GOVERNMENT OF KARNATAKA

DEPARTMENT OF AGRICULTURE

Pradhan Mantri Krishi Sinchayee Yojana

(PMKSY)

DISTRICT IRRIGATION PLAN

CHITRADURGA DISTRICT

2016

GOVERNMENT OF KARNATAKA

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Deputy Commissioner
Chitradurga.

Foreword

"Hon'ble President in his address to the Joint Session of Parliament of 16th Lok Sabha indicated that each drop of water is precious and launched Pradhana Mantri Krishi Sinchayee Yojana (PMKSY), with a major objective to achieve convergence of investments in irrigation at the field level, expand cultivable area under assured irrigation, improve on-farm water use efficiency to reduce wastage of water, enhance the adoption of precision irrigation and other water saving technologies. It will complete the long pending irrigation projects on priority. Micro-irrigation will be popularized to ensure Per Drop More Crop.

All the six taluks of Chitradurga district are located in Central Dry Zone(Zone IV) of Karnataka.The average normal rainfall of the district is 534.8mm in 32rainy days.The district receives scanty and unevenly distributed rainfall and having shallow and poor soils. Most of the rainfall is received during south west monsoon is from June to October.

The net sown area of the district is 3.98 lakh ha, of which 22.1 %(0.86 lakh ha) is irrigated and the rest (77.9%) is rainfed. Major part of the district lies in Krishna basin and is drained by Vedavathi River. The reservoir is built across the Vedavathi River near Vanivilaspura, in Hiriyur taluk. The canal network provides irrigation facilities to the farmers in Hiriyur taluk to a limited area. Agriculture is mainly dependent on the timely and adequate rainfall in the district. Through Vani vilas sagar an area of 593 ha in Hiriyuru taluk is irrigated. Major source of irrigation in the district is through 97282 bore wells (85389 ha).

The present planning should give impetus on utilizing water for expansion of irrigated area, establishment of new industries and creation of special economic zone, so that

the district can be model to the entire State. This provides additional job opportunities leading to economic growth of the district.

Under PMKSY, it is proposed to take various developmental activities to improve irrigation facilities in the district and also proposed to create an additional irrigation potential by 2020 with a budgetary support of Rs.11850.50 crores. This will help inintensive cultivation of crops, taking up of multiple crops, judicious use of water, change of cropping pattern which will create additional employment and additional income to farming community.

At the outset, I appreciate the efforts of the Department of Agriculture, particularly Joint Director and their team in collection of information from various departments and organizing District Level meetings which has led to finalize this report. I thank all the line department officials for providing timely information on their concerned templates. I also express my deep sense of gratitude to Sri H. Anjaneya, Hon'ble Minister for Social Welfare & Backward, Government of Karnataka and MP/MLAs/ZP President & Elected Members for providing valuable suggestions.

I also thank the President and members of PLUS TRUST, Bengaluru for compilation, analysis and printing of the District Irrigation Plan in an exhaustive and excellent manner.

I hope this report will be useful in planning and efficient management of precious water resource of Chitradurgadistrict.

Date: 14.10.2016

(M. K. Sreerangaiah)

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I. Introduction:

The major objective of PMKSY is to achieve convergence of investments in irrigation at the field level, expand cultivable area under assured irrigation, improve on-farm water use efficiency to reduce wastage of water, enhance the adoption of precision-irrigation and other water saving technologies (More crop per drop), enhance recharge of aquifers and introduce sustainable water conservation practices by exploring the feasibility of reusing treated municipal waste water for peri-urban agriculture and attract greater private investment in precision irrigation system.

PMKSY has been conceived by amalgamating ongoing schemes *viz*., Accelerated Irrigation Benefit Programme (AIBP) of the Ministry of Water Resources, River Development & Ganga Rejuvenation (MoWR, RD & GR), Integrated Watershed Management Programme (IWMP) of Department of Land Resources (DoLR) and the On Farm Water Management (OFWM) of Department of Agriculture and Cooperation (DAC). The scheme will be implemented by Ministry of Agriculture, Water Resources and Rural Development. Ministry of Rural Development is to mainly undertake rain water conservation, construction of farm pond, water harvesting structures, small check dams and contour bunding etc., MoWR, RD &GR, is to undertake various measures for creation of assured irrigation source, construction of diversion canals, field channels, water diversion/lift irrigation, including development of water distribution systems. Ministry of Agriculture will promote efficient water conveyance and precision water application devices like drips, sprinklers, pivots, rain-guns in the farm "(Jal Sinchan)", construction of micro-irrigation structures to supplement source

creation activities, extension activities for promotion of scientific moisture conservation and agronomic measures.

Programme architecture of PMKSY will be to adopt a 'decentralized State level planning and projectised execution' structure that will allow States to draw up their own irrigation development plans based on District Irrigation Plan (DIP) and State Irrigation Plan (SIP). It will be operative as convergence platform for all water sector activities including drinking water & sanitation, MGNREGA, application of science & technology etc., through comprehensive plan. State Level Sanctioning Committee (SLSC) chaired by the Chief Secretary of the State with the authority to oversee its implementation and sanction of projects.

The programme will be supervised and monitored by an Inter-Ministerial National Steering Committee (NSC) will be constituted under the Chairmanship of Prime Minister with Union Ministers from concerned Ministries. A National Executive Committee (NEC) constituted under the Chairmanship of Vice Chairman, NITI Aayog to oversee programme implementation, allocation of resources, inter-ministerial coordination, monitoring and performance assessment, addressing administrative issues etc.,

Components and responsible Ministries/ Departments are as follows:

1. AIBP by MoWR, RD &GR: To focus on faster completion of on-going Major and Medium Irrigation including National Projects.

2. PMKSY (Har Khet Ko Pani) by MoWR, RD & GR: Creation of new water sources through Minor Irrigation (both surface and ground water), Repair, restoration and renovation of water bodies; strengthening carrying capacity of traditional water sources, construction rain water harvesting structures (Jal Sanchan); Command area development, strengthening and creation of distribution network from source to the farm. Improvement in water management and

distribution system for water bodies to take advantage of available source, which is not utilised to its fullest capacity (deriving benefits from low hanging fruits).

3. PMKSY (Watershed) by Dept. of Land Resources, MoRD Water harvesting structures such as check dams, nala bund, farm ponds, tanks etc. Capacity building, entry point activities, ridge area treatment, drainage line treatment, soil and moisture conservation, nursery raising, afforestation, horticulture, fodder development, livelihood activities for the asset-less persons and production system & microenterprises for small and marginal farmers etc., Effective rainfall management like field bunding, contour bunding/trenching, staggered trenching, land levelling, mulching etc.,

4. PMKSY (Per drop more crop) by Dept. of Agriculture & Cooperation, MoA Programme management, preparation of State/District Irrigation Plan, approval of annual action plan, Monitoring etc., Promoting efficient water conveyance and precision water application devices like drips, sprinklers, pivots, rain-guns in the farm (Jal Sinchay). Topping up of input cost particularly under civil construction beyond permissible limit (40%), under MGNREGA for activities like lining inlet, outlet, silt traps distribution systematic.

Construction of micro irrigation structures to supplement source creation activities including tube wells and dug wells (in areas where ground water is available and not under semi critical /critical /over exploited category of development) which are not supported under PMKSY (WR), PMKSY (Watershed) and MGNREGA.

Secondary storage structures at tail end of canal system to store water when available in abundance (rainy season) or from perennial sources like streams for

use during dry periods through effective on-farm water management Water lifting devices like diesel/ electric/ solar pumpsets including water carrying pipes.

Extension activities for promotion of scientific moisture conservation and agronomic measures including cropping alignment to maximize use of available water including rainfall and minimise irrigation requirement (Jal samrankshan)

Capacity building, training for encouraging potential use water source through technological, agronomic and management practices including community irrigation awareness campaign on water saving technologies, practices, programmes etc., organisation of workshops, conferences, publication of booklets, pamphlets, success stories, documentary, advertisements etc. Improved/innovative distribution system like pipe and box outlet system with controlled outlet and other activities of enhancing water use efficiency.

District Irrigation Plans (DIPs):

District Irrigation Plan (DIP) shall be the cornerstone for planning and implementation of PMKSY. DIP will identify the gaps in irrigation infrastructure after taking into consideration the District Agriculture Plans (DAPs) already prepared for Rashtriya Krishi Vikas Yojana (RKVY) vis-à-vis irrigation infrastructure currently available and resources that would be added during XII Plan from other ongoing schemes (both State and Central), like Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGA), Rashtriya Krishi Vikash Yojana (RKVY), Rural Infrastructure Development Fund (RIDF), Member of Parliament Local Area Development (MPLAD) Scheme, Member of Legislative Assembly Local Area Development (MLALAD) Scheme, Local body funds etc. The gaps identified under Strategic Research & Extension Plan (SREP) be used in

preparation of DIP. DIPs will present holistic irrigation development perspective of the district outlining medium to long term development plans integrating three components viz., water sources, distribution network and water use applications incorporating all usage of water like drinking & domestic use, irrigation and industry. Preparation of DIP will be taken up as joint exercise of all participating departments. DIP will form the compendium of all existing and proposed water resource network system in the district.

The DIPs may be prepared at two levels, the block and the district. Keeping in view the convenience of map preparation and data collection, the work would be primarily done at block level. Block wise irrigation plan is to be prepared depending on the available and potential water resources and water requirement for agriculture sector prioritising the activities based on socio-economic and location specific requirement. In case of planning is made based on basin/sub basin level, the comprehensive irrigation plan may cover more than one district. The activities identified in the basin/sub-basin plan can be further segregated into district/block level action plans.

i. Background

Hon'ble President in his address to the joint Session of the Parliament of 16th Lok Sabha indicated that "Each drop of water is precious. Government is committed to giving high priority to water security. It will complete the long pending irrigation projects on priority and launch the 'Pradhan Mantri Krishi Sinchayee Yojana' with the motto of 'Har Khet Ko Paani'.

There is a need for seriously considering all options including linking of rivers, where feasible; for ensuring optimal use of our water resources to prevent the recurrence of floods and drought. By harnessing rain water through 'Jal Sanchay'

and ‘Jal Sinchan’, we will nurture water conservation and ground water recharge. Micro irrigation will be to ensure ‘Per drop-More crop’. Out of about 141 ml ha of net area sown in the country, about 65 million hectare (or 45%) is presently covered under irrigation. Substantial dependency on rainfall makes cultivation in unirrigated areas a high risk, less productive profession. Empirical evidences suggest that assured or protective irrigation encourages farmers to invest more in farming technology and inputs leading to productivity enhancement and increased farm income. The overreaching vision of Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) will be to ensure access to some means of protective irrigation to all agricultural farms in the country, to produce ‘per drop more crop’, thus bringing much desired rural prosperity.

ii. Vision

To utilize the available water resources in the district to the maximum extent in an efficient way to meet the basic needs of every living being and enhancing the livelihoods of rural population to the maximum extent thus alleviating poverty in a sustainable way without compromising the interests of future generations.

iii. Objective

Following are the objectives:

A. Enhance the physical access of water on the farm and expand cultivable area under assured irrigation (Har Khet ko pani).

B. Integration of water source, distribution and its efficient use, to make best use of water through appropriate technologies and practices.

C. Improve on-farm water use efficiency to reduce wastage and increase availability both in duration and extent.

D. Enhance the adoption of precision-irrigation and other water saving technologies (More crop per drop).

- Enhance the physical access of water on the farm and expand cultivable area under assured irrigation (Har Khet ko pani).
- Integration of water source, distribution and its efficient use, to make best use of water through appropriate technologies and practices.
- Improve on-farm water use efficiency to reduce wastage and increase availability both in duration and extent.
- Enhance the adoption of precision-irrigation and other water saving technologies (More crop per drop).
- Enhance recharge of aquifers and introduce sustainable water conservation practices.
- Ensure the integrated development of rain fed areas using the watershed approach towards soil and water conservation, regeneration of ground water and arresting runoff.
- Promote extension activities relating to water harvesting, water management and crop alignment for farmers and grass root level field functionaries.
- Explore the feasibility of reusing treated municipal wastewater for peri-urban agriculture.

iii. Strategy /approach

- Creation of new water sources; repair, restoration and renovation of defunct water sources; construction of water harvesting structures, secondary & micro storage, ground water development
- Developing/augmenting distribution network where irrigation sources (both assured and protective) are available or created;
- Promotion of scientific moisture conservation and run off control measures to improve ground water recharge so as to create opportunities for farmer to access recharged water through shallow tube/dug wells;

- Promoting efficient water conveyance and field application devices within the farm *viz.*, underground piping system, Drip & Sprinklers
- Encouraging community irrigation through registered user groups.

Farmer oriented activities like capacity building, training and exposure visits, demonstrations, farm schools, skill development in efficient water and crop management practices (crop alignment) including large scale awareness on more crop per drop of water through mass media campaign, exhibitions, field days, and extension activities through short animation films etc.

CHAPTER I

GENERAL INFORMATION OF THE DISTRICT

1.1. District Profile:

Chitradurga is recognized as the land of valour and chivalry. Chitradurga owes its name to “Chitrakaladurga,” or “Picturesque castle”. This is a massive fortress on top of granite hills that rises dramatically from the ground. Archaeological remains found in the area, trace its history to the 3rd **millennium B.C.** A rock cut edict of **Emperor Ashoka,** near Bharamagiri reveals that Chitradurga was part of the Mauryan Empire dating to the 3rd century B.C. After the fall of the Mauryans, this land was under the rule of royal dynasties like the **Rashtrakutas, Chalukyas and Hoysalas.** But it really achieved eminence, as a feudatory state of the **Vijayanagar Empire,** under the dynastic rule of the **Nayakas** or **“Palegars”,** known for their heroic exploits. Chitradurga features bold rock hills and picturesque valleys, huge towering boulders in unimaginable shapes. It is known as the "stone fortress" (Kallina Kote).

Chitradurga district has 6 taluks namely, Challakere, Chitradurga, Hiriyuru, Holalkere, Hosadurga and Molakalmuru (Fig. 1.1) having 185 gram panchayats covering 1060 villages (Table 1.1). Challakere taluk has 4 hoblies having 39 gram panchayats covering 195 villages, Chitradurga taluk has 36 gram panchayats covering 190 villages in 4 hoblies, Hiriyuru taluk has 32 gram panchayats covering 159 villages in 4 hoblies, Holalkere taluk has 29 gram panchayats covering 202 villages in 4 hoblies, Hosadurga taluk has 33 gram panchayats covering 225 villages in 4 hoblies and Molakalmuru taluk has 16 gram panchayats covering 89 villages in 2 hoblies. There are 6 urban towns, 1 each in every taluk.

Geographically the district is situated between 13^0 34' to 15^0 02'latitude and 75^0 37' to 77^0 02' longitude. The district is surrounded by Ananthapur district of Andhra Pradesh by east, Davanagere district by west, Chickamagalur and Tumkur by south east and Bellary district by north. According to 2011 census, the district has a population of 16.59 lakhs of which, Challakere has 3.66 lakhs (22.06% of district population), Chitradurga has 4.24 lakhs (25.50%), Hiriyuru has 2.86 lakhs (17.30%), Holalkere has 2.07 lakhs (12.47%), Hosadurga has 2.35 lakhs (14.16%) and Molakalmuru has 1.41 lakhs (8.50%).

Fig 1.1: Geographical map of Chitradurga district

Source: Maps of India

Table 1.1: District Profile

1.	District Code	29120000000
2.	Latitude and Longitude	Latitude 13^0 34' to 15^0 02' N, and Longitude 75^0 37' to 77^0 02' E
3.	Total Number of blocks	6
4.	Total Number of Grama Panchayats	185
5.	Total No. of Hoblies	22
6.	Total Number of Villages	1060
7.	Total Population	1659456
8.	Total Male Population	840843
9.	Total Female Population	818613
10.	Total Rural Population	1329923
11.	Total Urban Population	329533
12.	Total Child population	184280
13.	Total SC Population	389117
14.	Total ST Population	302554
15.	Geographical Area (ha)	770702
16.	Net Sown Area (ha)	397549
17.	Gross Cropped Area (ha)	484033
18.	Net Irrigated (ha)	86020
19.	Net Rainfed (ha)	302790
20.	Area under Forest (ha)	73719
21.	Total livestock (No)	1912576
22.	Total poultry (No)	3140409

Source: District at Glance

1.2. Demography:

1.2.1: Population:

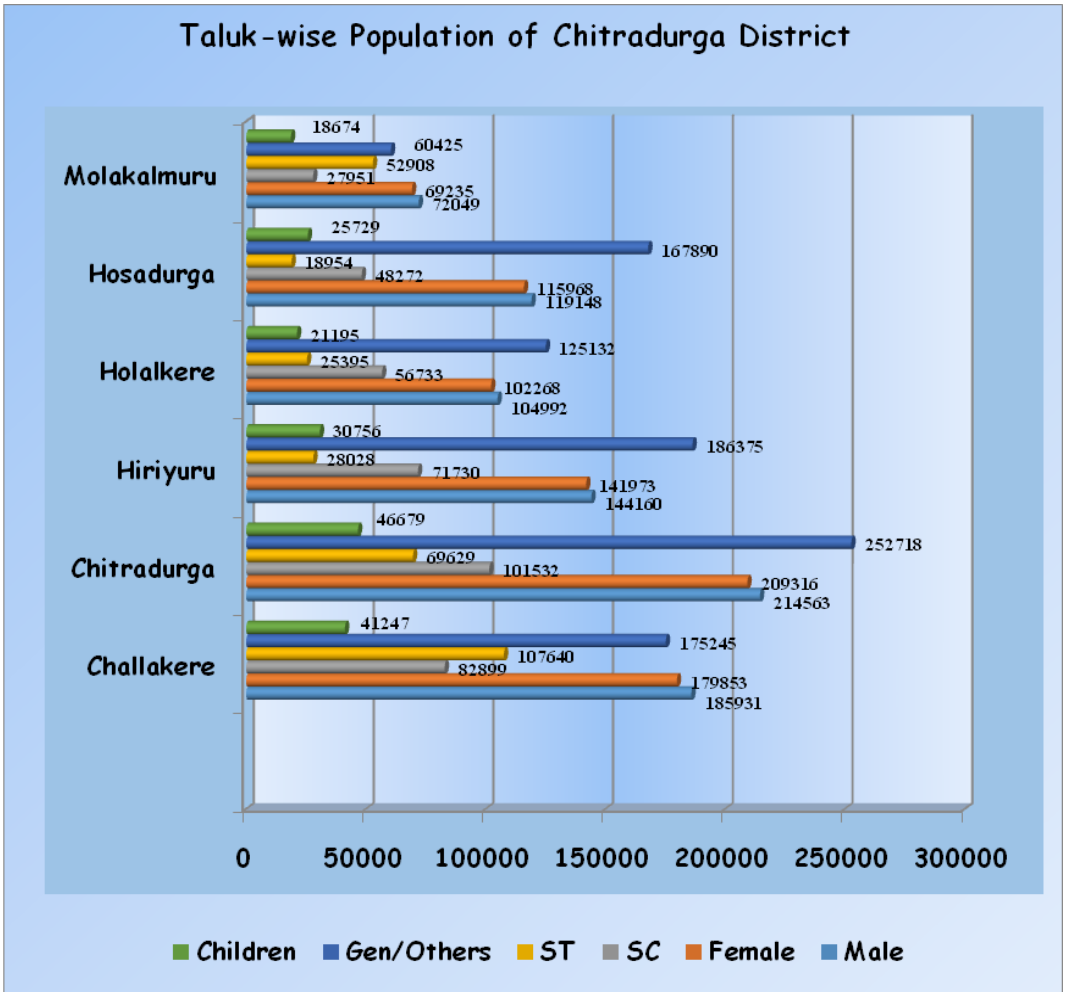
According to the 2011 census, Chitradurga district has a population of 1659456. The male and female population of the district is 840843 and 818613 respectively (Table1.2) Taluka wise population details are furnished below:

Table 1.2: Taluk-wise population of Chitradurga district

Sl. No.	Block/ Taluk	Population			SC	ST	Gen/ Others	Children
		Male	Female	Total				
1	Challakere	185931	179853	365784	82899	107640	175245	41247
2	Chitradurga	214563	209316	423879	101532	69629	252718	46679
3	Hiriyuru	144160	141973	286133	71730	28028	186375	30756
4	Holalkere	104992	102268	207260	56733	25395	125132	21195
5	Hosadurga	119148	115968	235116	48272	18954	167890	25729
6	Molakalmuru	72049	69235	141284	27951	52908	60425	18674
Total		**840843**	**818613**	**1659456**	**389117**	**302554**	**967785**	**184280**

Source: District at Glance

Fig: 1.2 Taluk wise population of Chitradurga district



Source: adapted from District at Glance

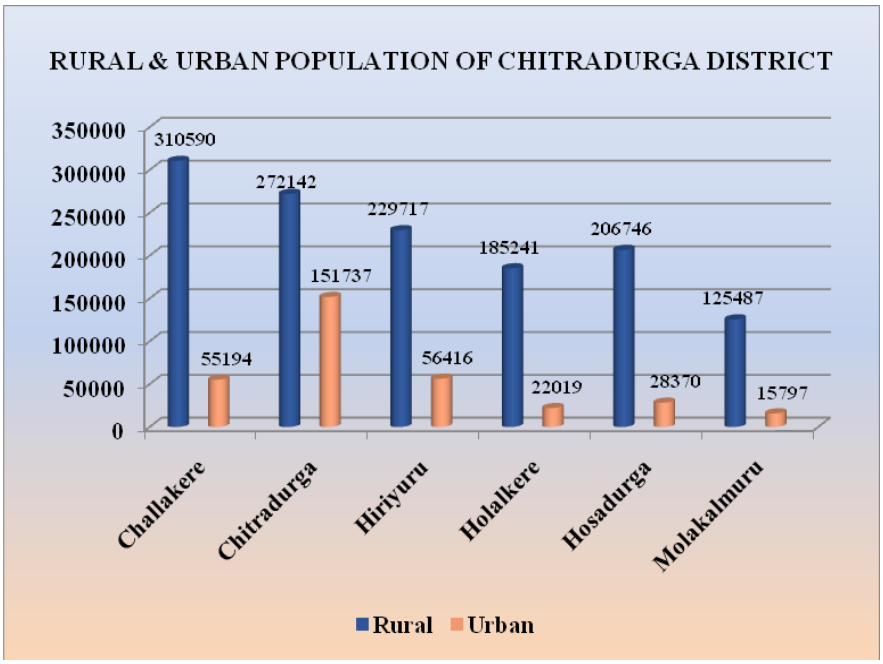
In the district, Chitradurga taluk has the highest population of 423879 (25.5%), followed by Challakere 365784 (22.0%), Hiriyur 286133 (17.2%), Hosadurga 235116 (14.2%) and Holalkere 207260 (12.5%). Molakalmuru has the lowest population of 141284 (8.5%) (Fig.1.2). The district is having a SC population of 389117 (23.4%) and ST population is 302554 (18.2%). SC population is highest (27.4%) in Holalkere taluk and the lowest in Molakalmuru taluk (19.8%) and ST population is the highest in Molakalmuru taluk (37.4%) and the lowest in Hosadurga taluk (8.1%).

