of the total area of the country. And the present population of the state is about 61095297, with 50.7% male and 49.3% female population.

METHODOLOGY

Present study is restricted to Karnataka state. The present work depends on secondary sources of information.ie, water source departments, Govt. of Karnataka state, census report and research articles for review

¹ *Dr. Y.P. Chandrashekara, M.A, Ph.D*
Assistant professor, Department of studies in Geography , Karnataka state open university,
Mukthagangothri, Mysuru

WATER SOURCES OF KARNATAKA

Surface water, ground water and rainfall are the basic water sources of study area. Potentiality of surface water: surface water potentiality of the state is about 102 km. Rivers lakes, reservoirs are the forms of surface water. Karnataka has seven rivers basins, 36,753 tanks in the state with capacity of 684518hectares. About 60% of the state surface water provided by the west flowing rivers remains from the east flowing rivers. There are seven major rivers in the state and their yield from these rivers estimated around 3,475 TMC, and 1440 TMC from west flowing rivers.

Fig-1 Rivers DistributionKarnataka



Sources: River and water potential in Karnataka

Table-1- River and water potential in Karnataka

Sl.No.	River systems	Drainage area in 1000 sq.km	Average annual yield in TMC	percentage
1	Krishna	113.29	969.44	59.48
2	Cauvery	34.27	425.00	17.99
3	Godavari	4.41	49.97	2.31
4	North Pennar	6.94	32.00	3.64
5	South Pennar	4.37	32.00	2.29
6	Palar	2.97		1.56
7	West flowing rivers	24.25	1998.83	12.73
	Total	190.50	3475.24	100

Krishna river is an interstate river in southern India. It is the second largest river in peninsular India, and took born in the western Ghats at the height of 1337 meter for mean sea level near Mahabaleshwar in Maharashtra state. It flows towards east from west with length about 1400 km. through Maharashtra, Karnataka and Andrapradesh. The river contribute predominant water potential of surface water and it covers 113.29 sq.km of drainage area in the state.

Cauvery river is also an interstate river in southern India, it is one of the major rivers of the peninsular flowing east and running into the Bay of Bengal. This rises at Talakaveri on the Brahmagiri range of hill in the western Ghats, presently in the Kodagu district of the state of Karnataka at an height of 4400 feet from mean sea level. Second largest drain area with 425 TMC of water potential.

Godavari river rises in the Nasik district of Maharashtra at the height of 1067 mtr from mean sea level. Its catchment area in Karnataka state is 4405 sq km. it flows south easterly direction through Maharashtra and Andrapradesh. Manjra, Purna, pravara and Karanja are the major tributaries of Godavari river.

North Pennar and south Pennar rivers are rises in Kolar district in Karnataka state. They rises at an elevation from 600 to 900 mtr. North Pennar catchment area about 6337 sq km in Karnataka and Andrapradesh.

South pennar rises in the same district at Talagavara village. It drains catchment area of 4370 sq km in Karnataka.

Palarriver rises in the place of hill ranges of Nandidurga of Kolar district. Generally the rivers flows south-easterly direction for a length of 93km.

The west flowing rivers are numerous and large amount of surface water resources of the state. Sharavathi, Kali, Gangavali, Bedthi, Aghanasini and Nethravathi which rise on the western Ghats and drain in to the Arabian sea. Almost all these rivers are originate at an elevation ranging from 400 meters to 1600 meters above from mean sea level.

Ground water resources

The ground water resources estimation has been accepted out watershed wise and the resources so assessed are apportioned taluk wise. The yearly replenishable ground water resources have been assessed as 17 bcm and the annual ground water availability is 14.83 bcm. The annual ground water draft is 9.76 bcm and the time of ground water development is 66%.

In the state of Karnataka, very shallow water level ranging between 0-2 mbgl has been observed in about only 6% of the wells monitored. In general depth to water level scenario in the state depicted a water level in the range of 5-20 m bgl, as almost 85% of the wells monitored fall in this range. Depth to water level of 2-5 m bgl is observed in 19% of the monitored wells, whereas, 43% wells show water level of 5-10 m bgl. Deeper water level of more than 10m bgl is observed in almost 32% wells the depth to water level in the state ranges upto 30.70 m bgl in Bangalore District