Table 1.3: Rural and Urban Population

Sl. No.	Block/Taluk	Population		
		Rural	Urban	Total
1	Challakere	310590	55194	365784
2	Chitradurga	272142	151737	423879
3	Hiriyuru	229717	56416	286133
4	Holalkere	185241	22019	207260
5	Hosadurga	206746	28370	235116
6	Molakalmuru	125487	15797	141284
Total		**1329923**	**329533**	**1659456**

Source: District at Glance

Fig 1.3 Rural and urban population of Chitradurga district



Source: adapted from District at Glance

Out of the total population of 1659456, Rural population accounts for 1329923 (80.1%) and Urban population is only 329533 (19.9%) indicating predominance of agrarian nature of the district (Table1.3, Fig. 1.3). Percentage wise, Holalkere taluk has the highest rural population (89.4%), followed by Molakalmuru (88.8%), Hosadurga (87.9%), Challakere (84.9%) and Hiriyuru (80.3%). Lowest percentage of rural population is in Chitradurga taluk (64.2%), whereas number wise, rural population is the highest in Challakere taluk (310590), followed by Chitradurga (272142), Hiriyuru (229717), Hosadurga (206746) and Holalkere (185241). The lowest number of rural population is in Molakalmuru (125487).

1.2.2. Households in Chitradurga district.

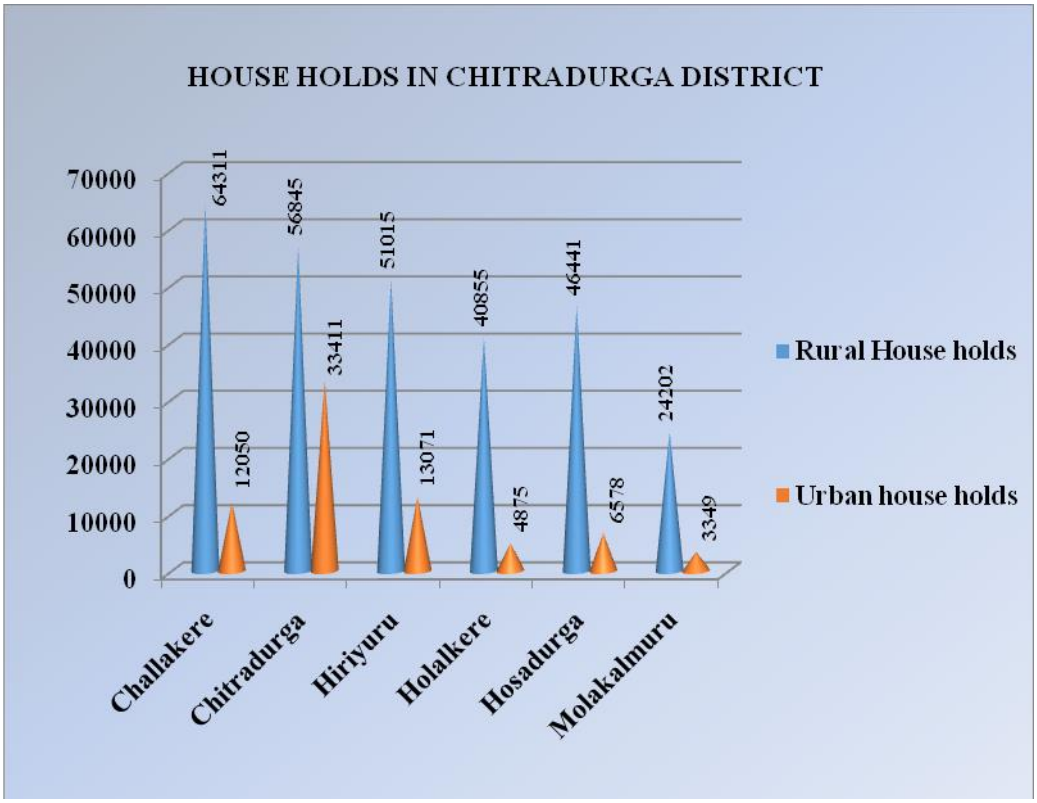
In the district, there are totally 357003 households comprising 283669 in rural areas (79.5%) and 73334 (20.5%) in urban areas. The highest percentage of rural house holds are in Holalkere taluk (89.3%), followed by Molakalmuru (87.8%), Hosadurga (87.6%), Challakere (84.2%) and Hiriyuru (79.6%). The lowest number of rural households is in Chitradurga (63.0%). The details are furnished in the Table 1.4 and Fig 1.4.

Table.1.4. Details of households in Chitradurga district

Sl. No.	Taluk	Rural	Urban	Total
1	Challakere	64311	12050	**76361**
2	Chitradurga	56845	33411	**90256**
3	Hiriyuru	51015	13071	**64086**
4	Holalkere	40855	4875	**45730**
5	Hosadurga	46441	6578	**53019**
6	Molakalmuru	24202	3349	**27551**
Total		**283669**	**73334**	**357003**

Source: District at Glance

Fig 1.4: Number of Households in Chitradurga district



Source: adapted from District at Glance

1.3. Biomass and Livestock:

Animal husbandry is an important subsidiary occupation in the rural areas. It is providing additional employment for the family and also additional income. The district is having 340999 cattle population (Table 1.5) majority of them indigenous breeds (93%) and 193260 buffaloes (indigenous breed) (Fig. 1.5). Hosadurga taluk has the highest (78175) cattle population, followed by Challakere (74518), Chitradurga (60683), Holalkere (49415) and Hiriyuru (43387). Molakalmuru has the lowest cattle population. Further, Buffaloes population is the highest in Hosadurga taluk (43521), followed by Holalkere (40754), Challakere (36183), Chitradurga (31949) and Hiriyuru (27820). Molakalmuru has the lowest buffaloes' population.

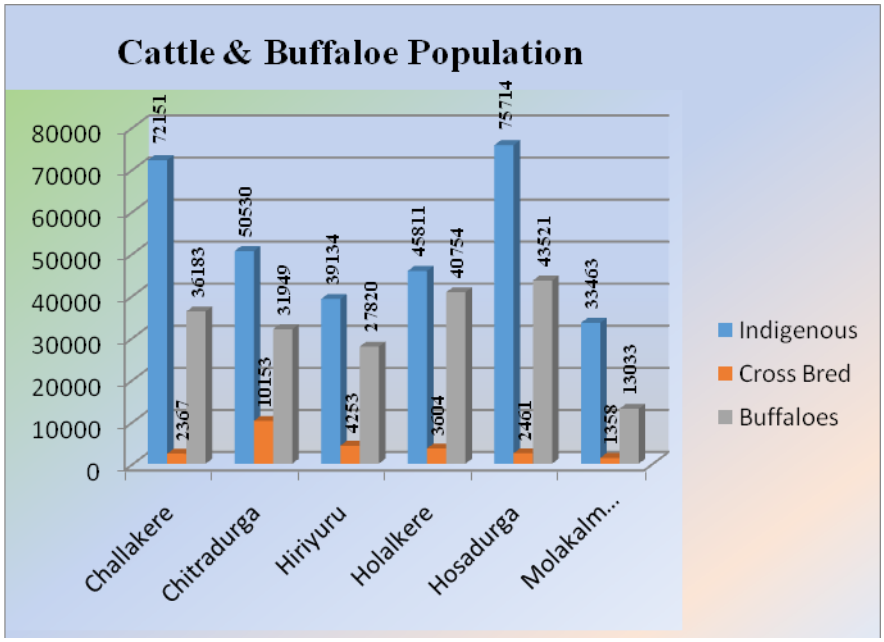
Table. 1.5: Cattle & Buffaloes' population

In Numbers

Sl. No.	Taluk	Cattle (Nos.)			Buffaloes Indigenous	Total- Cattle & Buffaloes
		Indigenous	Cross Bred	Total		
1	Challakere	72151	2367	74518	36183	110701
2	Chitradurga	50530	10153	60683	31949	92632
3	Hiriyuru	39134	4253	43387	27820	71219
4	Holalkere	45811	3604	49415	40754	90169
5	Hosadurga	75714	2461	78175	43521	121696
6	Molakalmuru	33463	1358	34821	13033	47854
Total		**316803**	**24196**	**340999**	**193260**	**534271**

Source: A&H department, Chitradurga

Fig: 1.5 Cattle and buffaloes population



Source: Department of A&H, Chitradurga

Small animals & poultry:

Among small animals in the district, Poultry population is highest (70.6%), followed by Sheep (21.0%) and Goats (8.4%). Among the taluks, Molakalmuru has the highest population 1677598 (37.73%) (Fig 1.6), followed by Challakere with 1044657 (23.5%), Hosadurga with 977383 (22.0%), Hiriyuru with 484882 (10.9%) and Chitradurga with 142240 (3.2%). Holalkere has the lowest small animal population with 119022 (2.7%). The details are furnished in Table1.6

Table: 1.6 Small animals in Chitradurga district.

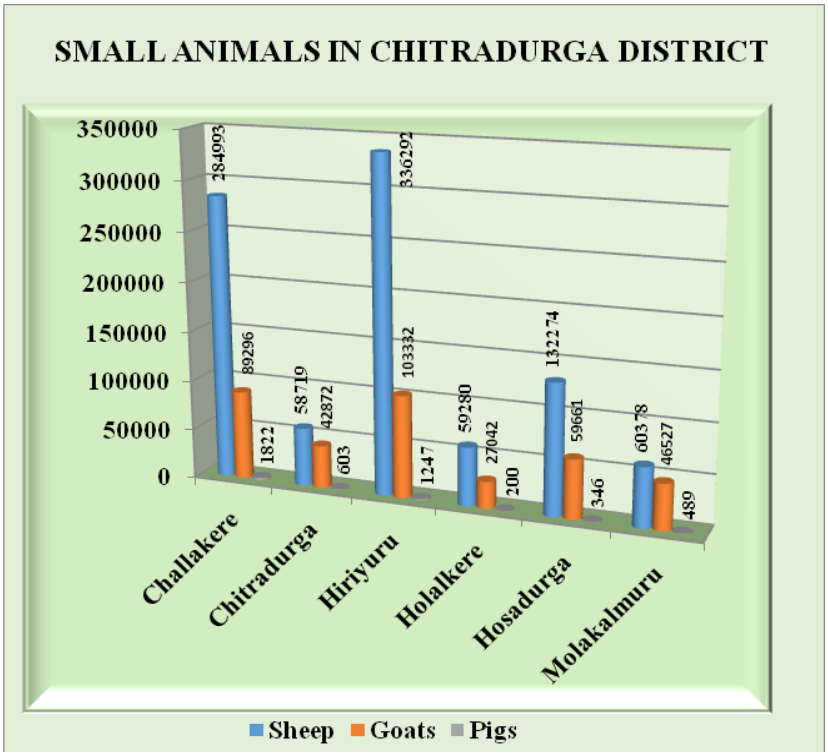
In Numbers

Sl. No.	Block/Taluk	Sheep	Goats	Poultry	Pigs	Total
1	Challakere	284993	89296	668546	1822	1044657
2	Chitradurga	58719	42872	40046	603	142240
3	Hiriyuru	336292	103332	44011	1247	484882
4	Holalkere	59280	27042	32500	200	119022
5	Hosadurga	132274	59661	785102	346	977383
6	Molakalmuru	60378	46527	1570204	489	1677598
Total		**931936**	**368730**	**3140409**	**4707**	**4445782**

Source: Department of A&H, Chitradurga

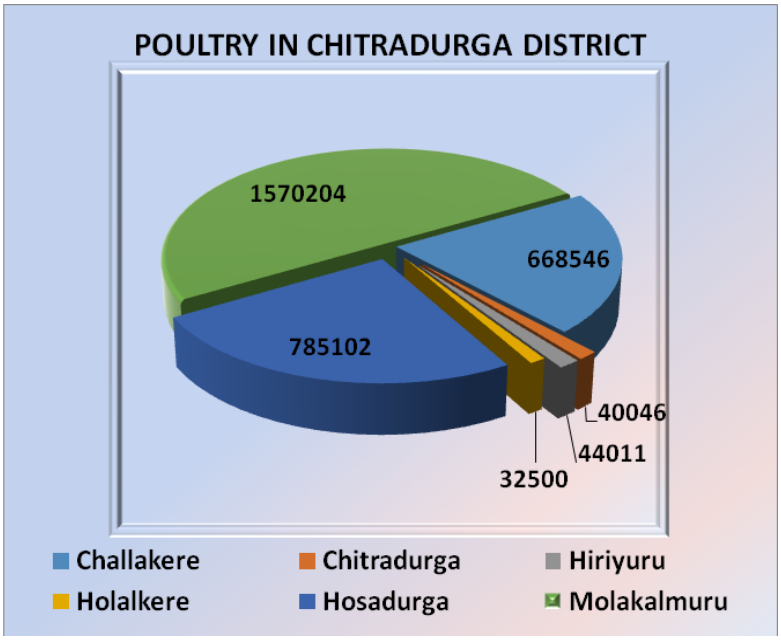
Hiriyur has highest poultry birds in the district (1570304), followed by Challakere, Hosadurga. Other taluks have negligible poultry population (Fig 1.7).

Fig 1.6 Small animals in Chitradurga district



Source: Department of A & H, Chitradurga

Fig 1.7 Poultry in Chitradurga district



Source: Department of A & H, Chitradurga

1.4 Agro-Ecology, Climate, Hydrology and Topography:

1.4.1 Agro-ecology:

Chitradurga district falls in Agro-climatic Zone-4 i.e. Central Dry Zone. The district receives scanty and unevenly distributed rainfall and having shallow and poor soils.

1.4.2: Climate

Chitradurga district enjoys moderate climate throughout the year. Most of the rainfall is received during south west monsoon is from June to October. The average rainfall of the district is 592.5 mm (Table 1.7) with 32 rainy days. Challakere taluk receives 464.5 mm of rainfall in 23 rainy days, Chitradurga taluk receives 653.9 mm in 38 rainy days, Hiriyuru taluk receives 549.9 mm in 29 rainy days, Holalkere taluk receives 718.4 mm in 41 rainy days, Hosadurga taluk receives 626.4 mm in 32.1 rainy days and Molakalmuru taluk receives 541.5mm in 28 rainy days. Districts average minimum temperature is 21.0^{0}C and maximum temperature is 31.8^{0}C.

Table 1.7: Taluk-wise average climatic parameters of Chitradurga district

Sl. No.	Taluk	Area (Ha)	Average monthly rainfall (mm)	No. of rainy days (No.)	Mean Temperature	
					Min ^{0}C	Max^{0}C
1	Challakere	194380	464.5	23	21	32
2	Chitradurga	123502	653.9	38	21	32
3	Hiriyuru	137423	549.9	29	21	32
4	Holalkere	135868	718.4	41	22	32
5	Hosadurga	112574	626.4	32	22	32
6	Molakalmuru	66955	541.5	28	20	31
		770702	**592.5**	**32**	**21**	**31.8**

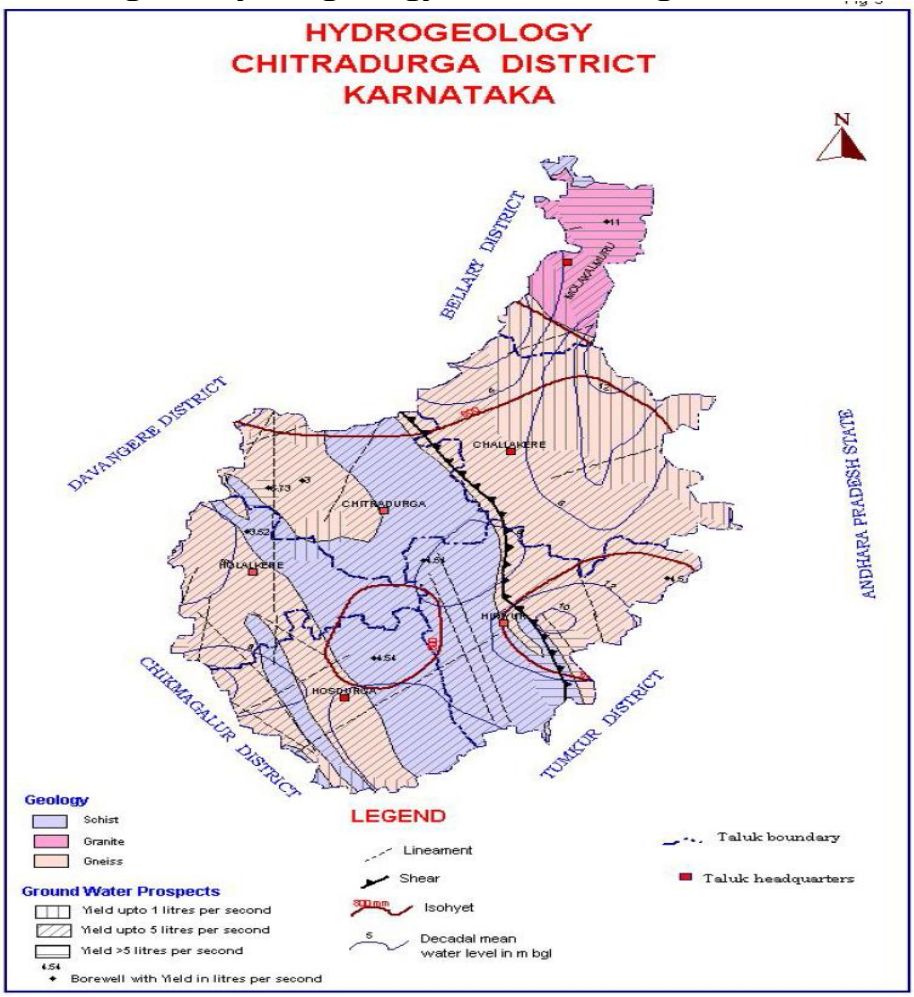
Source: Agriculture Dept, Chitradurga

1.4.3 Hydrology

Groundwater occurs under phreatic condition in the weathered rock formations of the 'Peninsular Gneissic Group' of rocks comprising of Granites, gneisses and schist (Fig. 1.8). The thickness of weathered zone varies from less than a meter near hill slopes and higher altitudes to about 39 m. in valleys and topographic low areas. At depth, the groundwater occurs in the fractures and fault zone of these crystalline rocks under semi-confined to confined conditions. The main source of ground water occurring in the district is through precipitation and return flow from applied irrigation. In Molakalmuru taluk, granites, granitic-gneisses and amphibolite gneisses are the main water bearing formations. Ground water exploration reveals the existence of 3 to 5 potential fracture zones having a thickness of 1 to 10 m. between the depths of 30 to 200 mbgl. Depth of weathered zone ranges from 12.3m to 24 mbgl. Yield ranges from the minimum depth to water level and maximum depth to water level are 9.77 and 12.68 mbgl respectively. During post-monsoon, water levels range from 10.28 to to16.05 mbgl. Seasonal fluctuation of ground water level varies from 2.91m to5.77m.

In Chitradurga taluk, fractured granitic-gneisses, gneisses and hornblende-schists are the main water bearing formations. Ground water exploration reveals that aquifers are encountered between the depths of 15 mbgl and 192 mbgl. In Chitradurga taluk bore wells were drilled from a minimum depth of 105.34 mbgl to a maximum of 200 mbgl. Depth of weathered zone range from 5.52m to 2.61mbgl.Yeild ranges from 0.04 to 5.42 lps. Transmissivity ranges from 2.37 to 40.84 m^2 /day. Specific capacity ranges from 4.53 to 43.94 lpm/m draw down.

Fig 1.8 Hydro geology of Chitradurga district



Source: CGWB report

Ground water occurs within the weathered and fractured rocks under water-table conditions and semi-confined conditions. During pre-monsoon season, the minimum and maximum depth to water level is 2.43 and 13.13 mbgl, respectively. During post-monsoon, water level ranges from 2.75 to 11.75 mbgl. Seasonal water-level fluctuation varies from 1.38 m to 1.86 m

In Holalkere taluk, gneisses, schists and greywackes are the main water bearing formations. Ground water occurs within the weathered and fractured rocks. Ground water occurs under water-table condition and semi-confined condition.

Ground water exploration reveals that aquifers were encountered between 25 mbgl to 169 mbgl. In Holalkere taluk, bore wells were drilled from a minimum depth of 123.66 mbgl to a maximum of 200mbgl. Depth of weathered zone ranges from 11.5 to 30.3 mbgl. Yield ranges from 0.04 to 6.3 lps. During pre-monsoon season, the minimum depth of water level and maximum water level are 0.15 to 7.54 mbgl, respectively. During Post- monsoon, water level ranged from 4.25 to 14.68 mbgl (Figure 5). Seasonal ground water level fluctuation varied from 0.34m to 3.37m.

In Challakere taluk, gneisses, granitic-gneisses and amphibolites are the main water bearing formations. Ground water occurs within the weathered and fractured rocks. Ground water exploration reveals that aquifer systems are encountered from depth15.4 mbgl to 182.9 mbgl. In Challakere taluk bore wells were drilled from a minimum depth of 118.82 mbgl to maximum of 200 mbgl. Depth of weathered zone range from 5.32 to 20.64 mbgl. Yield ranges from 0.21 to 8.23lps. Transmissivity ranges from34.50 to 665.17 m2 /day. During pre-monsoon season, the minimum depth to water level and maximum water level are 3.2 mbgl and 7.13 mbgl respectively. During Post- monsoon, water level ranged from 3.6mbgl to 16.1mbg. Seasonal Ground water level fluctuation varies from 1.5 m to 4.21m.

In Hosadurga taluk, granitic-gneisses, and schists are the main water bearing formations. Ground water occurs within the weathered and fractured granitic-gneisses and schists under water-table condition and semi-confined condition. In Hosadurga taluk bore wells were drilled from a minimum depth of 64 mbgl to a maximum of 200.1mbgl. Depth of weathered zone ranges from 6.0mbgl to 27.0 mbgl. Yield ranges from 0.64 to 5.5 lps. Transmissivity ranges from 0.5 m2 /day to 75.88 m 2 /day. During pre-monsoon season, the minimum and maximum depths to water level are 4.74 mbgl and 10.75 mbgl respectively. During November 2006

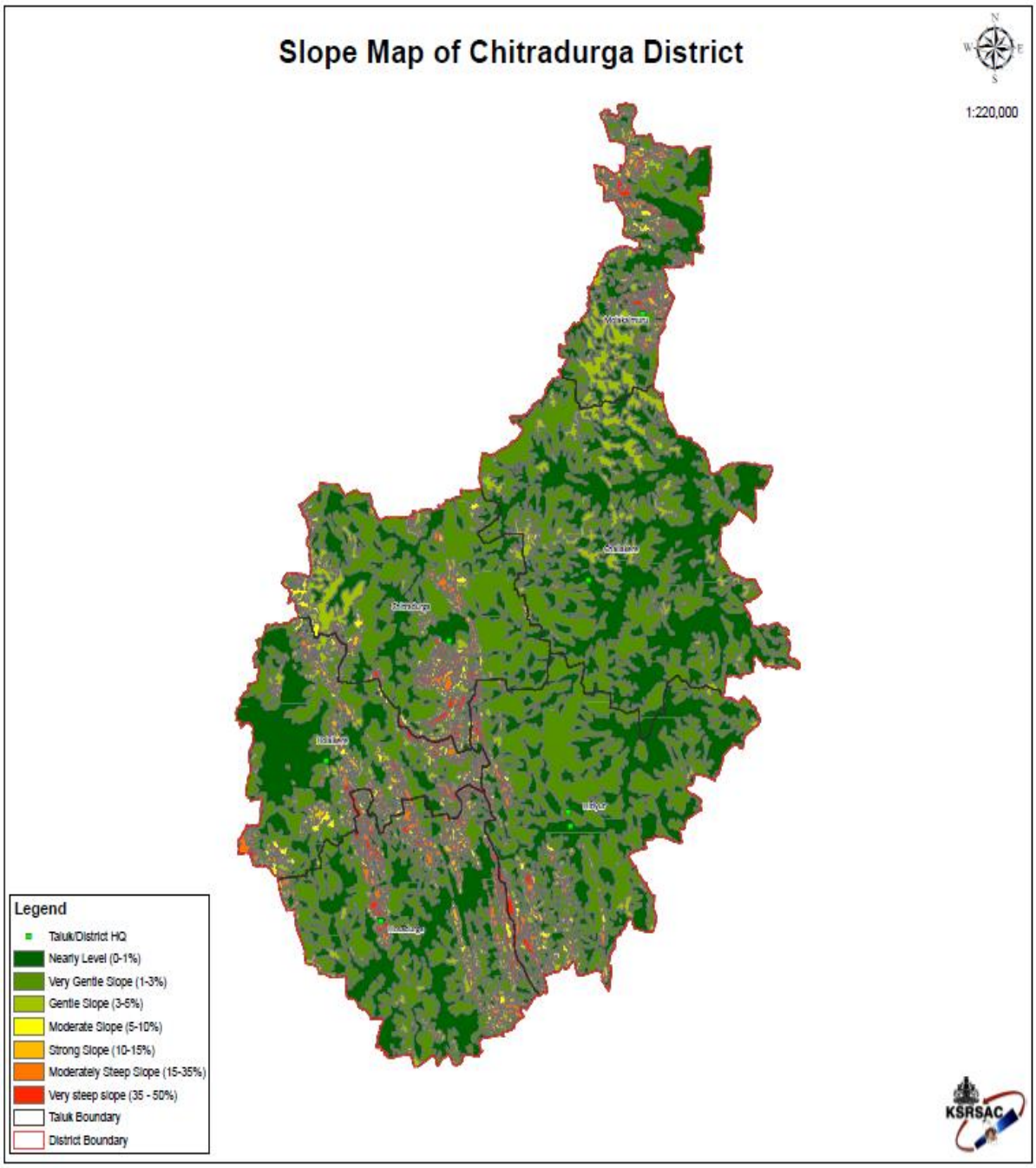
(post-monsoon) depth to water level ranged from 2.75 to 8.15 mbgl. Seasonal water- level fluctuation varies from 2.65 m to 3.37m.