Table-2. Ground Water Resources Availability and Utilization in Karnataka

Sl. No	District	Annual Replenishable Ground Water*	Net Ground water Availability #	Annual Ground Water			Projected demand for Domestic and Industrial Use(2025)	Net Ground Water availability for future irrigation use
				Irrigation	Domestic & Industrial Use	Total		
1	Bagalkote	43208	39574	32904	3028	35932	3838	10795
2	Bangalore Rural	21391	20184	22376	3239	25616	3240	107
3	Bangalore Urban	1141125	12746	12229	5749	17978	5749	0
4	Balgum	72946	103436	73925	6337	20261	8000	31892
5	Bellary	32722	65966	24363	3072	27436	4871	37877
6	Bidar	51446	30680	15732	1766	17498	3248	1379
7	Bijapur	37785	47410	30634	5006	35650	6070	16071
8	Chamarajanagara	32703	34322	26170	1446	27616	1910	10017
9	Chikballapur	32703	29883	40612	2705	43318	2735	1591
10	Chikmagalur	68630	56402	22015	2235	24250	2604	32580
11	Chitradurga	54852	49677	47941	2941	50882	3557	5998
12	Dakshin kannada	51579	32404	19414	2958	22373	3471	10614
13	Davangere	61215	55952	46814	2800	49613	4236	11840
14	Dharwad	27151	21745	11850	917	12767	1524	8549
15	Gadag	27127	24957	20613	1577	22190	2011	5581
16	Gulbarga	69295	63299	16699	3374	20073	4609	42025
17	Hassan	82020	73593	37804	2347	40151	3486	38414
18	Haveri	58188	53154	31214	2680	33894	3734	18465
19	Kodagu	32328	27441	5451	433	5884	617	21373
20	Kolar	33889	31828	57766	1757	59523	1757	0
21	Koppal	60093	54352	21625	1590	23215	2533	31181
22	Mandya	104395	94103	42432	2043	44476	3470	52536
23	Mysore	63391	57803	23075	2043	25118	3634	32178
24	Raichur	92116	83209	23232	2207	25439	3483	57268
25	Ramanagara	24087	22298	19527	4527	24054	4779	749
26	Shimoga	108216	92549	23330	1962	25292	2856	66378
27	Tumkur	85428	78424	73846	4488	78334	6596	15495
28	Udupi	53834	32775	9646	2393	12309	2888	20241
29	Uttar kannada	83421	52905	16869	2752	19621	3256	32780
30	Yadgir	41666	38050	9051	1067	10657	2499	26500
	State Total (bcm)	17.03	14.81	8.59	0.82	9.41	1.06	6.53

Source Karnataka's growing water scarcity:

KARNATAKA'S GROWING WATER SCARCITY:

Various sectors in Karnataka, are at the moment facing partial access and availability of water resources. Water scarcity has turned into a reality in the state as ground water table has reached rock-bottom whereas percolation is incapable to re-establish the stability of water table. As regards surface water, it is by and large unfit for consumptive and productive use due to excellence issues such as water pollution. Water calamity is increasingly being viewed in terms of increasing imbalance between water supply and demand. Water scarcity has raised economic, ecological, social and health concerns all over the place. The globe water

resources (both surface and ground) are unequally distributed among countries of the world. The world information on wealth of nations and water resources or availability suggest that countries with high GNP have also high per capita water availability. The paradox is that the western developed countries are abundantly endowed with water but they largely export less water intensive industrial goods, whereas, the developing countries which are scarcely endowed with water still export water intensive agricultural goods like rice and sugarcane. India with 2.4 per cent of the world's total area and supporting 16 per cent of the world's population is endowed with only 4 per cent of the total available fresh water. The international standard suggests that if per-capita water availability is less than 1700 m³ and 1000 m³ per year then the country is categorized as water stressed and water scarce respectively. India is in threshold of reaching these stages as per capita surface water availability in the years 1991 and 2001 were 2309 and 1902 m³. It is estimated that by 2017, India will be “water stressed” with the decline in per capita availability to 1600 m³ (Biswas et al, 2010). Projections for the years 2025 and 2050 also show that per capita water availability will be further drastically reduced to 1401 and 1191 m³ respectively (Kumar et al, 2005). The scarcity of water has been estimated based on per capita availability of water.

7.26. Water scarcity is growing with increasing population and growing demand for water from all sectors of the economy; consequently, the per capita availability of water in parts of Karnataka is very low and it also varies with time and season. Water demand for consumptive (drinking, health and sanitation needs) and productive uses (agricultural, industrial production, power generation, mining operations and navigation, and recreational activities) has increased tremendously while water supply has declined with depletion and degradation of water resources causing water distress or scarcity. The progressive water shortage and competitive demand with mounting population and economic growth has posed a challenge to water management particularly in the context of equitable access to water and its benefits. This will largely alter economic activities and limit productive capability of the economy. The declining trend in the economic contribution of water resources has occurred due to physical and economic water scarcity which results in insufficient use, poor management, declining water productivity, and increasing environmental and economic costs. Obviously, Page 29 of 38 the outcome is growing imbalance between water needs and supply augmentation capability in the state. Inefficiency in water use and management mainly caused by market failure, poor proprietary rights and improper allocation has further complicated operational zing water policies.

Rain fall

Rainfall plays a key role determining the climate of geographical area by regulating surface and ground water resources. The rainfall dependability is erratic as the occurrence and distribution to rainfall in the state is uneven. About 2/3rd of the geographical area of the state receives less than 750 mm of rainfall. The annual normal rainfall is 1,138 mm received of 55 rainy days. It varies from as low as 569 mm in the east to as high as 4029mm in the west. Karnataka receives 73 percent of its rainfall from south west monsoon from June to September and 16 % of the rainfall from north east monsoon from October to December. The south west monsoon obviously is the determining factor for agriculture in the state. Considering the definition of drought by the II Irrigation commission that drought occurs

when annual rainfall is below 75% of the normal rainfall, analysis of data for 100 years has indicated that in north eastern dry zone and central dry zone of Karnataka, drought occurred in more than 25% of the years.

Table-3. Distribution of Rainfall in Karnataka months and average rainfall received (mm)

Months	Average Rainfall Received (mm)
June-September	991.7 (73%)
October-December	212.4 (16%)
January_February	8.3 (1%)
March-May	142.3 (10%)
June-May	1354.7 (100%)

Source: Perspective land use plan for Karnataka state land use board, 2001.

CONCLUSION

In order to make available to the water necessity of the growing population, the present water resources must be preserved and prohibited from further degradation and reduction. The water under utilization of the irrigation potential created and problems of land degradation due to excessive use of water. Karnataka is endowed with limited surface and ground water resources that need to be systematically developed and properly utilized adopting new approached for the overall development of the state.