In Hiriyur taluk, granitic-gneisses and schists are the main water bearing formations. Ground water occurs within the weathered and fractured granitic-gneisses and schists under water table condition and semi-confined condition. In Hiriyur taluk bore wells were drilled from a minimum depth of 60 mbgl to a maximum of 88.90mbgl. Depth of weathered zone ranges from 1.6 mbgl to 13.52 mbgl. Yield ranges from 1.11 lps to 4.54 lps. During pre-monsoon season, the minimum and maximum depths to water levels were 7.56 and 15.33 mbgl respectively (Fig. 1.8). During Post-monsoon, water level ranged from 4.2 to 8.63 mbgl. Seasonal ground water level fluctuation varies from 2.61m to 3.17m.

1.4.4: Topography:

The district is having maximum area of 498668 ha (64.7 %) with a slope range of 3-8%, followed by an area of 170132 (22.1%) with a slope range of 8-25% and an area of 86020 ha (11.2%), with a slope of range of 0-3% (Fig 1.9). The hilly area of 15862 ha (2.0%) is having a slope range of > 25%.

Fig 1.9 Slope map of Chitradurga district



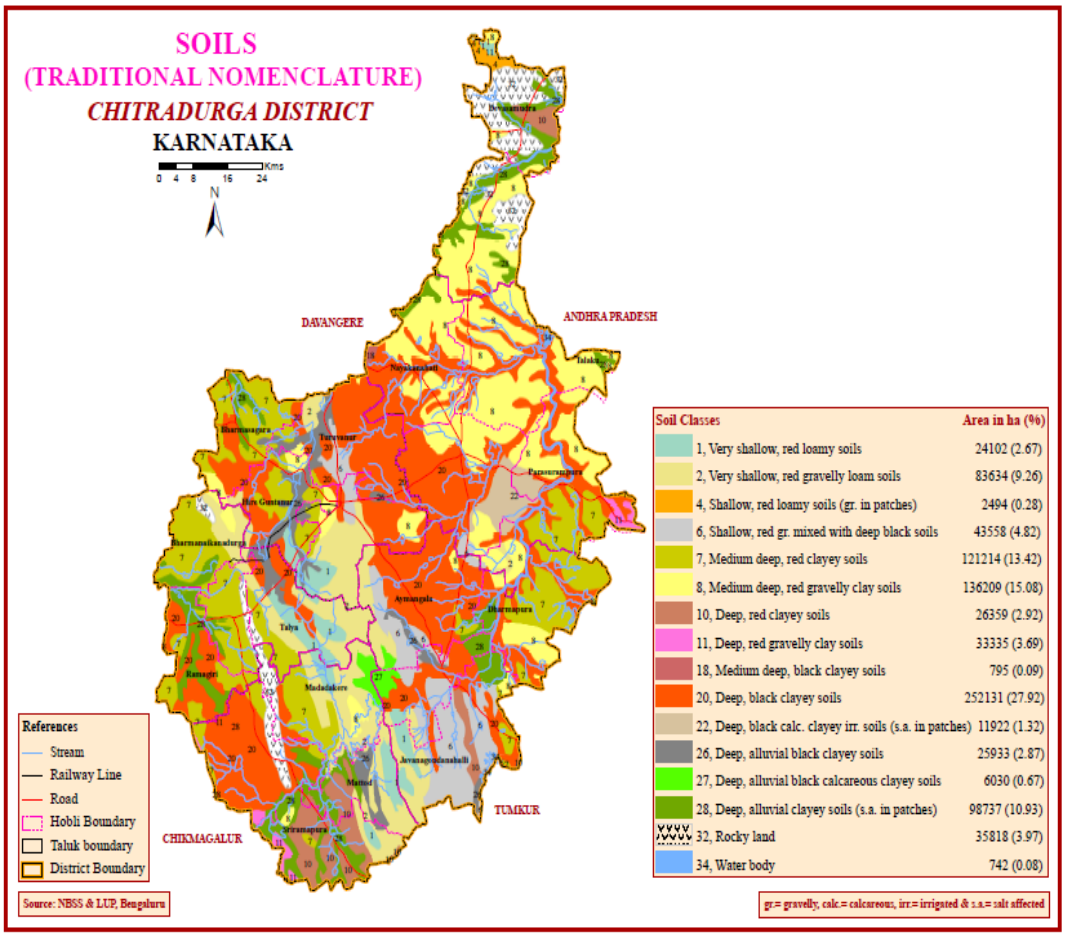
Source: KSRSC, Bengaluru

1.5: Soil Profile:

Chitradurga district has varied types of soils- both in terms of texture and depth. Out of available geographical area, meager area is occupied by deep

medium black clay soils (28%), medium deep red gravelly clay soils (15%), medium deep red clayey soils (13.4%), deep alluvial clay soils (11%) and very shallow red gravelly loam soils (9.3%) (Fig 1.10). Other types of soil textural groups include deep red gravelly clay soils (3%), deep red clay soils (3%), shallow red gravelly mixed with deep black soils (4.8%), deep black calcareous clay soil (1.3%), very shallow red loamy soils (2.6%) as well as many other classes.

Fig1.10 Soils of Chitradurga district



Source: NBSS&LUP

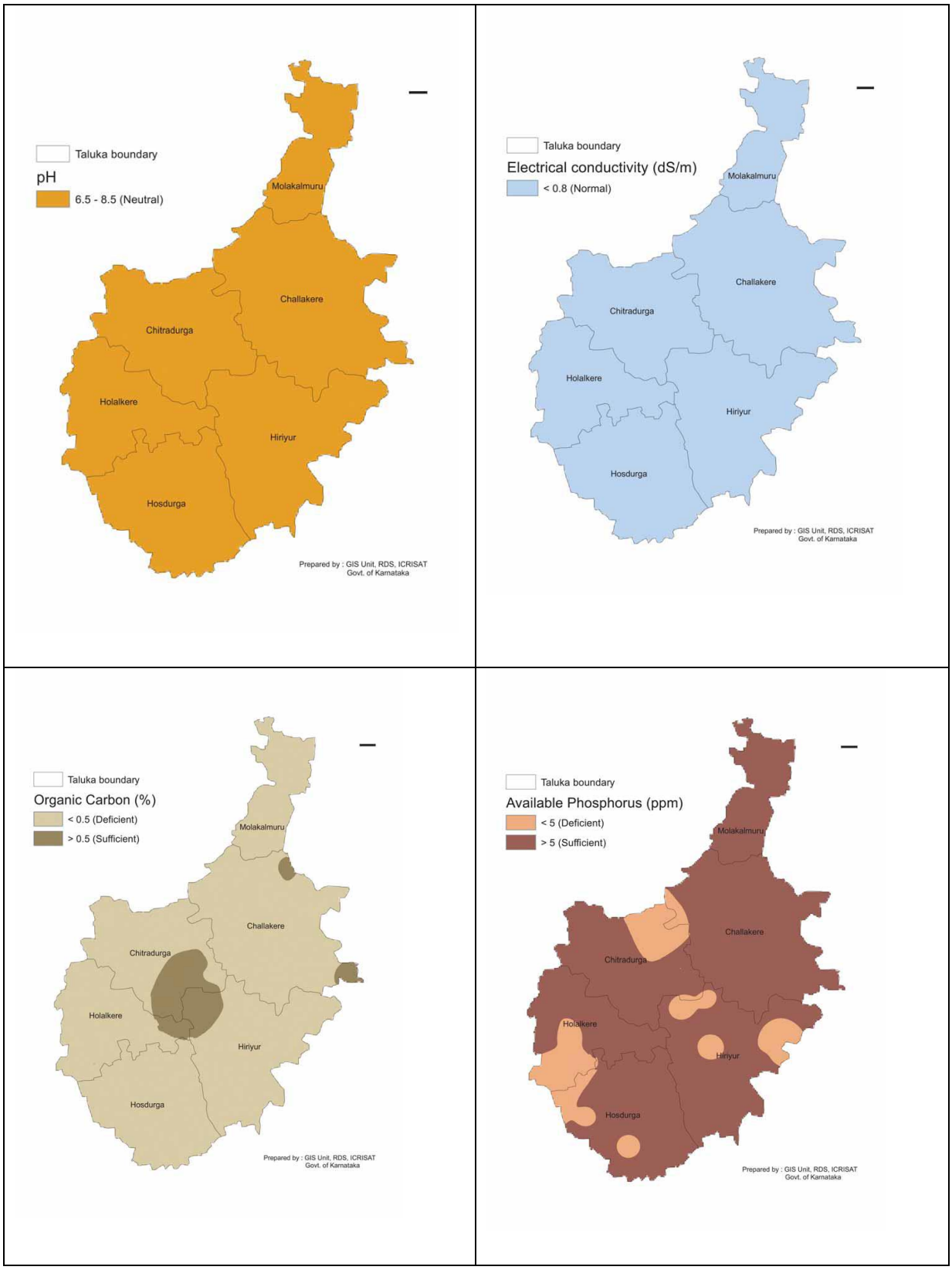
Soil fertility status

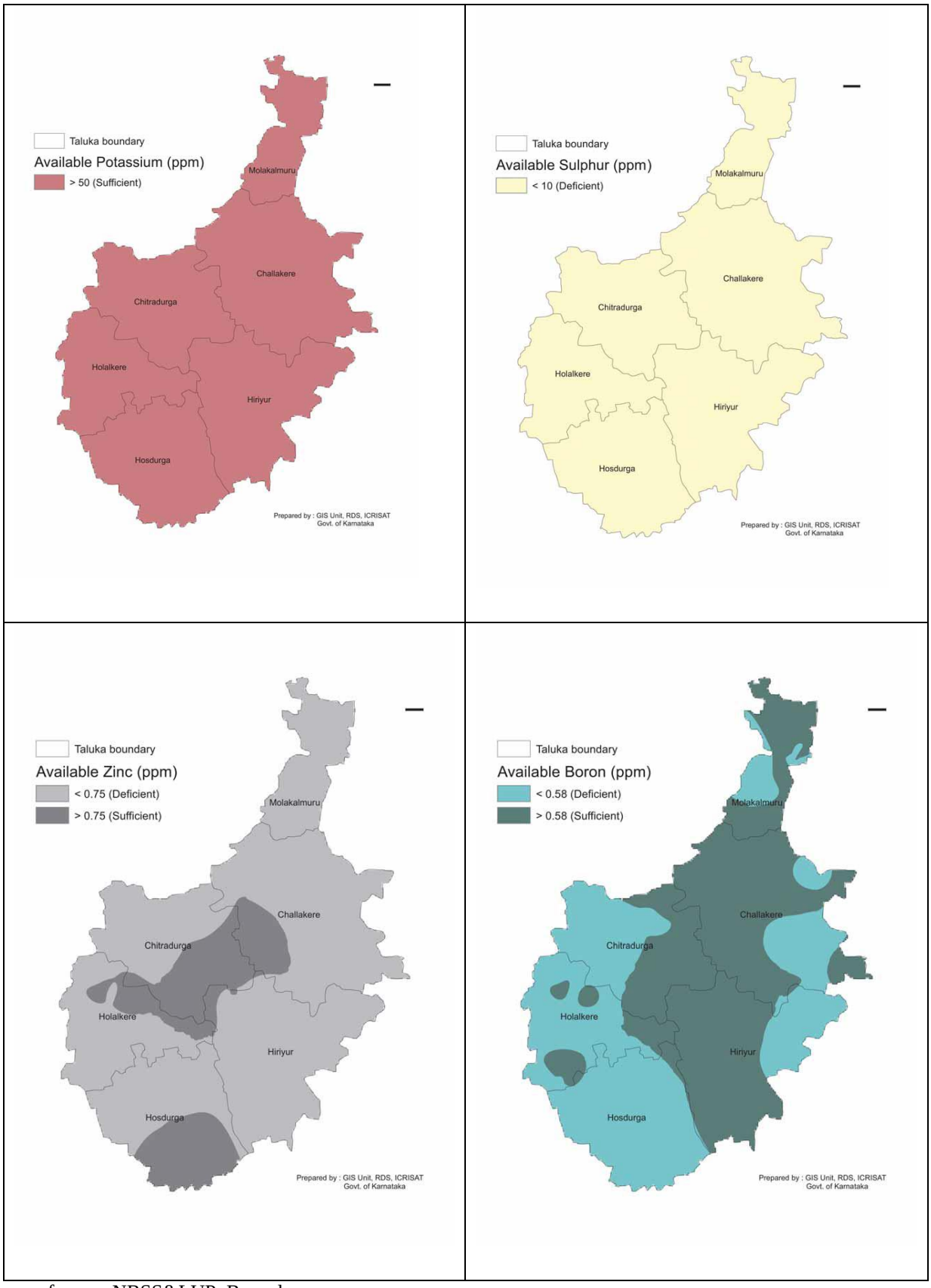
The soils of the district are of neutral in nature with a mean pH of 7.8 and the pH range of the district is 7.3 to 8.0. The mean electrical Conductivity of the

soil of the district is normal and the value is 0.23dS/m is normal and the EC range of the district is 0.22 to 0.27dS/m, while the organic carbon is deficient (<0.5%) in entire district except for a few patches in Chitradurga, Hiriyuru and Challakere taluk where the organic carbon content is sufficient (>0.5%). The district mean value of organic carbon is 0.40% and the range for the district is 0.36% to 0.44%. Except for few patches in Chitradurga, Hiriyuru, Hosadurga and Molakalmuru taluks, the district is sufficient in Av. phosphorus (>5 ppm) and the district mean for Av. Phosphorus is 7.0 ppm and the range for the district is 4.7 ppm to 10.2 ppm (Fig 1.11). Available Potassium is sufficient in the entire district (> 50ppm) and the district mean is 137 ppm and the range is 120 ppm to 140 ppm. Available sulphur is deficient (<10ppm) in entire district and the district mean is 7.3 ppm and the range is 5.0 ppm to 9.1 ppm. 99% of soils of the district is sufficient in 80 to 85% soils of the district is deficient in Av. Zinc (<0.75 ppm) except for few patches in Chitradurga, Hiriyuru, Hosadurga and Molakalmuru, the Av. Zinc is sufficient (>0, 75 ppm). The mean value for the district is 0.64 ppm and the range is 0.57 to 0.77 ppm. Nearly 50% of soils of the district is deficient in Available Boron (<0.58 ppm) and the district mean is 0.63 ppm. Entire Challakere taluk and parts of Chitradurga, Hiriyuru, Holalkere, Molakalmuru is sufficient in Av. Boron (>0.58 ppm) whereas, entire taluk of Hosadurga and parts of other taluks is deficient in Av. Boron. The district mean for Av. Boron is 0.64 ppm and the mean is 0.48 ppm 0.82 ppm.

Further, the district is having 7450 ha of saline soils, 13460 ha sodic soils and 3280 ha of water logged soils. These soils need immediate reclamation to improve the soil characteristics so that this area could be brought under cultivation or their productivity could be increased.

Fig1.11 Soil Fertility Maps





Source of maps: NBSS&LUP, Bengaluru

1.6 Soil Erosion and Runoff Status:

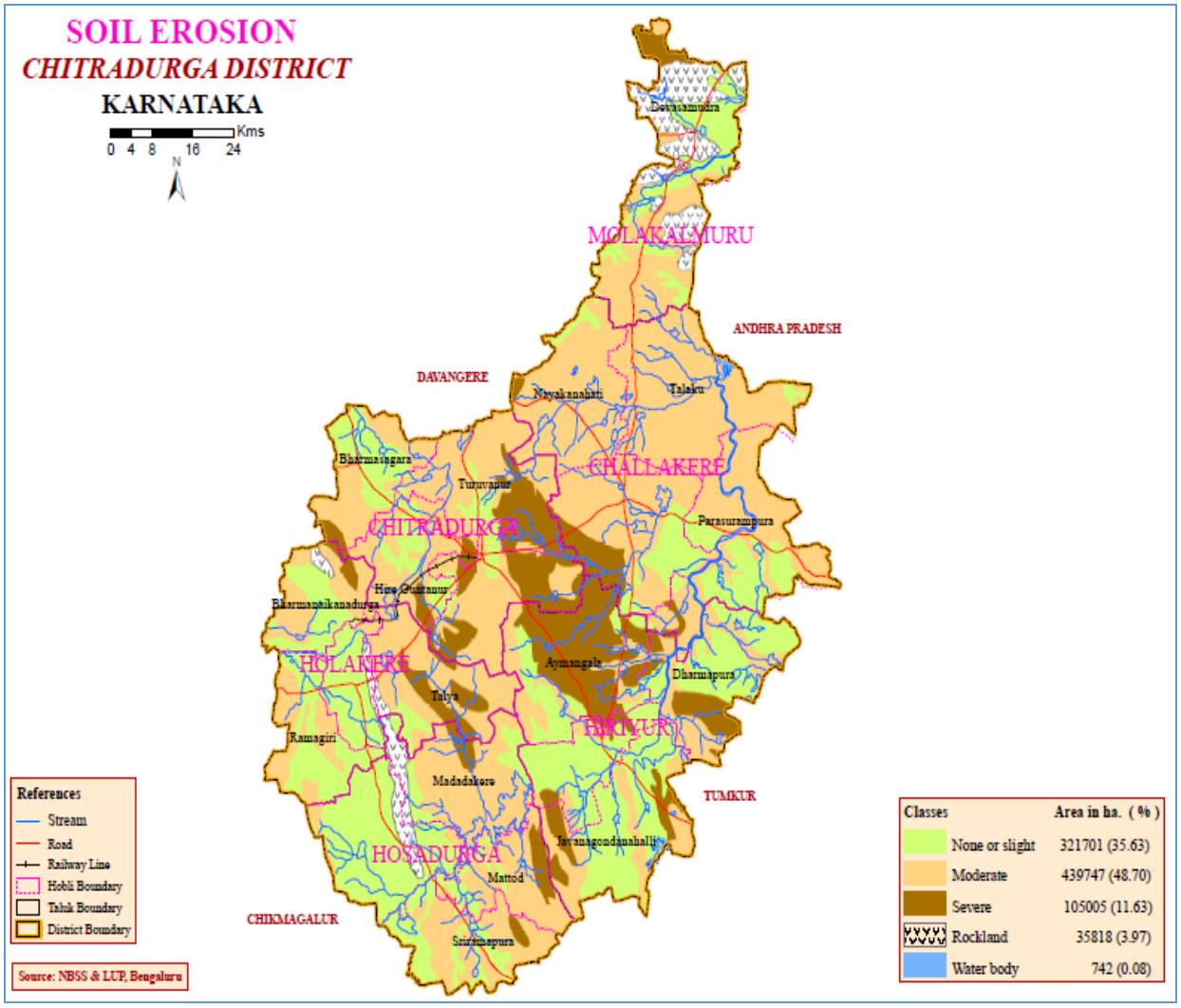
Soil erosion which occurs at varying rates is a widespread threat to sustainable resource management. Major causes of soil erosion were cultivation without proper soil and water conservation measures in area not suitable for crops, denuded areas without vegetation, cultivated fallow on moderate slopes, degraded forests/pastures on steep slopes and poorly managed forest cover. Appropriate soil conservation and land management techniques for the different soil erosion classes were suggested. It is generally associated with agricultural practices, leading to decline in soil fertility, bringing in a series of negative environmental impacts and has become a threat to sustainable agricultural production and water quality.

Soil erosion is one form of soil degradation. Soil erosion is a naturally occurring process on all land. The agents of soil erosion are water and wind, each contributing a significant amount of soil loss each year. Soil erosion may be a slow process that continues relatively unnoticed, or it may occur at an alarming rate causing serious loss of topsoil. The loss of soil from farmland may be reflected in reduced crop production potential, lower surface water quality and damaged drainage networks.

In Chitradurga district, moderately eroded soils account for about 48.7% (321701 ha.) occurring in Challakere, Chitradurga, Holalkere and Hosadurga taluks, while in certain parts of Molakalamuru taluk (Fig 1.12). Soils with none or slight erosion are observed mainly in Holalkere, Hosadurga and Hiriyur taluks and in a patches in Chitradurga, Challakere and Molakalmuru taluks accounting for 35.63 % (321701 ha.). Whereas, severely eroded soils are mainly observed in Challakere and Hiriyur taluks and in patches in Chitradurga, Holalkere, Hosadurga and Molakalmuru taluks covering an area of 105005 ha (11.63 %). Surface runoff

is high in nearly 60.33 % of area that is moderately eroded to severely eroded, resulting in loss of water, soil fertility and top soil. Necessary water conservation measures are needed to be taken up to conserve water and soil.

Fig 1.12 Soil erosion map of Chitradurga district



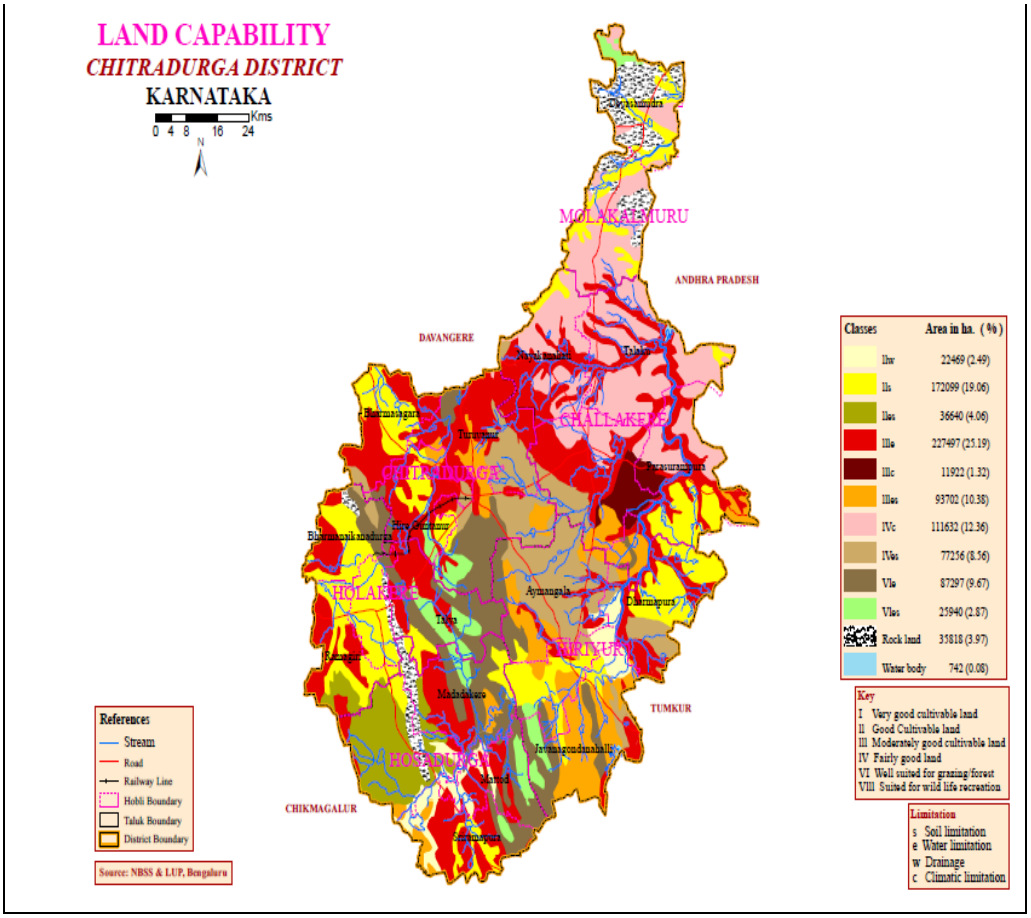
Source: KSRSC, Bengaluru

Land capability classification

Major area in the district falls under classes II , III and IV classes and nearly 16 % of lands are unfit for cultivation with classes V and VI. No land

is classified as class I. Nearly 25% of the area (2.27 lakh ha) is occupied by class IIIe, indicating that such area has limitation of water (Fig1.13), though lands area moderately good for cultivation. Similarly, 19% of the area (1.72 lakh ha) is occupied by class IIs, indicating that such area has limitation of soil, although these lands are good for cultivation. As many as 12.3% of land area (1.11 lakh ha) is occupied by Class IV c, indicating that in such areas climate is the limitation and the lands are fairly good for cultivation.

Fig 1.13 Land capability map of Chitradurga district

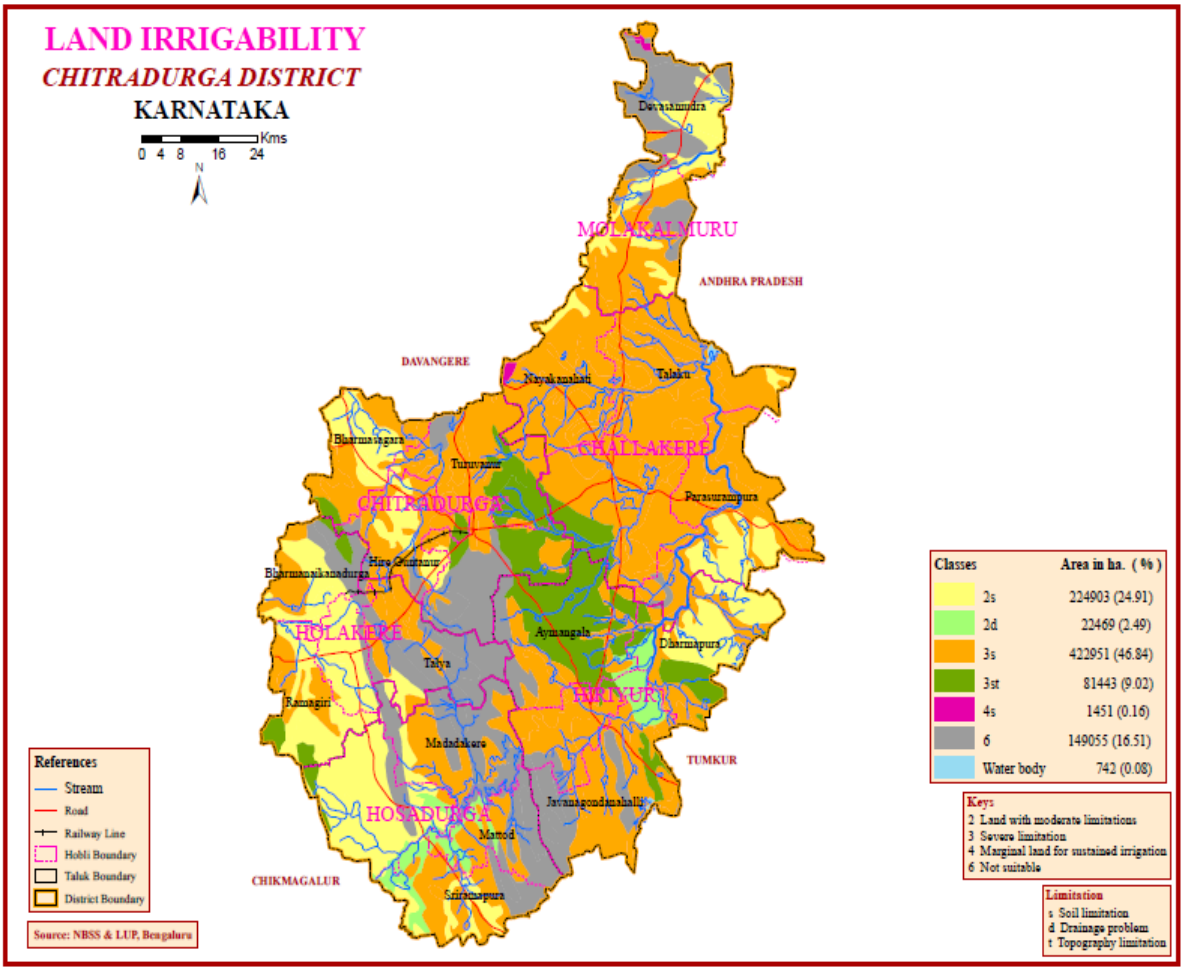


Source: KSRSC, Bengaluru

Land irrigability classes

Not all lands are suitable for irrigation. The limitation of not being suitable to irrigation may be due to soil characters (Fig 1.14), drainage problems or due to topographical problems. In Chitradurga district, 16.51% of land is not suitable for irrigation at all, while 46.8 % (422951 ha) of land has severe limitation due to soil characters and 25% (224903ha) of land has moderate limitation due to soil characters. The drainage is not a serious problem in the district and only 9% of lands have topography as limitation for irrigating them.

Fig 1.14 Land irrigability classification in Chitradurga district



Source: KSRSC, Bengaluru

1.7. Land Use pattern:

The total geographical area of the district is 770702 ha. Challakere taluk is the biggest taluk with 194380ha (25.2%) geographical area (Table 1.8), followed by Hiriyur with 137423ha (17.8%), Holalkere with 135868 ha (17.6%), Chitradurga with 123502 ha (16.0%) and Hosadurga (Fig 1.15) with 112574 ha (14.6%). Molakalmuru is the smallest taluk with 66955 ha (8.7%). Of the geographical area, 397549ha (51.6%) is the net sown area in the district. The Net sown percentage area is highest in Chitradurga (61.2%), followed by Holalkere (58.0%), Hosadurga (53.1%), Hiriyuru (52.8%) and Molakalmuru (44.9%). Net sown percentage area is minimum in Challakere taluk (41.5%).

In the district, 73719 ha (9.7%) of the geographical area is under forest. The forest cover, Molakalmur taluk has the maximum percentage of forest area (22.9%), followed by Hosadurga (16.9%), Chitradurga (9.8%), Hiriyuru (8.3%) and Holalkere (8.3%). Challakere has the lowest forest area (3.6%). However, area wise, Hosadurga taluk has the highest forest area of 19074 ha and lowest forest area is in Challakere taluk (6987 ha).

The cropping intensity of the district is 122%, about 86484 ha is sown more than once in the district. The highest cropping intensity is in Hiriyuru taluk mainly because of highest area under irrigation and lowest cropping intensity (109%) is observed in Holalkere taluk.

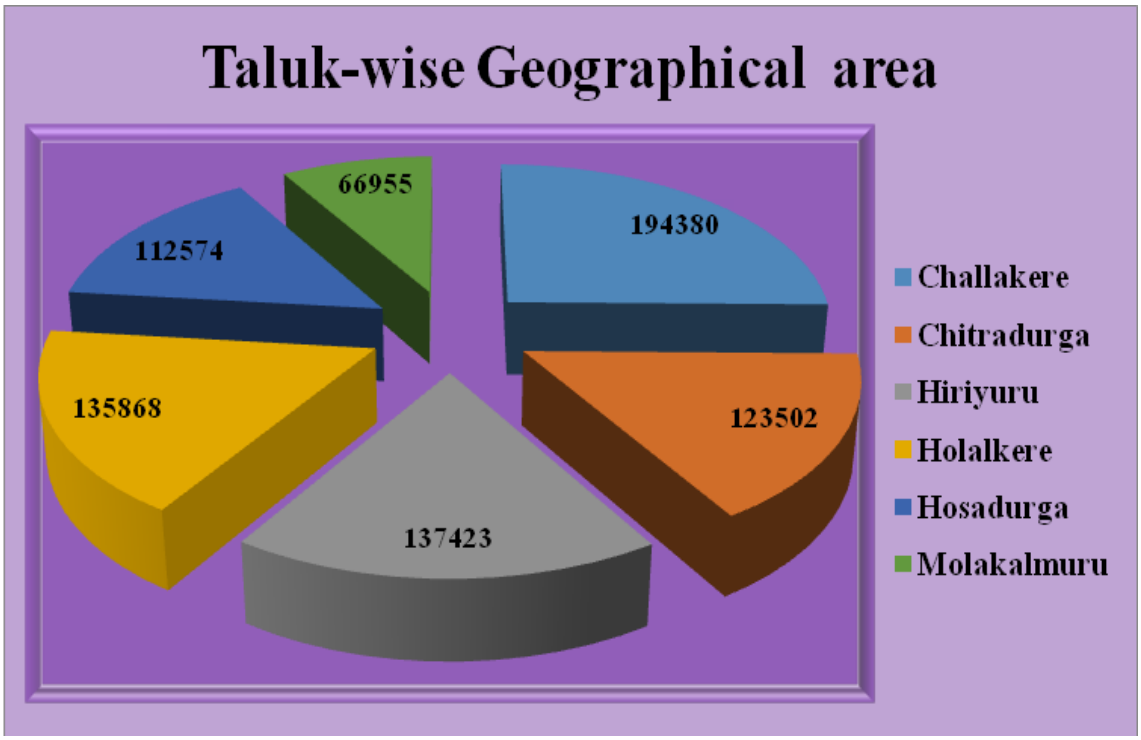
Table 1.8 Land Use Pattern in Chitradurga district

Area in hectares

Sl. No.	Taluk	Geographical area	Area sown			Cropping intensity (%)	Forest area	Waste land	Area under other uses
			Gross cropped area	Net sown area	Area sown more than once				
1	Challakere	194380	92198	80716	11482	114	6987	1793	104884
2	Chitradurga	123502	90988	75588	15400	120	12049	14307	21558
3	Hiriyuru	137423	99777	72535	27242	138	11358	10429	43101
4	Holalkere	135868	85524	78812	6712	109	8878	14528	33650
5	Hosadurga	112574	82329	59804	22525	138	19074	5116	28580
6	Molakalmuru	66955	33217	30094	3123	110	15373	9103	12385
Total		**770702**	**484033**	**397549**	**86484**	**122**	**73719**	**55276**	**244158**

Source: District at a Glance

Fig 1.15 Taluk wise geographical area



Source: adapted from District at Glance

CHAPTER II

DISTRICT WATER PROFILE

2.1. Area Wise, Crop Wise irrigation status:

Season wise, Category wise Irrigated and Rainfed area details in Chitradurga district are furnished in Table 2. Totally Field crops are being cultivated in an area of 428209 ha, comprising 58283 ha (13.6%) under Irrigated and 369926 ha (86.4%) under rainfed conditions. During Kharif season area covered is 337406 ha (78.8%), comprising 18305 ha (5.4 %) under Irrigated and 319101 ha (94.6%) under rainfed condition.

2.1 Area wise crop wise Irrigation Status for agricultural crops

Crop Type	Kharif (Area in Ha)			Rabi (Area in Ha)			Summer (ha)	TOTAL (ha)		
	Irrigated	Rainfed	Total	Irrigated	Rainfed	Total	Irrigated /total	Irrigated	Rainfed	Total
Cereals	8996	146349	155345	4979	11118	16097	4223	18198	157467	**175665**
Pulses	25	19577	19602	171	35402	35573	182	378	54979	**55357**
Oil Seeds	1095	133729	134824	235	3840	4075	2463	3793	137569	**141362**
Fibres	8189	19446	27635	27635	465	28100	90	35914	19911	**55825**
Total	**18305**	**319101**	**337406**	**33020**	**50825**	**83845**	**6958**	**58283**	**369926**	**428209**

Source: Agriculture Dept., Chitradurga

During rabi Season, field crops are cultivated in an area of 83845 (19.6%), comprising 33020 ha (39.4%) under irrigated and 50825 ha (60.6%) under rainfed

condition. During summer season field crops are cultivated under irrigated condition on an area of 6958 ha (1.6%).

In the district, Horticultural crops are cultivated total area of 75239 ha (Table 2.2). Under irrigated condition, horticultural crops are cultivated in an area of 61976 ha (82.4%) and under rainfed conditions, it is being cultivated on an area of 13263 ha (17.6%).

Table 2.2 Area wise crop wise irrigation status (ha) of horticultural crops

Crops	K-I	K-R	Total	R-I	R-R	Total	S-I	S-R	Total	Total irrigated	Total rainfed	TOTAL
Onion	7934	2600	**10534**	1310	0	**1310**	524	0	**524**	9768	2600	**12368**
Banana	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**
Pomogranate	0	0	**0**	0	0	**0**	0	0	**0**	2298	0	**2298**
Papaya	0	0	**0**	0	0	**0**	0	0	**0**	637	0	**637**
Coconut	0	0	**0**	0	0	**0**	0	0	**0**	23134	10508	**33642**
Arecanut	0	0	**0**	0	0	**0**	0	0	**0**	20773	0	**20773**
Mango	0	0	**0**	0	0	**0**	0	0	**0**	571	0	**571**
Tomato	555	0	555	198	0	198	111	0	111	864	0	864
Chillies	750	560	1310	0	0	0	0	0	0	750	560	1310
Flowers	0	0	**0**	0	0	**0**	0	0	**0**	103	0	**0**
Sapota	0	0	**0**	0	0	**0**	0	0	**0**	177	0	**0**
Total	**9239**	**3160**	**12399**	**1508**	**0**	**1508**	**635**	**0**	**635**	**61976**	**13263**	**75239**

Source: Agriculture Dept., Chitradurga

Note: K-I Kharif irrigated K-R Kharif rainfed; R-I Rabi irrigated R-R Rabi rainfed S-I Summer irrigated S-R Summer rainfed

2.2. Production and productivity of major crops:

The total production of various field crops in the crops in the district is 407827.5 qtls. And average productivity is around 1002.53 qtls/ha. The average

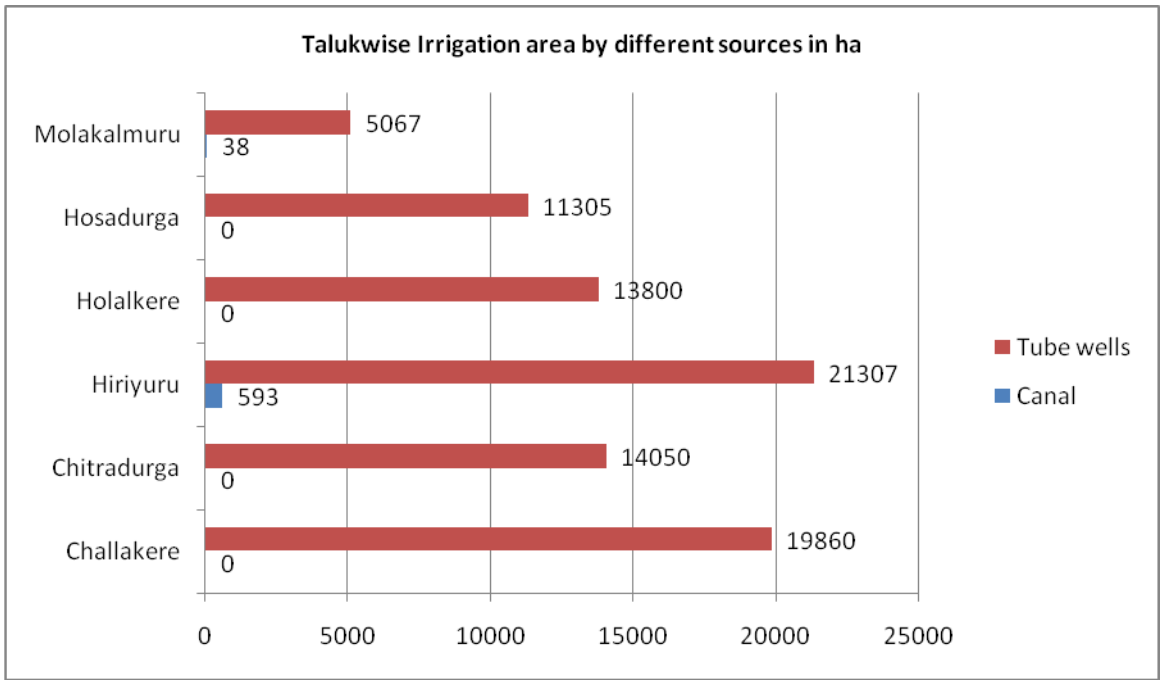
productivity of Cereals crops in the district is 1828 Kg/ha, Pulses is 567 kg/ha and Oilseeds is 726 Kg/ha. Among the Commercial crops, Cotton productivity is 304 Kg/ha and tobacco is 861 Kg/ha.

2.3. Irrigation based classification:

Major part of the district lies in Krishna basin and is drained by Vedavathi River. The reservoir is built across the Vedavathi River near Vanivilaspura, in Hiriyur taluk. The canal network provides irrigation facilities to the farmers in Hiriyur taluk to a limited area at present. The other streams are Janagahalli, Chikhagari, Swarnamukhi, Garain and Nayakanahatti halla. Agriculture is mainly dependent on the timely and adequate rainfall in the district. Through Vani Vilas Sagar, an area of 593 ha in Hiriyuru taluk is irrigated. About 86020 ha of land is net irrigated area by different sources which accounts to 22.12 % of net sown area. The details are provided at Table 2.3 and Fig. 2.1.An area of 631 ha is irrigated by canals accounting to 0.16% of irrigated area. Tube-wells irrigate an area of 85389 (21.96% of net sown area). The data reveals that, the Chitradurga district is having very limited irrigation resources and the agriculture of the district is mainly rainfed.

The net notified area under Canal irrigation in the district is 12135 ha under Vanivilas sagar and 2305 ha under Gayathri dam. However, presently canal irrigation is available only for 631 ha as major part of water stored in Vani Vilas Sagar dam is used for drinking purposes.

Fig. 2.1. Taluk wise irrigated area by different sources



Source: adapted from District at Glance

Table 2.3. Taluk wise source wise irrigated area (ha) in Chitradurg district

Taluk	Canals (Area)		Tanks		Open Wells		Tube/Bore Wells			Lift irrigation		Total	
	Gross	Net	Nos.	Area	Nos.	Area	Nos.	Area		Nos.	Area	Area	
				Net		Net		Gross	Net		Net	Gross	Net
Challakere	0	0	72	0	4334	0	9799	23408	19860	29	0	23408	19860
Chitradurga	0	0	44	0	2700	0	9481	15507	14050	0	0	15507	14050
Hiriyuru	831	593	57	0	2102	0	8499	23398	21307	55	0	24229	21900
Holalkere	0	0	57	0	703	0	10727	15449	13800	19	0	15449	13800
Hosadurga	0	0	59	0	779	0	7428	13005	11305	4	0	13005	11305
Molakalmuru	52	38	20	0	1379	0	2780	6515	5067	0	0	6567	5105
Total	**883**	**631**	**309**	**0**	**11997**	**0**	**48714**	**97282**	**85389**	**107**	**0**	**98165**	**86020**

Source: District at Glance

CHAPTER III

WATER AVAILABILITY

3.1. Status of Water availability:

Chitradurga district falls in central eastern parts of the state. It receives low to moderate rainfall and is one of the drought prone districts in the state. Normal rainfall varies between 668 mm in Holalkere in western part to 457 mm in Challakere in the northeastern part. As the Holalkere and Hosadurga taluks are placed adjacent to Western Ghats, these taluks experience the highest rainfall as compared to taluks away from the Western Ghats taluks.

Vedavathi River basin covers maximum areas in the district and it is tributary of Tungabhadra River. The Vanivilas Sagar a reservoir is built across the Vedavathi River, at Vanivilaspura in Hiriyur taluk. The canal network of the reservoir provides irrigation facilities to areas in Hiriyur taluk and also supplying drinking water to Hiriyur city. In addition to this, 1) Gayathri Reservoir, 2) Rangayanadurga Reservoir, and 3) Narayanapura anicut are irrigation projects commissioned in the district.

The water is available from canals (Vanivilas sagar and Gayathri dam) for irrigation purpose, which is 0.0702 BCM. The water available from tanks is 0.00042144 BCM (Table 3.1). Further, stored water from Vanivilas Sagar, Shanthisagar, Vedavathi river is supplied for drinking purpose in towns of all taluks of Chitradurga district. The total water supplied for drinking purpose is 0.03291205 BCM (Table 3.1). Thus, total surface water available for irrigation and drinking purposes is 0.10553349 BCM.

Table 3.1. Status of water availability (surface)

Sl. No.	Sources				Total, BCM
1	**Surface Irrigation**				
(i)	Canal (Major & Medium Irrigation)				
	Vanivilas Sagar				0.060675
	Gayathri				0.011525
	Total, BCM				**0.0722**
ii)	**Minor Irrigation tanks**	*Kharif*	*Rabi*	Total	**BCM**
	Challakere (Mcft)	69.19	34.60	103.79	0.00010379
	Chitradurga (Mcft)	23.74	11.87	35.61	0.00003561
	Hiriyur (Mcft)	89.26	14.63	133.89	0.00013389
	Holalkere (Mcft)	19.35	9.67	29.02	0.00002902
	Hosadurga (Mcft)	74.53	37.27	111.8	0.0001118
	Molakalamur (Mcft)	0.22	0.11	0.33	0.00000033
	Total (Mcft)	**276.29**	**138.15**	414.14	**0.00042144**
	Total water available, BCM				**0.07262144**
(iii)	Lift Irrigation/ diversion				--
(iv)	Various Water Bodies including Rain Water Harvesting				--
(v)	Treated Effluent Received from STP				--
(vi)	Untreated effluent				--
(vii)	Perennial sources of water				--
	Total surface water, BCM				**0.07262144**

	Drinking water supply to towns of Chitradurga district			
	Taluk – Headquarters/ Town	Source of water	Water supply, million lit/day (mld)	Water supply BCM
1	Chitradurga Stage 1	Vanivilas Sagar	9.08	0.0033142
	Chitradurga Stage 2	Shanthisagar	25.08	0.0091542
2	Challakere	Vanivilas Sagar	21.49	0.0078438
	Nayakanahatti	Vanivilas Sagar	3.2	0.001168
3	Holalkere	Shanthisagar	2.79	0.001018
4	Hiriyur	Vanivilas Sagar	21.33	0.00778545
5	Hosadurga	Vedavathi River	4.0	0.00146
6	Molakalmuru	RD River	3.2	0.001168
	Total surface water		90.17	**0.03291205**
	Total surface water from all sources			**0.10553349**

Source – CWC, CGWB, District Irrigation and Agriculture office records

3.2 Status of Ground water availability:

The ground water estimation is worked out based on the methodology recommended by Ground Water Estimation Committee. The ground water resource of the entire State has been computed by Central Ground Water Board (CGWB, 2013). The salient features of the ground water resources are given below. The data has been computed Block-wise. The areas having slopes of >20% have been excluded from the recharge computation. Further, the ground water recharge and draft has been computed separately for command and non-command areas. The information has been calculated separately for each taluk.

The ground water development in the district is by dug wells, dug cum bore-wells. The depth of bore-wells used for irrigation is ranging from 100 to 300 mts. with a diameter of 148 mm to 165 mm. The yield of these bore-wells varies from > 1 to 5 lps. The possibilities of ground water development in the district are quite high.

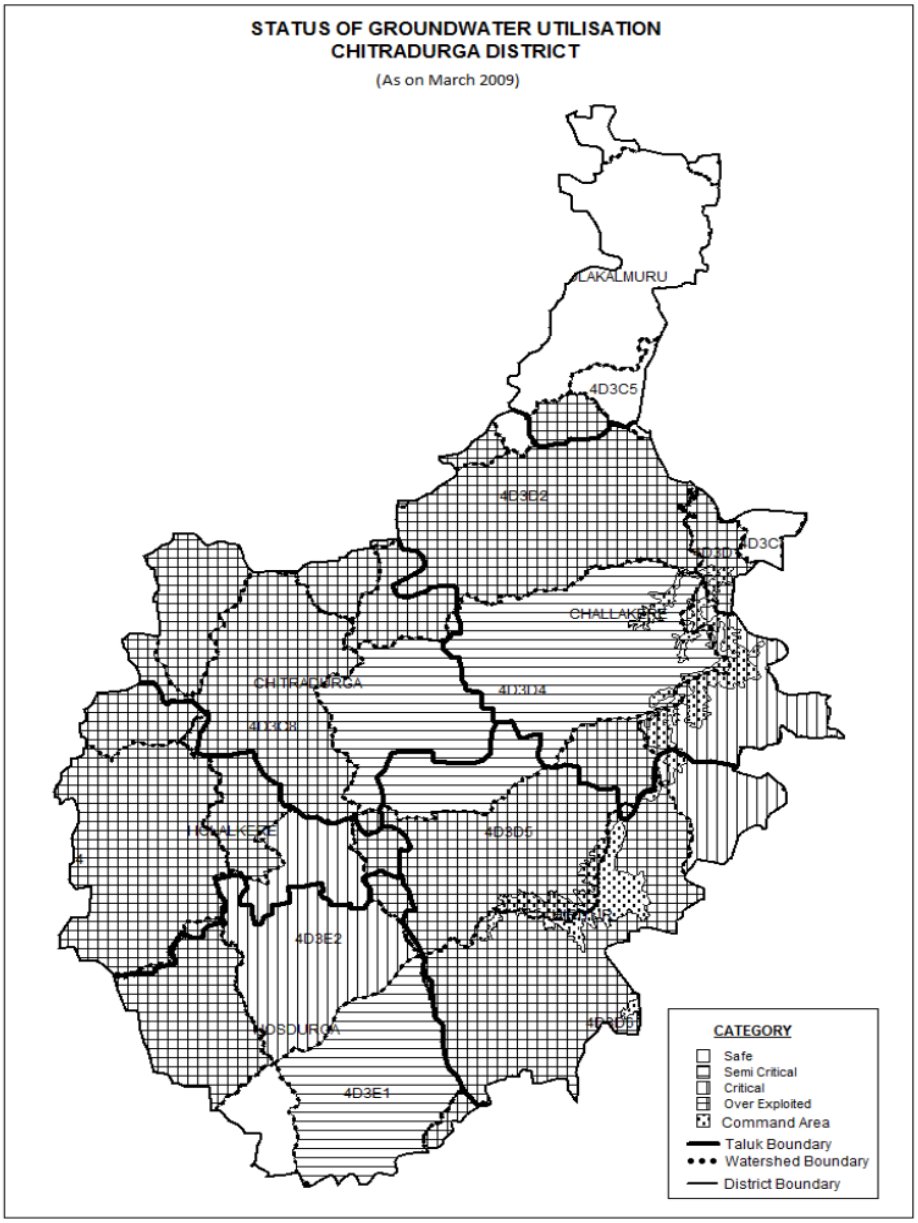
All the taluks in the district have been categorized as critical, semi-critical and safe from ground water abstraction point. The overall ground water development in the district is in a critical condition except one taluk – Molakalamuru, which is in the safe zone. But, three taluks in the district (Challakere, Hiriyur and Holalkere) are over exploited and hence, the chances of further exploitation of underground water are very limited. In case of other two taluks (Hiriyur and Hosadurga), the ground water position is critical and hence, bore-well recharge system should be invariably adopted for rejuvenation of existing bore-wells (Table 3.2, Fig. 3.1).

Table 3.2 Status of ground water in Chitradurga district

Taluk	Status of ground water exploitation- taluk wise (% area in each taluk)				Status of ground water draft, recharge (BCM)		
	Safe	Semi critical	Critical	Over exploited	Annual net GW availability	Total draft for irrigation	Net GW availability for future irrigation
Chitradurga	4	32	12	52	0.05593	0.07590	0.00261
Challakere	--	35	--	65	0.08777	0.07654	0.00700
Holalkere	5	7	6	82	0.09320	0.12906	0.00006
Hiriyur	--	--	13	87	0.11460	0.11515	0.01811
Hosadurga	10	30	30	30	0.08990	0.07909	0.01051
Molakalamuru	85	--	--	15	0.06224	0.02846	0.02946
Total					**0.50364**	**0.5042**	**0.06775**

(Adapted from CGWB Brochure of Chitradurga District-2013) * Calculated considering the natural recharge from all sources ** Calculated after considering other sector's needs.

Fig. 3.1. Status of groundwater utilization in Chitradurga district



Ground water occurs under phreatic condition in the weathered rock of peninsular gneissic complex comprising of granite, gneisses and schist. The ground water occurs in the fractures and fault zones of these crystalline rocks under confined conditions.

3.3. Status of Command area:

The district has very less area under canal irrigation. Although 2 reservoirs (Vanivilas Sagar & Gayathri dam) were constructed almost 100 years back, mainly for recharging of open wells to provide drinking water facilities since this district is chronically a drought prone area. However, a small area of 14440 ha is notified for providing irrigation, but in the recent years no water is allowed in canals exclusively for irrigation purpose. The Government has taken up Upper Bhadra Project to provide irrigation facilities for 4 taluks in the district and also to fill up existing tanks with Bhadra River water. It is envisaged that from Upper Bhadra Project 154245 ha of land in 4 taluks is to be brought under irrigation in 2 to 3 years, by which the water scenario of the district will drastically change for achieving higher production and also for establishing new industries (Table 3.3).

3.3. STATUS OF COMMAND AREA (existing) AREA IN HA

Sl. No	Name of the Command Area	Command Area			Total developed area	Total un-developed area
		Total Area	Developed Area	Un-developed Area		
1	Vanivilas Sagar	12135	12135	0	12135	0
2	Gayathri Dam	2305	2305	0	2305	0
3	Upper Bhadra Project	154245	0	154245	0	154245
Total		**168685**	**14440**	**154245**	**14440**	**154245**

3.4. Existing type of irrigation:

The district has good length of canals created long back considering the potential of irrigation through reservoirs and also tanks. Unfortunately, the district receives low rainfall and due to non-filling up of reservoirs and tanks, the irrigation has become only through tube wells (No. 48,714) mainly developed by the farmers themselves. However, the future of the district is bright due to the proposal of the

Government for bringing an area of 1.54 lakh ha under irrigation in 4 taluks of the district through Upper Bhadra Project, which is likely to be, completed shortly (Table 3.4).

3.4. Status of Existing type of irrigation (ha)

Sl. No.	Name of the Taluk	Source of Irrigation	Surface Irrigation (1)				
			Canal Based		No. of Tanks / Ponds / Reservoirs		
			Govt. Canal	Community/Pvt. Canal	Community Ponds Including Small	Individual / Pvt. Ponds	Govt, Reservoir / Dams
1	Chitradurga	16	21.6	-	44	-	-
2	Challakere	32	54.35	-	72	-	-
3	Hiriyur	16	7.45	-	57	-	2
4	Holalkere	32	14.05	-	57	-	-
5	Hosadurga	36	9.56	-	59	-	-
6	Molakalmur	7	13.33	-	20	-	-
Total		**139**	**120.34**	**-**	**309**	**-**	**-**

3.5. Water available from various sources:

The surface water available from canals (major and medium), minor irrigation (tanks maintained by Zilla Panchayats and minor irrigation Department), amounts to 0.1055335 BCM at present, where as 0.50364 BCM of water is available from underground (wells) in the district (as per CGWB, 2013). Regarding net underground water recharge, relatively higher amounts of water is available in taluks of Hiriyur, Holalkere and Hosadurga as compared to Chitradurga and Molakalmuru taluks. The surface water available from canals (Vanivilas sagar, Vedavathi river, Shanthisagar) and tanks is 0.1055335 BCM, which is used for irrigation and drinking purposes. The total water available from these two sources is 0.6091735 BCM. Of the total water available from various

sources (0.6091735 BCM), major water of 0.50364 BCM comes from underground water recharge annually and 0.1055335 BCM from tanks and canals (Table 3.5, Fig. 3.2).

Table 3.5 Total water available from various sources in Chitradurga district

Taluks	Net underground water available, BCM (CGWB)#	Surface water from canals and tanks, BCM – 2015##	Total water available, BCM (Col. 1+2+3)
	2	3	4
Challakere	0.08777	0.1055335	0.6091735
Chitradurga	0.05593		
Hiriyur	0.1146		
Holalkere	0.0932		
Hosadurga	0.0899		
Molakalmuru	0.06224		
Total	**0.50364**	**0.1055335**	**0.6091735**

- Central Underground Water Board Booklet – 2013 – Chitradurga district;

##- Water available from existing canals of Vani Vilas Sagar, Vedavathi river, Shanthisagar and Gayatri dam as well as tanks in different taluks for irrigation and drinking purposes

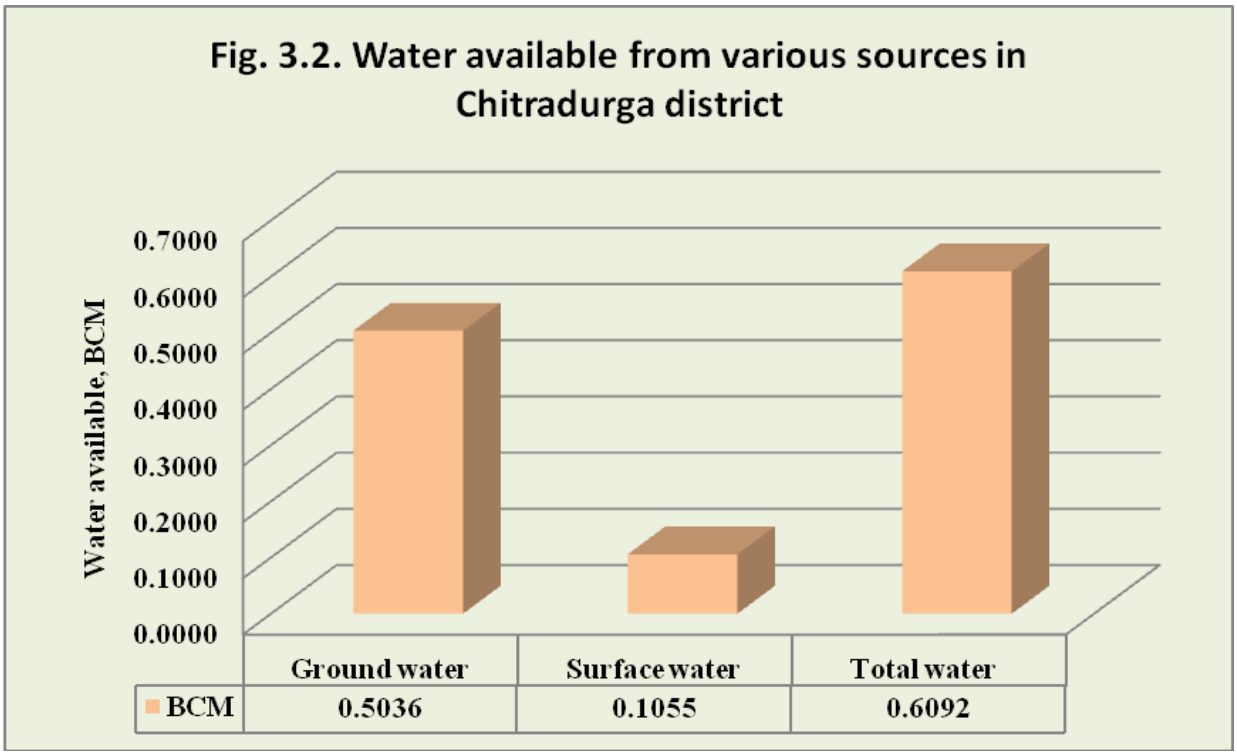


Fig. 3.2. Water available from various sources in Chitradurga district
Water available, BCM
0.7000
0.6000
0.5000
0.4000
0.3000
0.2000
0.1000
0.0000
Ground water
Surface water
Total water
BCM
0.5036
0.1055
0.6092

CHAPTER IV.

WATER REQUIREMENT/ DEMAND - CHITRADURGA DISTRICT

Water is a precious natural resource provided by nature to mankind for usage in various activities. Life does not exist without water. All living organisms depend on water for performing various vital functions for survival. Major portion of water is used for agriculture all over India and that too in Karnataka. Although water is a renewable resource, it is quite dynamic and becoming scarce due to spatial and temporal variation in rainfall. Water is needed to ensure food security, feed livestock, maintain organic life (sustain lifestyle of human beings, living creatures, conserve biodiversity and environment), industrial use, etc. However, with reckless abuse and increasing demand due to growing population and undesirable lifestyle, many states are facing severe water crisis. It is not only due to rapid population growth alone, but also on account of many other factors such as rise in per capita water demand arising out of continuous upward movement of living standards, increased reliance on irrigated agriculture, massive urbanization and industrialization etc. The available utilizable water resource of the country is considered insufficient to meet all future needs. Under such a situation, in order to face the challenge of water deficit, apart from accelerating pace of development of available utilizable water resources, all out efforts, on the part of people from every walk of life, would need to be made to conserve every drop of water and improve efficiency in all areas of water use.

The National Commission on Agriculture in 1976 estimated water resources in the country for 1974 and projected for 2000 and 2025 based on certain empirical formulae and assumptions related to runoff characteristics of soil, rainfall events and vegetation cover. India is a vast country with a geographical area of 328 Mha and receiving annual precipitation of 1194 mm. This amounts to availability of 400 Mha-m (million hectare meter) of water to

India. Out of this, 17.5% goes as immediate evaporation (70 Mha-m), 53.8% as precipitation into soil (215 Mham) and 28.7% as surface runoff (115 Mha-m, which includes 10 Mha-m as snowfall). Further total precipitation received on the soil is further divided into 41.3% (165 Mha-m) as soil moisture available for crops and 12.5% as ground water (50 Mha-m). Water is lost through evaporation to an extent of 20% in medium and major reservoirs and 40% in tanks. This assumption is followed for Karnataka (Bhaskar *et al*., 2016).

Karnataka has total geographical area of 19.05 million ha receiving an annual precipitation of 1133.3 mm (average of 55 years from 1960 to 2014). About 71% of rainfall is received during south west monsoon (June to September), while north monsoon contributes 17% (October to December) and early showers by 12%. The south west monsoon sustains agricultural activity in most parts of the state, as large proportion of agriculture is rainfed farming. Taking geographical area and rainfall into consideration, available water due to precipitation is 21.76 Mha-m to Karnataka (215.2864 Billion cubic m or 7688.8 TMC). Following NCA 1976 recommendation, out of 215.2864 BCM (7688.8 TMC) of water, 53.8% percolates into soil (115.822 BCM or 4136.57 TMC), 17.5% as immediate evaporation loss (37.674 BCM or 1345.54 TMC), and 28.7% as surface water runoff (61.7876 BCM or 2206.69 TMC).

The average annual rainfall in Karnataka is 1133.3 mm. The state is divided into four meteorological divisions viz. North Interior Karnataka, South Interior Karnataka, Malnad and Coastal Karnataka. Coastal Karnataka with an average annual rainfall of 3456 mm is one of the rainiest regions in the country. Contrasting this, the region of South Interior Karnataka and North Interior Karnataka receive only 1286 and 731 mm of average annual rainfall. (https://en.wikipedia.org/wiki/Rainfall_in_Karnataka).

With a surface water potential of about 102 kilometers, Karnataka accounts for about six percent of the country's surface water resources. Around 60% of this is provided by the west flowing rivers while the remaining comes from the east flowing rivers. There are seven river basins in all formed by the Godavari, Cauvery, Krishna, the west-flowing rivers, North Pennar River, South Pennar, and Palar

(http://waterresources.kar.nic.in/river_systems.htm);
(https://en.wikipedia.org/wiki/Geography_of_Karnataka).

Chitradurga district has a total geographical area of 770,702 ha receiving an annual precipitation of 59.25 cm. Holalkere taluk receives higher rainfall of 71.8 cm, followed by Chitradurga, Hosadurga, Hiriyur, and Molkalmuru taluks (54.15 to 65.69 cm), while it is lower in Challakere taluk (46.45 cm). Most of rain (51%) is received during south west monsoon (June to September). The south west monsoon sustains agricultural activity in most parts of the state, as large proportion of agriculture is rainfed farming. Taking geographical area and rainfall into consideration, available water due to precipitation is 450,996.43 ha-m to Chitradurga (4.509964 BCM). Following NCA 1976 recommendation, out of 4.509964 BCM of water, 53.8% percolates into soil (2.42636 BCM), 17.5% as immediate evaporation loss (0.789244 BCM), 28.7% as surface water runoff (1.29436 BCM) and 12.5% as underground water (0.789244 BCM).

4.1. Water Demand for domestic need:

A number of factors like climate, culture, food habits, work and working conditions, level and type of development, and physiology determine the requirement of water. The per capita water requirement in urban areas is more than that in the rural areas. As per the Bureau of Indian Standards, IS:1172-1993, a minimum water supply of 200 litres per capita per day (lpcd) should be provided for domestic consumption in cities with full flushing systems. IS:1172-1993 also mentions that the amount of water supply may be reduced to

135 lpcd for the LIG and the economically weaker sections (EWS) of the society and in small towns [Modi, 1998]. However, in the Tenth Plan (2002-07), the cities with planned sewerage systems are classified into two groups based on population, i e, metropolitan or megacities (minimum water supply level is 150 lpcd) and non-metropolitan cities (135 lpcd) [Government of India 1997, 2002]. Over and above the aforesaid demand, 15% losses may be allowed for determining the quantity of raw water required.

During 2015, water requirements for domestic use in taluks of Chitradurga and Challakere are relatively higher (0.018648 to 0.021823 BCM), while it was lower in taluks of Hosadurga, Holalkere and Molakalmuru (0.007189 to 0.011544 BCM. This water requirement in these taluks corresponded to the prevalent population. For district as whole, water demand is 0.084793 BCM in 2015 (Table 4.1). With projected growth of population of 9.33% during 2011 to 2020, the domestic water requirements in taluks of Chitradurga and Challakere would be relatively higher (0.019467 to 0.023070 BCM), followed by taluks of Hiriyur (0.015306 BCM) (Table 4.1, Fig. 4.1).

Thus, domestic water requirement is projected at 0.088777 BCM in 2020 from the present consumption level of 0.084793 BCM during 2015 (Table 4.1, Fig. 4.1).

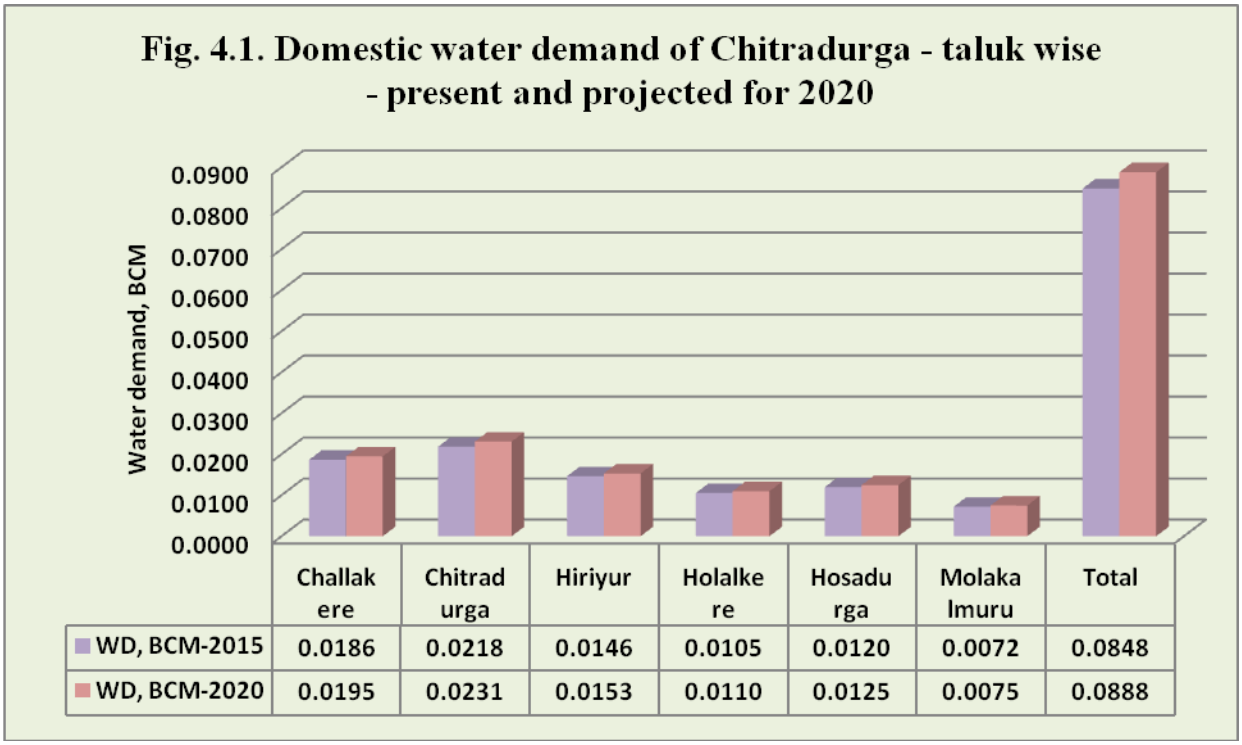


Table 4.1. Domestic water requirement/Demand of Chitradurga district - present and projected for 2020

	Blocks	Population in 2011	Water demand - 2011, BCM	Population in 2015	Water demand in 2015, BCM	Projected population, 2020	Projected water demand by 2020, BCM
1	Challakere	365,784	0.018024	378,448	0.018648	395,069	0.019467
2	Chitradurga	423,879	0.020887	442,875	0.021823	468,182	0.023070
3	Hiriyur	286,133	0.014099	296,698	0.014620	310,622	0.015306
4	Holalkere	207,260	0.010213	213,982	0.010544	222,764	0.010977
5	Hosadurga	235,116	0.011585	242,903	0.011969	253,090	0.012471
6	Molakalmuru	141,284	0.006962	145,902	0.007189	151,938	0.007487
TOTAL		**1,659,456**	**0.081770**	**1,720,808**	**0.084793**	**1,801,665**	**0.088777**

Water requirement for human being - 135 liters/head/day, lphd;
Domestic Water requirement/Demand in Billion cubic meter, BCM
= (Population X Water requirement, 135 lphd X 365 days)/ (1000 liters X 1,000,000,000)
Assumption: Increase in population during 2011 - 2021 is 9.33% similar to as that of decadal growth rate of population of 9.33% observed between 2001-2011.
{Source: Chitradurga district at a glance 2013-14, Zilla Panchayat, Chitradurga}

4.2. Water requirement for crops:

Field/horticultural/plantation crops grown in Chitradurga district are paddy, maize, groundnut, sunflower (both in Kharif & rabi), cotton, bajra, Tur, black gram, green gram, cowpea, avare, safflower, horse gram, castor, sesamum (in Kharif only), Bengal gram, wheat, (rabi only) (under agriculture), fruit crops, and vegetable crops. For calculation of water requirement of irrigated crops, following methodology and some assumptions have been used based on the recommendations of the NCA, 1976 and methodology suggested by Bhaskar et al. (2016).

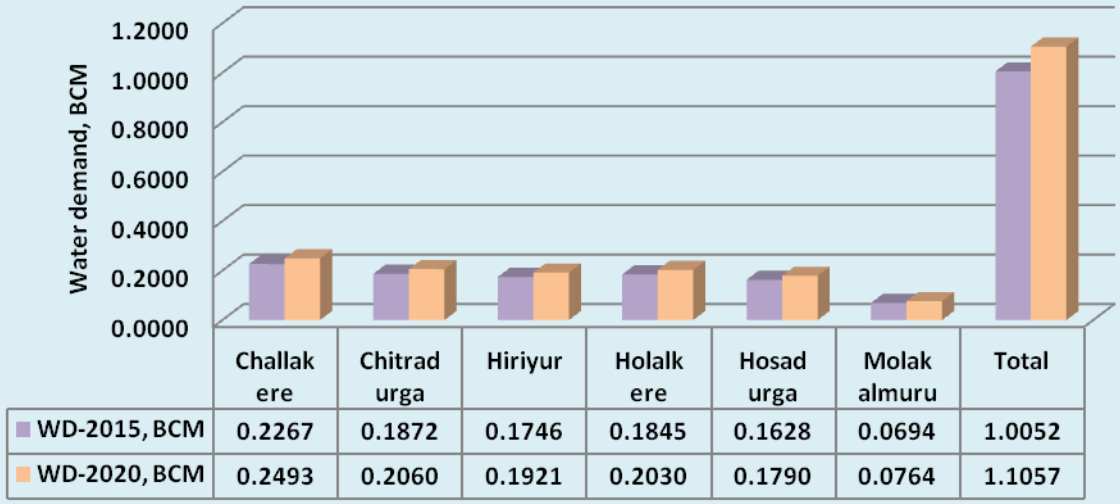
Irrigation water requirement considered for calculation purpose for various crops are transplanted rice (100 cm during Kharif, 125 cm during rabi), maize - 60 cm, bajra - 40 cm, cotton - 65 cm, red gram - 70 cm, groundnut - 45 cm, sunflower/other oilseeds - 40 cm, green gram/other pulses - 40 cm, vegetable crops - 50 cm, and fruit crops - 60 cm. From this water requirement of various crops and the area of the crops grown under irrigation, irrigation water requirement for crops has been worked out.

Assumption - Rain water accounted for crop use is 50% of total rainfall occurring during the cropping season in Chitardurga district, considering the soil type (vertisols, sandy clayey soils) and the intensity of rain. Rain water used for rainfed crops' growth is calculated for working out water requirement of rainfed crops.

Net water requirement of rainfed field crops is relatively higher (0.380605 BCM) in view of large area of various crops grown (maize, groundnut) in Challakere, Chitradurga, Holalkere and Hosadurga taluks. Whereas, net water requirement of irrigated crops is 0.53041 BCM in view of large under crops (maize, groundnut, cotton, sunflower) in taluks of Challakere,

Hiriyur, Holalkere and Chitradurga. Water demand for total horticultural crops is 0.0942133 BCM for Chitradurga district, of which major share goes to vegetable crops (0.05550 BCM), followed by fruit crops (0.043759 BCM). Further, water demand of total horticulture crops is more in Challakere (0.023639 BCM) and Holalakere taluks (0.019676 BCM) as compared to Molakalmuru taluk (0.006723 BCM). The projected water demand for total crops is also worked out for 2020, keeping 10% increase in irrigated area due to efficient rain water use, more under area and other means. For Chitradurga district, the projected total water demand for crops is 1.105735 BCM by 2020 as compared to the present demand of 1.005213 BCM), which amounts to 10% increase (Table 4.2, 4.2a, Fig. 4.2, 4.2a).

Fig. 4.2. Water demand of total crops - taluk wise in Chitradurga district, 2015 and projected for 2020



	Challakere	Chitradurga	Hiriyur	Holalkere	Hosadurga	Molakalmuru	Total
WD-2015, BCM	0.2267	0.1872	0.1746	0.1845	0.1628	0.0694	1.0052
WD-2020, BCM	0.2493	0.2060	0.1921	0.2030	0.1790	0.0764	1.1057

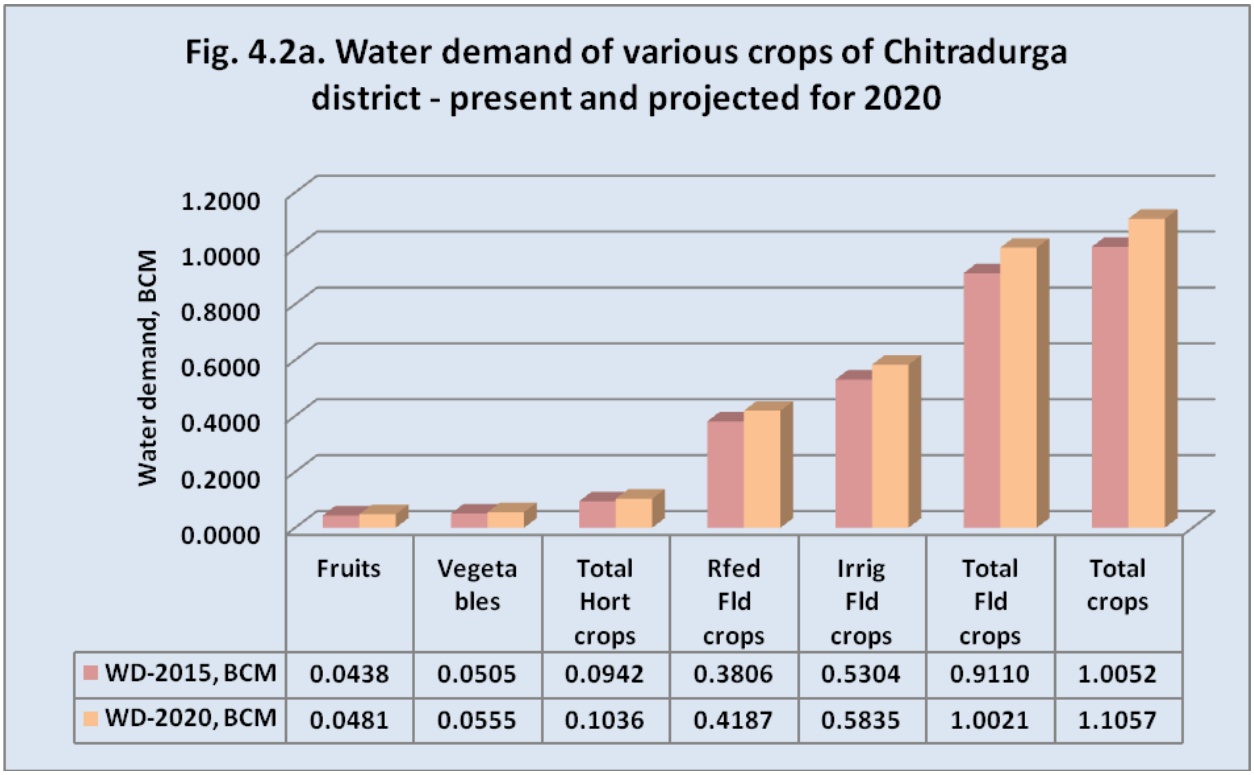


Table 4.2. Water requirement of horticulture and agricultural crops (BCM) in Chitradurga district - 2014-15

Taluks	Fruit crops	Vegetables	Total - Horticulture crops	Rainfed field crops	Irrigated field crops	Agriculture crops (Irrigated + Rainfed)	Total crops
	Net water requirement, BCM						
Challakere	0.004225	0.019414	0.023639	0.086374	0.116657	0.20303	**0.226669**
Chitradurga	0.005061	0.011651	0.016712	0.088252	0.082270	0.17052	**0.187232**
Hiriyur	0.008264	0.004168	0.012432	0.028905	0.133255	0.16216	**0.174592**
Holalkere	0.006540	0.008491	0.015031	0.075628	0.093884	0.16951	**0.184541**
Hosadurga	0.016777	0.002900	0.019676	0.073424	0.069659	0.14308	**0.162756**
Molakalmuru	0.002893	0.003830	0.006723	0.028022	0.034681	0.0627	**0.069423**
Total	**0.043759**	**0.050454**	**0.094213**	**0.380605**	**0.530405**	0.9110	**1.005213**
Projected for 2020 - 10% increase	**0.048135**	**0.055499**	**0.103635**	**0.418666**	**0.583446**	**1.0021**	**1.105735**

Water requirement for crops: Fruit crops - 60 cm, Vegetable crops - 50 cm, Spices - 60 cm and Plantation crops - 70 cm; For rainfed crops – rainfall is taken for calculation of water requirement. Irrigation water requirement, ha - cm = Area of the crop, ha X Water requirement of the crop, cm; One ha-cm = 100,000 liters or 100 cubic meters; Source: Chitradurga district at a glance 2013-14
Irrigation water requirement in BCM = {(Irrigation water requirement, ha-cm X 100)/100,000}

Table 4.2a. Water requirement of agricultural crops (BCM) in Chitradurga district - 2014-15

Taluks	Cereals	Pulses	Oilseeds	Cotton	Total Rainfed crops	Total irrigated crops	Total crops (Rainfed + irrigated)
	Net water requirement, BCM						
Challakere	0.00712947	0.011241	0.067335	0.00066812	0.086374	0.088386	0.20303
Chitradurga	0.07306927	0.005752	0.0068286	0.00260225	0.088252	0.053421	0.17052
Hiriyur	0.01074097	0.003582	0.0127389	0.00184337	0.028905	0.091874	0.16216
Holalkere	0.06879034	0.003822	0.0022782	0.00073769	0.075628	0.060190	0.16951
Hosadurga	0.0587878	0.01176	0.0026258	0.00025028	0.073424	0.051068	0.14308
Molakalmuru	0.00350651	0.001447	0.0226836	0.00038519	0.028022	0.025410	0.0627
Total	**0.22202435**	**0.037604**	**0.1144902**	**0.00648691**	**0.380605**	**0.370348**	0.9110
Projected for 2020 - 10% increase	**0.24422679**	**0.04136**	**0.12594**	**0.0071356**	**0.418666**	**0.407384**	**1.0021**

Water requirement for irrigated crops: Fruit crops - 60 cm, Vegetable crops - 50 cm, Spices - 60 cm and Plantation crops - 70 cm; For rainfed crops – rainfall is taken for calculation of water requirement.

Net water requirement, cm = Irrigation water requirement, cm - Rainfall water available for crop use (50% of rainfall during Kharif/Rabi/Summer season for seasonal crops or 50% of rainfall during the year for perennial crops/plantation/fruit crops, cm); Irrigation water requirement, ha - cm = Area of the crop, ha X Water requirement of the crop, cm

One ha-cm = 100,000 liters or 100 cubic meters;

Irrigation water requirement in BCM = {(Irrigation water requirement, ha-cm X 100)/1,000,000,000}

{Source: Chitradurga district at a glance 2013-14, Zilla Panchayat, Chitradurga**}**

4.3. Water requirement of Livestock:

Livestock sector plays a significant role in rural economy of India. It contributes to 5% of total domestic gross product (DGP) and one fourth of total agricultural GDP (AgGDP). Livestock sector is unique in terms of providing employment opportunity particularly to two third of women workforce in India towards animal rearing. Livestock is an integral part of mixed farming of Indian agriculture. Both indigenous cattle and buffalo population registered an annual decline of 4.5 per cent and 4.3 per cent respectively between 2007 and 2012 census periods, while that of crossbred cattle increased by 5.8 per cent (https:www/Uttara%20Kannada/Livestock%20census%20Karnataka.pdf).

Besides, contributing food and inputs (draught energy and manure) for crop

production, livestock are important as savings or investments for the poor household and provide food security or insurance through various ways in different production systems. Rainfed regions support the highest number of livestock units. Except buffalo and pigs, more than half of all livestock species (52.3 to 60.1%) are concentrated in the rainfed region. Even 43.1% of the total buffalo and 44.7% of pigs are reared in rainfed region.

Irrigated region accounts for higher proportion of buffalo (43.1%) and except sheep it accounts for second highest population of all major livestock species. although the resource degradation in rainfed areas has been observed, various support programmes of the government are encouraging mixed farming to stabilize the income of the resource poor farmers of arid and semi-arid regions of the state. Considering these facts, increase in total population of the livestock has been maintained at 5% in 2020 as compared to earlier census of 2012 (Anjani Kumar and Singh, 2008).

Water requirement for livestock and other animals namely - indigenous cattle, cross bred cattle, draft animals/bulls/others, sheep, goats, pigs, duck, and poultry, have been calculated separately with the corresponding population for 2012. The projected water requirement for livestock population at 2020 has also been calculated separately for all live stocks. The total water requirement for live stocks for 2007 and projected for 2020 is provided taluk wise in Table 4.3.

Total population of livestock and other animals in Chitradurga district is 5048,127 during 2007 and their water requirement is 0.0107319 BCM. Considering the increase in the population of livestock at 15% from 2007 to 2020, their water demand would be 0.01234169 BCM with corresponding population of 5805,346 (Table 4.3, Fig. 4.3). Water demand of livestock is more in Hosadurga and Challakere taluks, followed by Hiriyur and Holalkere, while it is very less in Molakalmuru taluk, as reflection of livestock population in these taluks.

Table 4.3. Water requirement of livestock and other animals in Chitradurga district in 2007 and projected for 2020

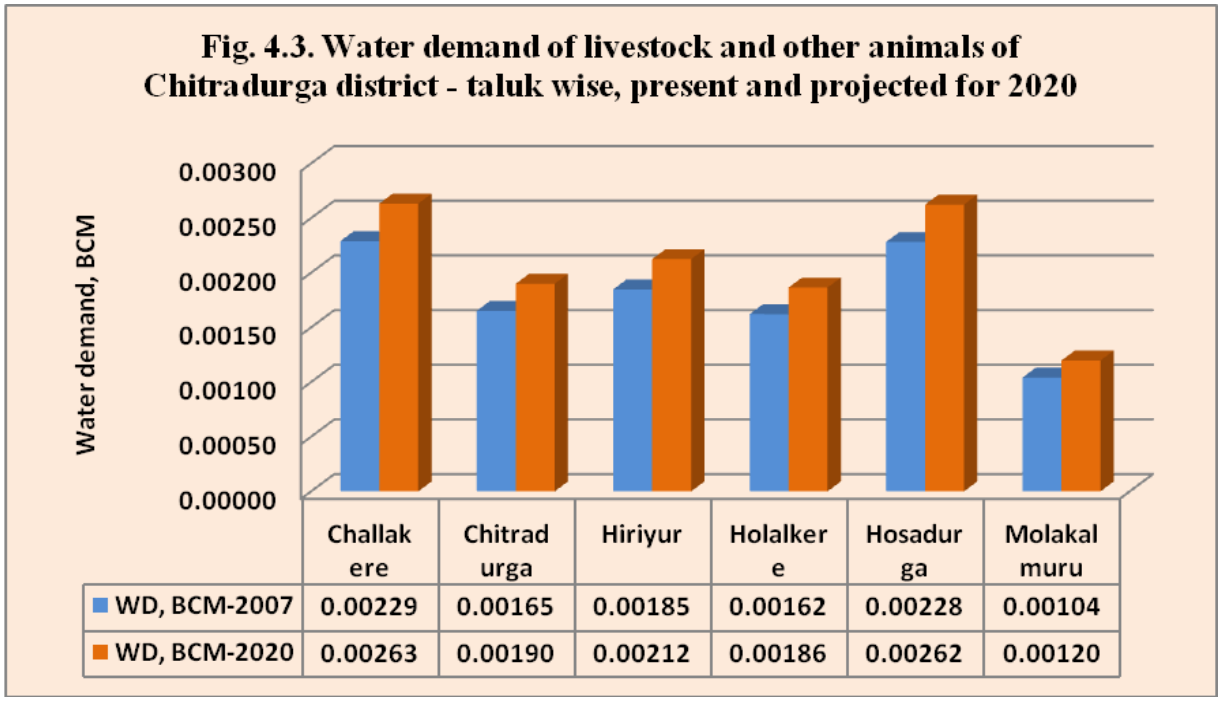
Taluk	Water requirement of livestock, Billion cubic meters (BCM)			
	Population, 2007	Present Water requirement, BCM	Projected Population, 2020	Water requirement for 2020, BCM
Challakere	1173,693	0.002289	1349,747	0.002632
Chitradurga	245,351	0.001652	282,154	0.001899
Hiriyur	576,901	0.001848	663,436	0.002125
Holalkere	215,425	0.001622	247,739	0.001865
Hosadurga	1110,111	0.002281	1276,628	0.002624
Molakalmuru	1726,646	0.001041	1985,643	0.001197
Total	**5048,127**	**0.010732**	**5805,346**	**0.012342**

Water requirement for various livestock: liters/head/day, lphd: Indigenous cattle - 36 lit; Cross bred cattle/Buffalo - 55 lit; Sheep/Goat - 3.5 lit; Pigs - 6.3 lit; Poultry - 0.3 lit; Dog - 1.8 lit; Duck - 1.0 lit; Others (Bull/He Buffalo/Others - 55 lit

Water requirement is calculated based on water requirement for various livestock(s), BCM = {(Population of livestock * Water requirement for various livestock, lphd X 365 days)/1000*1000,000,000)}

Livestock population is projected to be increased by 15% between 2007 to 2020 census, due to encouragement in the government policies and more support for integrated farming systems. Though cattle population has decreased particularly in favour of indigenous cattle, this reduction is compensated with increase in the density of cross bred animals and other animals.

(Anjani Kumar and Singh, D.K. 2008. Livestock production systems in India: An appraisal across agro-ecological regions. Indian Journal of Agricultural Economics, 63(4): 577-597); Source: Deputy Director, Department of Animal Husbandry and Veterinary Services, Chitradurga, 2013-14



4.4. Water demand for Industry

Surface water is the major source of water for the industries in India (41%) followed by groundwater (35%) and municipal water (24%). With greater demand for water, water availability to Industries is becoming scarce and has to invest more for getting water. In addition, industries have to adopt conservation measures and reuse of water after treatment. The water available from waste water treatment is being used for gardening.

While inadequate availability of water is the major risk facing the industries (37%), others agree that poor water quality is another major risk in the running of business (14%). Sectors like pharmaceuticals, power, food processing and agriculture feel the brunt of poor water quality. High costs for obtaining water are hindering the business interest of smaller industries and the ones which are located in the drier regions of the country. Around 14 per cent of the respondents also feel that environmental changes over the past few decades have had an impact on freshwater availability. A realization is gradually emerging that rectifying measures needs to be taken by industries to augment freshwater through rainwater harvesting and wastewater treatment and reuse.

Indian industry is becoming responsive to the fact that it should be the role of every user to undertake measures for water conservation. It is desirable that the shared responsibility of companies across sectors is to join hands with communities and governments to work on programmes for water conservation, recharge and wastewater treatment (FICCI, 2011).

In Chitradurga district, there are 4 large scale, 18 medium scale and 10843 small scale industries. Here, large scale industries are located in Challakere, Hosadurga, and Hiriyur, where as medium scale industries are distributed in all taluks except Molakalmuru. However, small scale industries

are distributed in all taluks, being more in Chitradurga and Challakere taluk. Total water demand at present (2015) for all industries put together is 0.00200664 BCM, of which major share goes to small scale industries being 0.00195174 BCM (97.3%). The next industry which require huge water is medium scale industries, amounting to 0.0000405 BCM (2%) (Table 4.4, 4.4a, Fig. 4.4).

Table 4.4 Water demands of Industries in Chitradurga district - present and projected for 2020

Taluks	Water demand at Present, BCM			
	Large (4)	**Medium (18)**	**Small (10843)**	**Total**
Challakere	0.0000036	0.0000212	0.000424113	0.000448913
Chitradurga	0	0.0000068	0.000572445	0.000579245
Hiriyur	0.0000036	0.0000099	0.000336285	0.000349785
Holalkere	0	0.0000012	0.000201615	0.000202815
Hosadurga	0.0000072	0.0000014	0.000236941	0.000245541
Molakalmuru	0	0	0.000180341	0.000180341
Total	**0.0000144**	**0.0000405**	**0.00195174**	**0.00200664**
Taluks	**Water demand for 2020, BCM**			
	Large (4)	Medium (18)	Small (10843)	Total
Challakere	0.000018	0.000106	0.002120566	0.002244566
Chitradurga	0	0.000034	0.002862227	0.002896227
Hiriyur	0.000018	0.00005	0.001681424	0.001749424
Holalkere	0	0.000006	0.001008074	0.001014074
Hosadurga	0.000036	0.000007	0.001184706	0.001227706
Molakalmuru	0	0	0.000901704	0.000901704
Total	**0.000072**	**0.000203**	**0.009758701**	**0.010033701**

Source: Joint Director, District Industries Centre, Chitradurga

Table 4.4a. Water demand of Industries (category wise) in Chitradurga district - Present and future demand by 2020

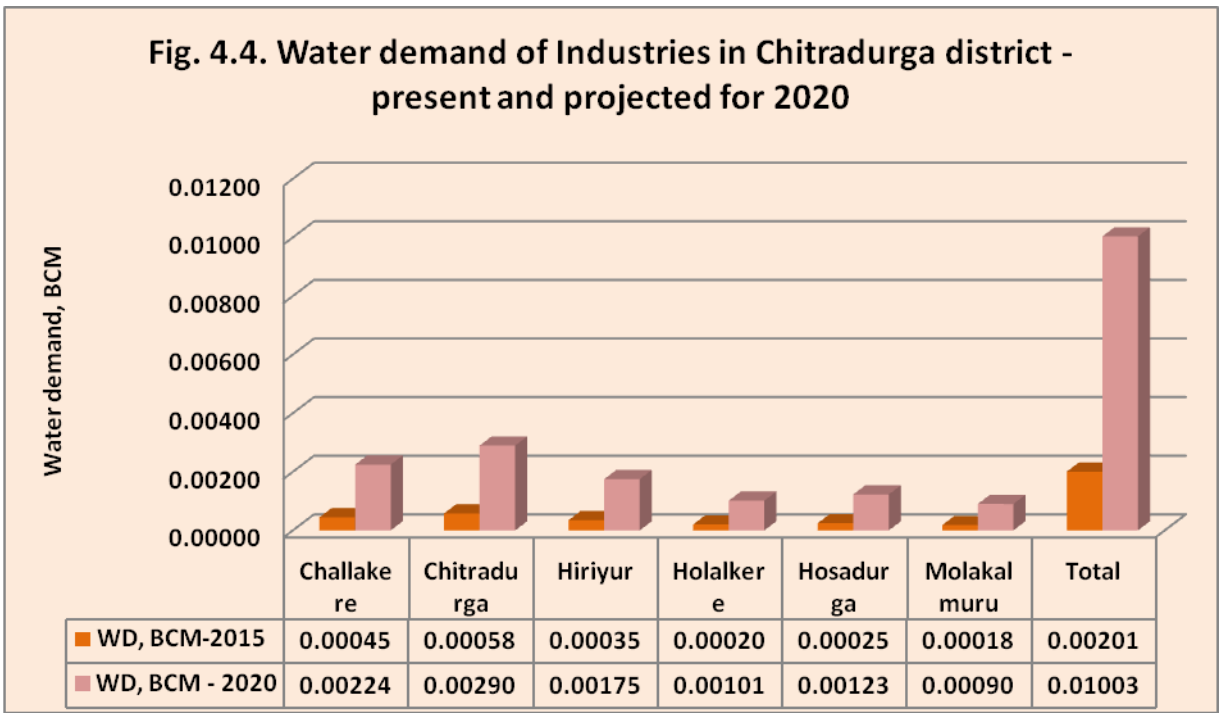
	Name of the Industry	Water demand, BCM	
		2015	2020
	a) Large scale Industries		
1	Madarass Cement Pvt. Ltd., Mattodu, Hosadurga	0.0000072	0.000036
2	R.K. Power green Pvt. Ltd., Challakere	0.0000036	0.000018
3	V.S.L. Steel Limited, Paramenahalli, Hiriyur	0	0
4	Entire ceramic Pvt. Ltd., Maradihalli, Hiriyur	0.0000036	0.000018
	Total	**0.0000144**	**0.000072**
	b) Medium Scale Industries		
1	Prakash Spong Iron & Power Pvt. Ltd., Heggere Village, Challakere	0.0000054	0.000027
2	Habib Protection & Fats Extracts, Metikurke, Hiriyur	0.0000036	0.000018
3	SKM Animal feeds & Foods Pvt. Ltd., Jattalahalli, Chitradurga	0.0000031	0.000016
4	Basaveshwara Rice Mill, GR Halli, Chitradurga	0.0000012	0.000006
5	Gurudeva Industries, GR Halli, Chitradurga	0.0000012	0.000006
6	Venkateshwara Rice Mill, Challakere	0.0000014	0.000007
7	Ananth Spinning Pvt. Ltd., Kelagote, Chitradurga	0.0000013	0.0000065
8	Abhishake Solvent Pvt. Ltd., Challakere	0.0000072	0.000036
9	Golden Feeds, JG Halli, Hiriyur	0.0000032	0.000016
10	Nanda Feeds, Metikurke, Hiriyur	0.0000031	0.0000155
11	Ananatha Refineries, Challakere	0.0000036	0.000018
12	Amruth Organics, Malladihalli, Holalkere	0.0000012	0.000006
13	Prakash Co. Coir pith, Kondihalli, Hosadurga	0.0000014	0.000007
14	M.K. Agro private Ltd., Challakere	0.0000036	0.000018
15	Sun Ray Industries, Rampura, Molakalmuru	0	0
16	Murugarajendra Oil Industries, Chitradurga	0	0
17	Suvarna Karnataka Cement Pvt. Ltd., Kanchipura, Hosadurga	0	0
18	B.M. Cement Private Ltd., Srirampura, Hosadurga	0	0
	Total	**0.0000405**	**0.0002025**
	c) Small Scale Industries		
	10843 units	0.00195174	0.0097587
	Total	**0.00200664**	**0.0100332**

Source: Joint Director, District Industries Centre, Chitradurga

Here rain water harvesting measures are to be created in the premises of the industries to augment the water demand and also to recharge the bore well.

It is necessary to augment the requirement of fresh water by undertaking wastewater treatment and using it for horticulture, gardening, ash handling, washing of ore, flushing toilets, cleaning, fire-fighting and dust suppression activities**.** The industries must see a merit and an economically value in reusing wastewater for purposes where water quality is not an important criterion. There is need to take up water auditing to understand the complete water use pattern in their operations and look for water saving measures.

4.5. Water demand for power generation:



In Chitradurga district, there is no proposal for power generation. Hence, there is no requirement for water to generate power (Table 4.5).

Table 4.5 Water demand for power generation in Chitradurga district

Block	Name of the power generating unit/ Power requirement	Present Water demand, BCM	Proposed for new power generating unit	Water demand at 2020, BCM
	None proposed			

4.6. Water demand for other public purposes:

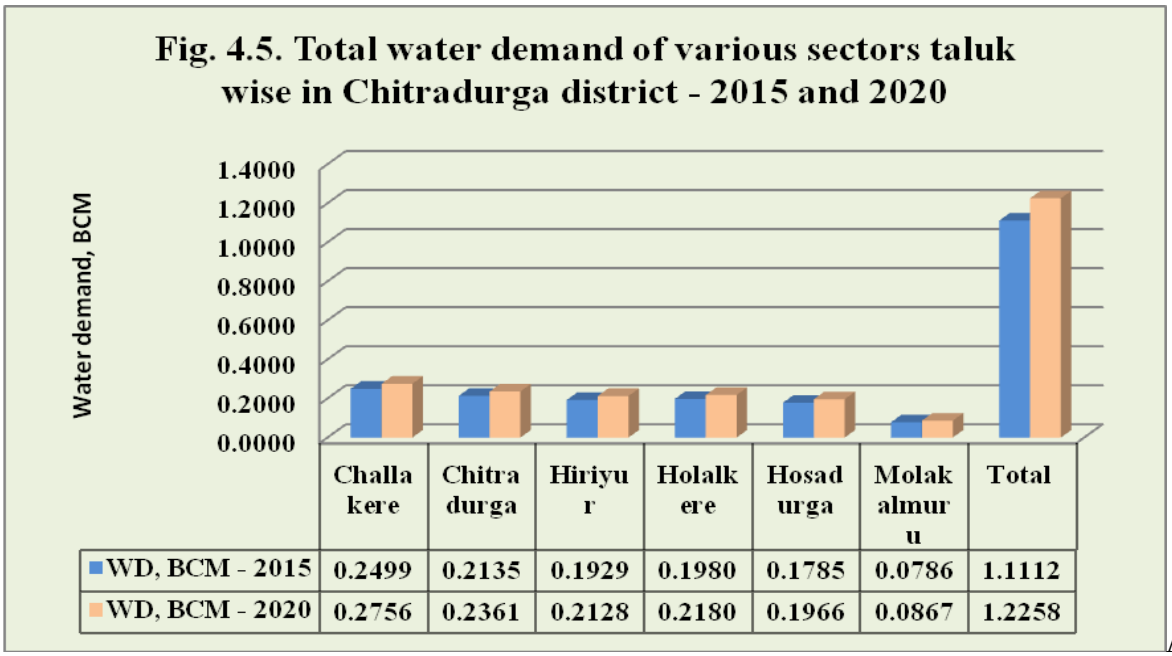
Water is also required to be provided in public places like schools, colleges, offices, public toilets, bus station, railway stations, theaters, hostels, hotels, restaurants, hospitals, nurses' homes and medical quarters, community hall and all other public places. Here, it is very difficult to work out the water demand for all these places, which require many parameters - number of person involved in each activity, type facility available, etc. It is assumed that 10% of domestic requirement is considered as water demand for these public places. The water demand for these public places is amounted to 0.0084793 BCM in 2015, where as the total amount would be 0.0088777 BCM by 2020 (Table 4.6, Fig. 4.6).

4.7. Total water demand of the district for various sectors:

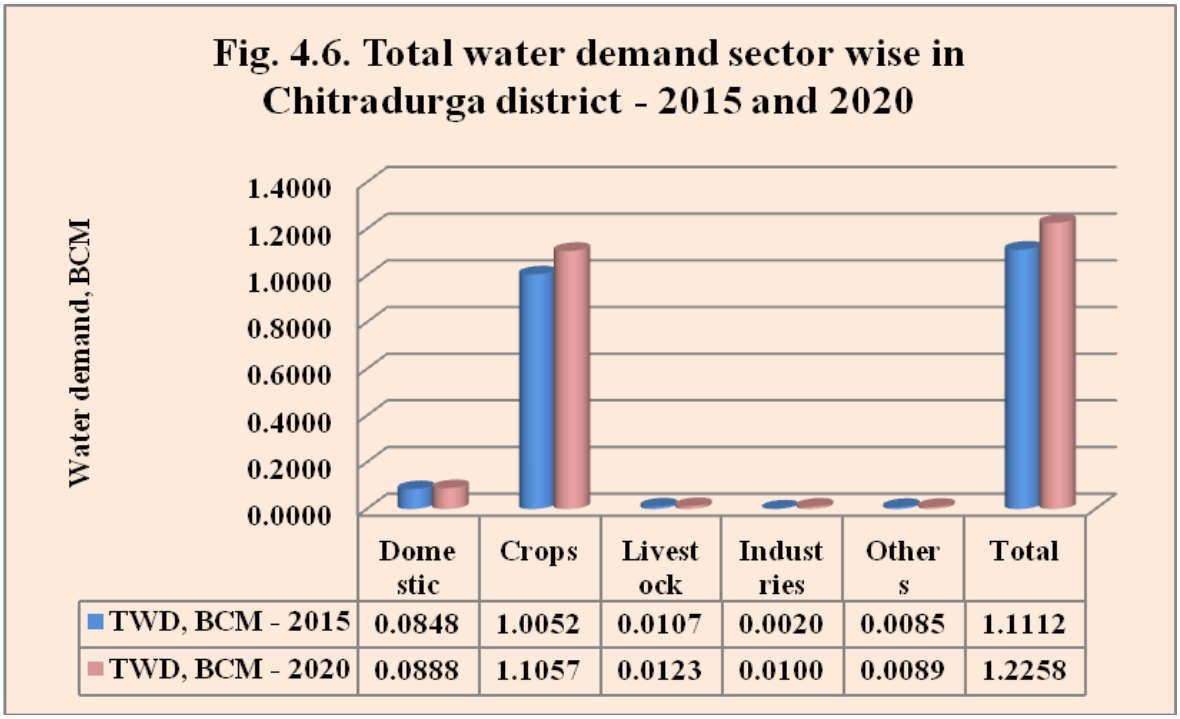
At present, water demand for all purposes in Chitradurga district is 1.11122 BCM, of which major share goes to crops' demand of 1.00521 BCM (90.5%). The next share of water demand is for domestic amounting to 0.0847928 BCM (7.6%). The water demand of livestock, industries and other public purposes is around 1.9% (0.021217821 BCM) of the total (Table 4.6, Fig. 4.5, 4.6). The projected water demand of various sectors for 2020 followed the same trend of 2015 and would be to the tune of 1.22577 BCM during 2020 (Fig. 4.6).

Table 4.6. Total water demand for various sectors in Chitradurga district - present and projected demand for 2020

Taluks	Water demand at present (2015), BCM						
	Domestic	Crops (irrigated + rainfed)	Livestock	Industries	Power genera-tion	Other public places	Total water demand, BCM
Challakere	0.018648	0.226669	0.002289	0.0004489	0	0.001865	**0.24992**
Chitradurga	0.021823	0.187232	0.001652	0.0005792	0	0.002182	**0.21347**
Hiriyur	0.014620	0.174592	0.001847	0.0003498	0	0.001462	**0.19287**
Holalkere	0.010544	0.184541	0.001621	0.0002028	0	0.001054	**0.19796**
Hosadurga	0.011969	0.162756	0.002281	0.0002455	0	0.001197	**0.17845**
Molakalmuru	0.007189	0.069423	0.001041	0.0001803	0	0.000719	**0.07855**
Total	**0.084793**	**1.005213**	**0.010732**	**0.0020066**	**0**	**0.008479**	**1.11122**
Taluks	**Water demand for 2020, BCM**						
Challakere	0.019467	0.249336	0.002632	0.0022446	0	0.001947	**0.27563**
Chitradurga	0.023070	0.205955	0.001899	0.0028962	0	0.002307	**0.23613**
Hiriyur	0.015306	0.192051	0.002125	0.0017494	0	0.001531	**0.21276**
Holalkere	0.010977	0.202995	0.001865	0.00101411	0	0.001098	**0.21795**
Hosadurga	0.012471	0.179032	0.002623	0.00122771	0	0.001247	**0.19660**
Molakalmuru	0.007487	0.076365	0.001197	0.00090170	0	0.000785	**0.08674**
Total	**0.088777**	**1.105735**	**0.012342**	**0.01003370**	**0**	**0.008878**	**1.22577**



Assumption - Increase in population is 9.3%, crops by 10% between 2011 to 2020, livestock by 15% between 2007 to 2020, Industrial uses - 8.8% during 2015 to 2020, Power generation - Not proposed



4.8. Water budgeting:

Water available from surface water (Major, medium and Minor irrigation tanks) is 0.10553 BCM, which accounts for 17.3% of the total water available from various sources, ie, 0.60917 BCM. The underground water available annually is 0.50364 BCM, which accounts for 82.7% (Central Underground Water Board, 2013). Thus total water available from various sources amounts to 0.60917 BCM, which is less than the present total water demand of 1.11122 BCM and also for projected water demand of 1.22577 BCM for 2020. Thus, there is negative balance of water available, which needs to be harnessed properly through various conservation measures so that more area could be brought under irrigation and also to offset the negative balance (Table 4.9, Fig. 4.7 and 4.8).

Table 4.7. Water budgeting for Chitradurga district – available, demand and balance - 2015 and 2020

Taluks	Net underground water available, BCM (CGWB)#	Surface water from canals and tanks, BCM – 2015##	Total water available, BCM (Col. 1+2)
	1	2	3
Challakere	0.08777	0.1055335	0.6091735
Chitradurga	0.05593		
Hiriyur	0.1146		
Holalkere	0.0932		
Hosadurga	0.0899		
Molakalmuru	0.06224		
Total	**0.50364**	**0.1055335**	**0.6091735**

	Total water demand for various sectors, BCM - 2015	Water balance available after meeting all demands, BCM-2015	Total water demand for various sectors, BCM - 2020	Water balance available after meeting all demands, BCM-2020
	4	5	6	7
Challakere	0.24992	-0.50205	0.27563	-0.6166
Chitradurga	0.21347		0.23613	
Hiriyur	0.19287		0.21276	
Holalkere	0.19796		0.21795	
Hosadurga	0.17845		0.19660	
Molakalmuru	0.07855		0.08674	
Total	**1.11122**	**-0.50205**	**1.22577**	**-0.6166**

CGWB - Central Ground Water Board, 2013 for Chitradurga district - Net underground water available; ## - Water available from other sources includes water available from Major, Medium irrigation – canal & minor irrigation – tanks (Details refer Table 3.1).

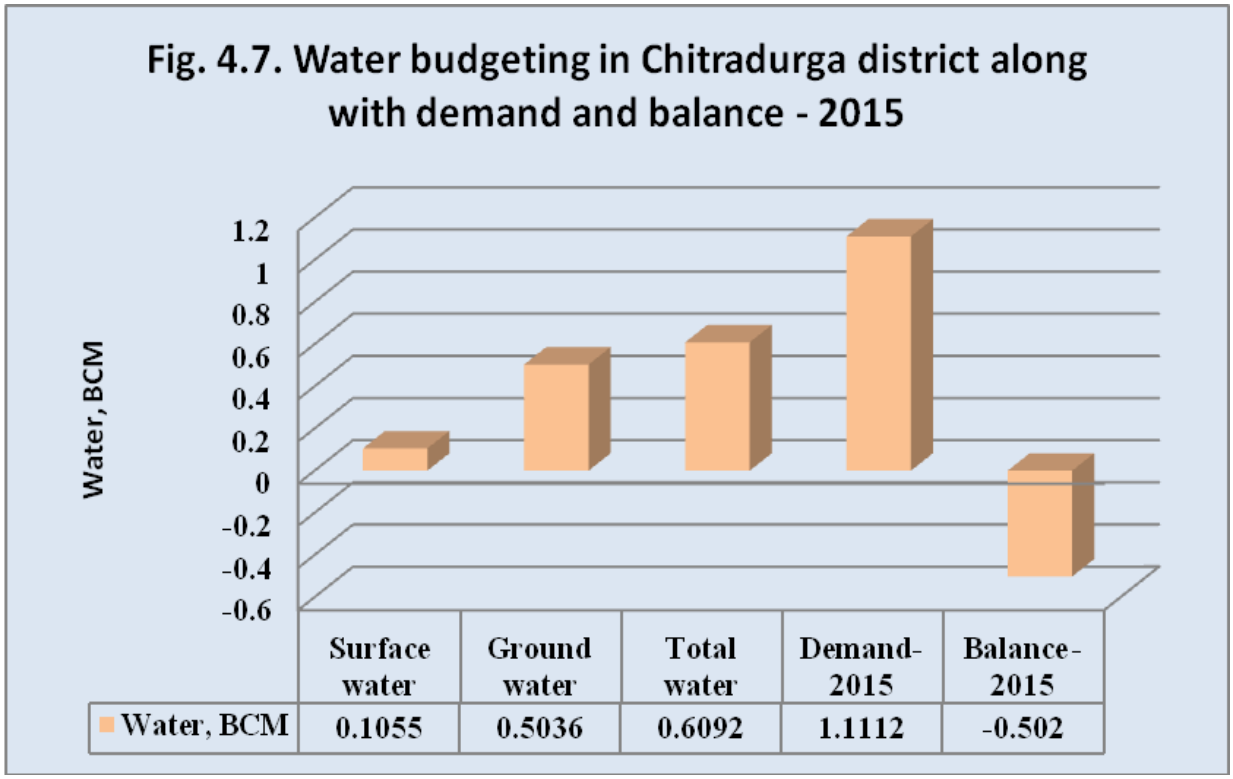


Fig. 4.7. Water budgeting in Chitradurga district along with demand and balance - 2015
Water, BCM
1.2
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
Surface water
Ground water
Total water
Demand-2015
Balance-2015
Water, BCM
0.1055
0.5036
0.6092
1.1112
-0.502

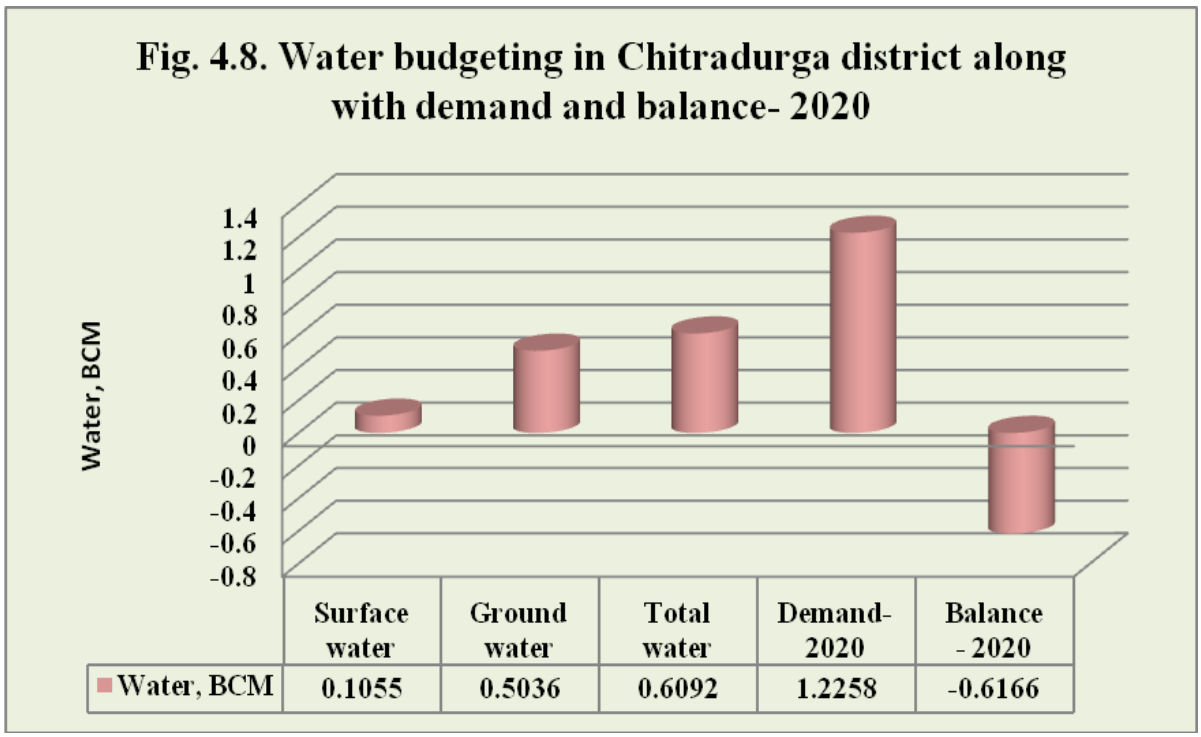


Fig. 4.8. Water budgeting in Chitradurga district along with demand and balance- 2020
Water, BCM
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
Surface water
Ground water
Total water
Demand-2020
Balance - 2020
Water, BCM
0.1055
0.5036
0.6092
1.2258
-0.6166

CHAPTER V
STRATEGIC ACTION PLAN FOR IRRIGATION IN CHITRADURGA DISTRICT

5.1 Introduction

Chitradurga district is a traditional dry land, since centuries, even before formation of Karnataka state. Low unpredictable rains has been a prominent feature of the district- often leading to poor performance of crops and poor economic status of majority of population in the district (80 % of population depend on agriculture). Even in erstwhile Mysore Kingdom, to which Chitradurga was aligned, many measures were taken up to mitigate the effects of frequent droughts. As a testimony of this, Vani Vilas Sagar dam was constructed more than century back, under stewardship of Sir M. Vishveshwaraiah mainly to provide drinking water and limited irrigation facilities.

As a result of inadequate rains, farmers naturally depend on bore wells for irrigation. But, excessive extraction of ground water has led to over exploitation (draft water is far more than naturally available recharge). Without realising the true reasons of reduced bore well yield/ failure of bore wells, digging of bore wells to deeper depths is continued unabated even now with the hope that adequate water may become available. This has led to unsustainable end, wherein farmers only tempted to spend more and raise more loan only to become debt ridden.

Except Vedavathi river, across which Vani Vilas Sagar dam was constructed, there is no perennial river passing through the district. Even Vani Vilas Sagar dam is rarely filled, due to paucity of rains in its catchment- severely restricting the irrigated area it can cater to. Added to this, the population of all towns in Chitradurga district is growing at high rate

demanding more allocation of domestic water from the only available dam in the district.

In such a precarious situation, no crop has assured irrigation and rainfed agriculture is highly unpredictable. But, sources of irrigation are limited, excepting over exploited ground water. Increasing demands of domestic water (in rural and urban centres) by added human and animal population, demand for industries and power generation and partially satisfied crop demands for water have only added serious dimensions to already precarious situations.

The management strategies for drought hit Chitradurga district need to be carefully drawn up to achieve a sustainable solution. The whole gamut of issues related to water management in the district need to be considered to develop a holistic irrigation plan on sustainable basis. The focus should be laid on efficient use of rain water and recharge of underground sources. These two strategies can respectively help in attaining a long term sustainable solutions in surface and ground water domains. Efficient use of existing bore wells by micro irrigation may be one more strategy, which can lead to expansion of irrigated area, by saved water.

The district irrigation plan is drawn up considering agro-climatic features and constraints of each taluk and consolidating it as district plan. By using the opportunities provided under PMKSY, by centralised common platform of District level Committee converging the funds available in different departments.

Luckily, the State of Karnataka has already perceived, planned and executed an irrigation project called ‘Upper Bhadra Project’ to help Chitradurga district to expand irrigated area. The project is in final stage of implementation and very shortly, the canals start flowing water in the district. This project

envisages lifting of water from Tunga river in Shivamogga district to Bhadra reservoir in Lakkavalli near Tarikere of Chikkamagalore district, from where it is transferred to Vedavathy valley. Thereafter, water can flow gravitationally to irrigate 1.04 lakh ha of Hosadurga, Hiriyur, Challakere and Chitradurga. The project also involves filling of large number of village tanks in Chitradurga and Tumakuru districts. The proposed district plan duly considers this state funded major project.

5.2: TALUKA PLANS

CHALLAKERE TALUKA

Table 5.1 STRATEGIC ACTION PLAN FOR CHALLAKERE TALUK

Concerned Ministry / Dept.	Component	Activity	Total number/capacity (cum)	Command Area/ Irrigation Potential (Ha)	I Yr	II Yr	III Yr	IV Yr	V Yr	Total Estimated cost (Rs. In Lakhs)	Table No in district plan
MoWR	A.I.B.P	Minor Irrigation (Check Dams) **MI**	13/0.57 0.57	365 355	204 194	204 194	204 194	204 194	204 194	1020 970	Table 5.7
MoWR	Har Khet ko pani	Lift Irrigation	0	0.00						0.00	
		Ground Water Development **MI**	2/ 3.52 0.30	150.00 150	41 41	41 41	41 41	41 41	41 41	205 205	Table 5.8
		RRR of water Bodies **MaI**	31/ 61.90 59.33	4412.81 4412	900 900	900 900	900 900	900 900	900 900	4500 4500	
		Construction of Field Channels									
		Lined Field Channels **MaI**	8/ 2.28 2.34	1695.00 1695	610 610	610 610	610 610	610 610	610 610	3050 3050	
		Unlined Channels	-	-						-	
MOA&FW DAC&FW	Per drop more crop	DPAP Drip **H**	3000	3250	292	292	292	293	294	1463	Table 5.9
		Sprinkler + pumpsets **A**	12000	12000	2200	2200	2200	2200	2200	11000	Table 5.9

	PMKSY Watershed	**Newly created WHS**									
	"	Check Dams **WS**	11 /7.47 3028	1410.00 30280	763 3028	763 3028	763 3028	763 3028	763 3028	3815 15140	Table 5.10
		Farm ponds **WS**	221 362	221 362	35 58	35 58	35 58	35 58	36 58	176 290	
	"	Nallah Bunds **WS**	3/0.11 1415	125 7075	42 1415	42 1415	42 1415	42 1415	42 1413	210 7073	
	"	Percolation Tanks **WS**	1/ 0.06 4145	50.00	30 4145	30 4145	30 4145	30 4145	30 4146	150 20726	
	"	Mini percolation tanks **WS**	1679 2335	-	336 467	336 467	336 467	336 467	335 467	1679 2335	
	"	**Renovated WHS**									
DOLR-MORD	"	Check Dams **WS**	10 / 3.04 3.04	725.00 725	61 61	61 61	61 61	61 61	61 61	305 305	Table 5.10
DORD-MORD	Convergence with MGNREGA	**Newly created**									
		Water Conservation :									
		Bore well recharging: **A**	9500	9500	760	760	760	760	760	3800	Table 5.11
	Convergence with MGNREGA	Creation of Irrigation Canal and Drains :									

State Planned Scheme of Irrigation											
State Irrigation Department		Upper Bhadra irrigation Project **MaI**	1/0.05 BCM 0.007 BCM	13266	45300 1200	45300 1200	-	-	-	90600 2400	Table 5.12
Total				***92224***	***63693***	***63693***	***17193***	***17194***	***17194***	***178967***	

Note: *Numbers of water harvesting structures(farm ponds, check dams and percolation tank) and their costs proposed in the plan are according to the information supplied by JDA, Chitradurga*

DETAILS OF COMPONENTS

AIBP: Accelerated Irrigation Benefit Programme
HKKP: Har khet ko Pani
PDPC: Per Drop More crop Table 5.12
PDPC-WS: Per Drop More crop-Water shed
CMGNREGA: Convergence with MGNREGA
SFP: State Funded Plan
EFP: Externally funded project

DETAILS OF DEPARTMENTS

MaI - Major Irrigation department
MI- Minor irrigation department
A- Agriculture department
H- Horticulture department
WS- Water shed department
F- Forest department
SFP- State Funded Projects

Fig 5.1 : Component wise irrigation potential to be created in Challakere taluk (ha)

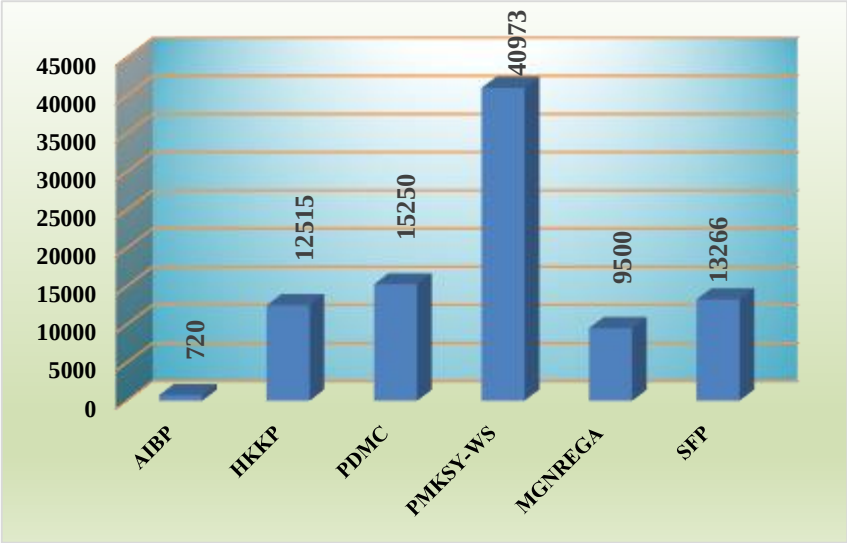
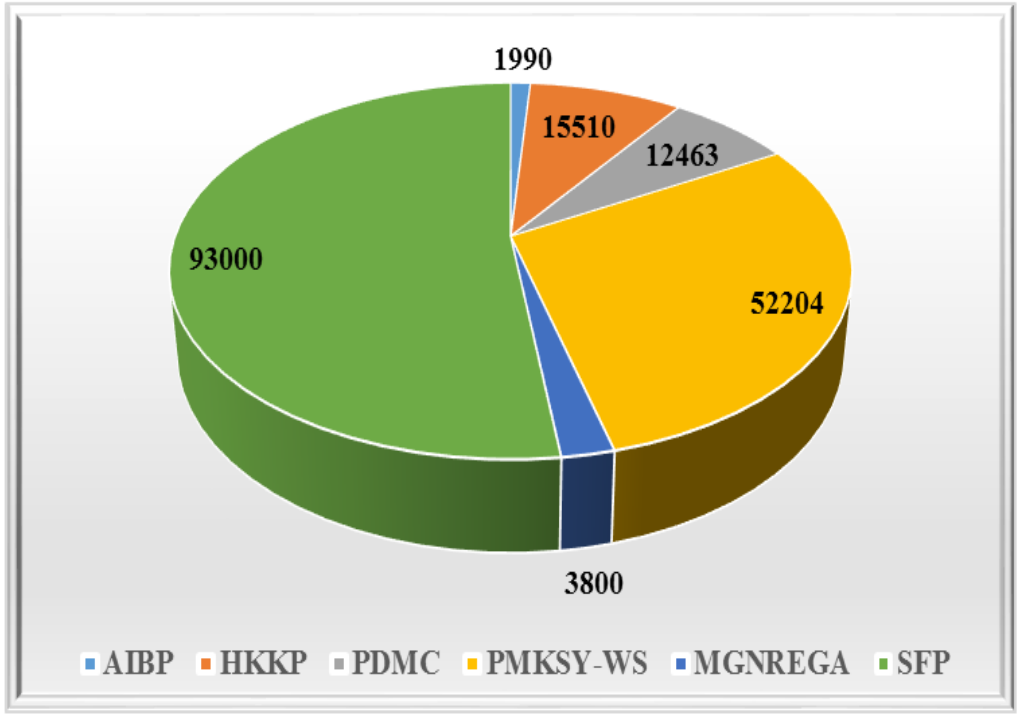


Fig 5.2: Component wise budget allotment (Rs in lakhs) in Challakere taluka



CHITRADURGA TALUKA

Table 5.2 STRATEGIC ACTION PLAN FOR CHITRADURGA TALUK

Concerned Ministry / Dept.	Component	Activity	Total number/capacity (cum)	Command Area/ Irrigation Potential (Ha)	I yr	II yr	III yr	IV yr	V yr	Estimated cost (Rs. In Lakhs)	Table no in district plan
MoWR	A.I.B.P	Minor Irrigation (Check Dams) **MI**	10/ 0.67 0.815	385.00 485	258 310	258 310	258 310	258 310	258 310	1290 1550	Table 5.7
MoWR	Har Khet ko pani	Lift Irrigation **MI**	1 / 0.12 15.12	75.00 425	60 360	60 360	60 360	60 360	60 360	300 1800	Table 5.8
		Ground Water Development **MI**	7/0.66 0.790	415.00 415	98 98	98 98	98 98	98 98	98 98	490 490	
		RRR of water Bodies **MaI**	13/20.75 18.57	1284.21 962.7	283 247	283 247	283 247	283 247	283 247	1415 1235	
		Construction of Field Channels									
		Lined Field Channels	0	0.00	0					0.00	
		Unlined Channels	-	-	-					-	
MOA&FW DAC&FW	Per drop more crop (Micro Irrigation)	DPAP Drip **H**	3500	3800	304	304	304	304	304	1520	Table 5.9
		Sprinkler + pump sets **A**	12000	12000	2200	2200	2200	2200	2200	11000	
		Non- DPAP DRIP- Horticulture									

		Non-DPAP- Drip Agriculture **A**	5000	5500	300	300	300	300	300	1500	Table 5.9
		Non- DPAP SPRINKLER **A**	1000	1200	60	60	60	60	60	300	
	PMKSY Watershed	**Newly created WHS**									
DOLR-MORD	"	Check Dams **WS**	11 /7.47 1904	1410 19040	763 1904	763 1904	763 1904	763 1904	763 1903	3815 9519	Table 5.10
		Farm ponds **WS**	204	221 1059	35 1059	35 1059	35 1059	35 1059	36 1060	176 5296	
	"	Nallah Bunds **WS**	0.17	165	50	50	50	50	50	250	
	"	Percolation Tanks **WS**	1/1.06 2167	50	30 2167	30 2167	30 2167	30 2167	30 2166	150 10834	
DORD-MORD		Mini percolation tanks **WS**	1679	-	336	336	336	336	335	1679	
	Convergence with MGNREGA	Bore well recharging **A**	9000	9000	720	720	720	720	720	3600	Table 5.11
		Renovation									
	"	Renovation of water bodies **MI** including desilting :	16	180	80	80	80	80	80	400	Table 5.11

State Planned Scheme of Irrigation											
State Irrigation Department	Upper Bhadra irrigation Project	Major Irrigation MaI	1/0.109 BCM	28966	79200	79200	-	-	-	158400	Table 5.12
				91273	***90922***	***90922***	***11722***	***11722***	***11721***	***217009***	

Note: *Number of water harvesting structures (farm ponds, check dams and percolation tank) and their costs proposed in the plan are according to the information supplied by JDA, Chitradurga*

Fig. 5.3 : Component wise irrigation potential to be created in Chitradurga taluk (ha)

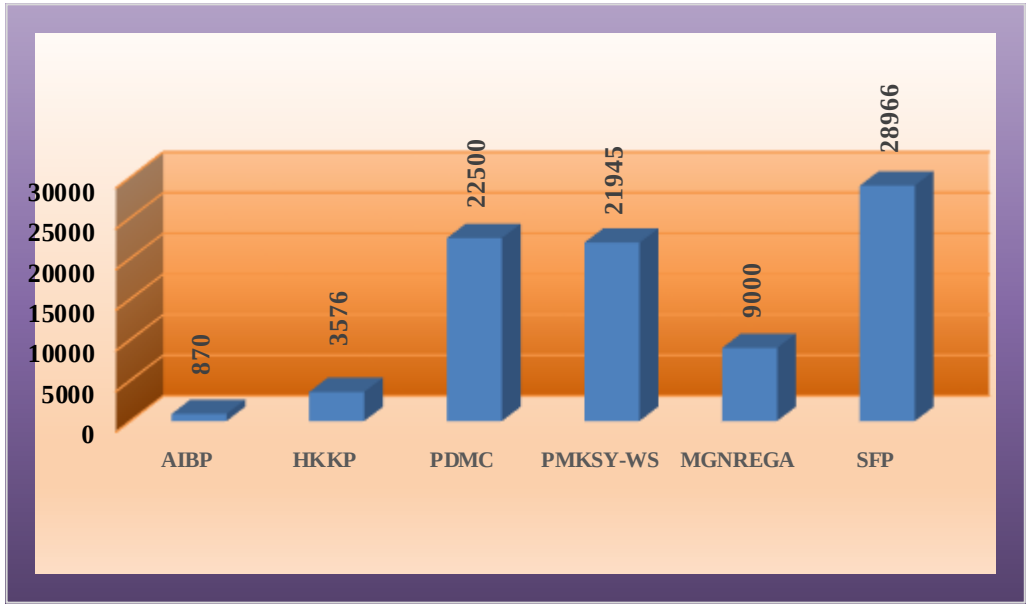
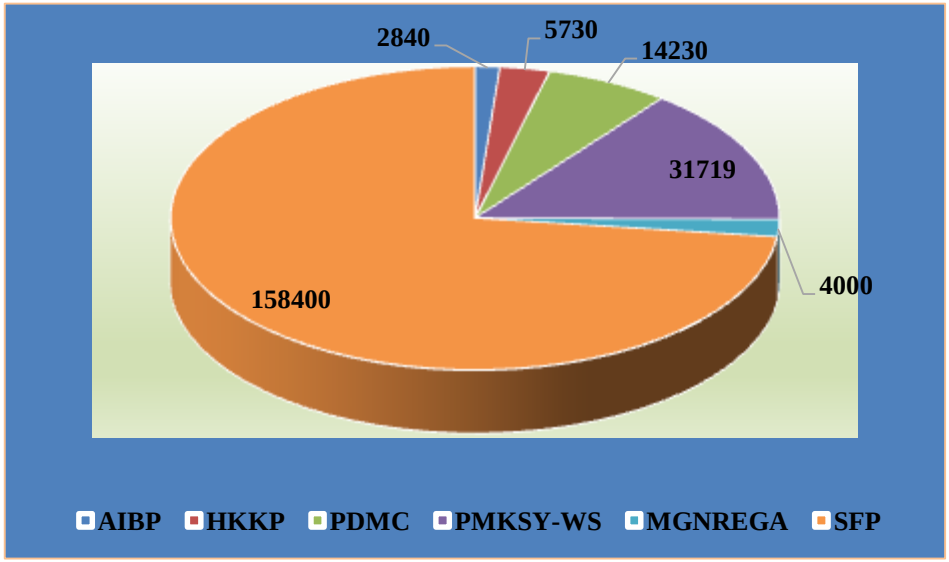


Fig 5.4: Component wise budget allotment (Rs in lakhs) in Chitradurga taluk



HIRIYURU TALUKA

Table 5.3: STRATEGIC ACTION PLAN FOR HIRIYURU TALUK

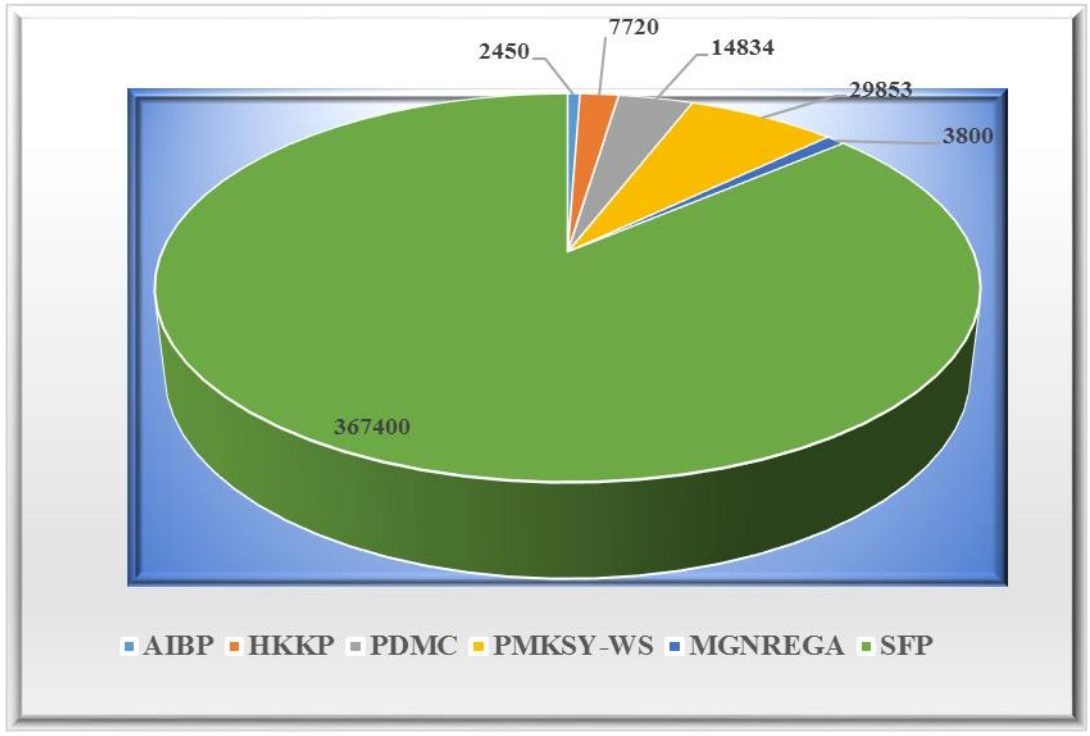
Concerned Ministry / Dept.	Component	Activity	Total number/capacity (cum)	Command Area/ Irrigation Potential (Ha)	Iyr	II yr	III yr	IV yr	V yr	Estimated cost (Rs. In Lakhs)	Table No on District plan
MoWR	A.I.B.P	Minor Irrigation (Check Dams) **MI**	a)5/ 0.45 b)0.09	415 100	410 80	410 80	410 80	410 80	410 80	2050 400	Table 5.7
MoWR	Har Khet ko pani	Lift Irrigation	0	0.00						0.00	Table 5.8
		Ground Water Development **MI**	1/ 2.56	500.00	1300	1300	1300	1300	1300	6500	
		RRR of water Bodies **MaI**	6/ 2.71 2.71	505.00 505	122 122	122 122	122 122	122 122	122 122	610 610	
MOA&FW DAC&FW	Per drop more crop (Micro Irrigation)	DPAP Drip									
		Sprinkler + pumpsets **A**	12000	12000	2200	2200	2200	2200	2200	11000	Table 5.9
MOA&FW DAC&FW		Non- DPAP DRIP- Horticulture **H**	3800	4200	357	357	357	357	356	1784	
MOA&FW DAC&FW		Non-DPAP- Drip Agriculture **A**	5500	7000	350	350	350	350	350	1750	
MOA&FW DAC&FW		Non- DPAP SPRINLER **A**	1000	1200	60	60	60	60	60	300	
DOLR-MORD	PMKSY Watershed	**Newly created WHS**									

	"	Check Dams **WS**	11 /7.47 1525	1410 15250	763 1525	763 1525	763 1525	763 1525	763 1523	3815 7623	Table 5.10
		Farm ponds **WS**	204	204	33	33	33	33	32	164	
	"	Nallah Bunds **WS** 4908	682	4910	982	982	982	982	980		
	"	Percolation Tanks **WS**	1/ 0.06 2338	50	30 2338	30 2338	30 2338	30 2338	30 2340	150 11692	
	"	Mini percolation 1501 Tanks **WS**	1501	-	300	300	300	300	301		
DORD-MORD	Convergence with MGNREGA	Water Conservation :									
	Convergence with MGNREGA	Bore well recharging **A**	8500	8500	680	680	680	680	680	3400	Table 5.11
	"	Land Development									
	"	**Renovation**									
	"	Renovation of water bodies **MI** including desilting :	16	180	80	80	80	80	80	400	Table 5.11
State Planned Scheme of Irrigation											
State Irrigation Department		Upper Bhadra irrigation Project **MaI**	1/0.251 BCM 0.001 BCM	67034	183400 300	183400 300	-	-	-	366800 600	Table 5.12
				123963	**195432**	**195432**	**11732**	**11732**	**11729**	**426057**	

***Note**: Numbers of water harvesting structures(farm ponds, check dams and percolation tank) and their costs proposed in the plan are according to the information supplied by JDA, Chitradurga*

Fig 5.5 : Component wise irrigation potential to be created in Hiriyur taluk (ha)

Fig 5.6: Component wise budget allotment (Rs in lakhs) in Hiriyur taluk



HOLALKERE TALUKA

Table 5.4: STRATEGIC ACTION PLAN FOR HOLALKERE TALUK

Concerned Ministry / Dept.	Component	Activity	Total number/capacity (cum)	Command Area/ Irrigation Potential (Ha)	Iyr	II yr	III yr	IV yr	V yr	Estimated cost (Rs. In Lakhs)	Table No in District plan
MOA&FW DAC&FW	PDMC (micro irrigat*on)*	Micro irrigation DPAP drip **H** NonDPAP drip **A** Non DPAP sprinkler **A**	5000 5000 1000	5500 7500 1200	495 300 60	495 300 60	495 300 60	495 300 60	495 300 60	2475 1500 300	Table 5.9
MOA&FW DAC&FW		Sprinkler + pumpsets Agri **A**	12000	12000	2200	2200	2200	2200	2200	11000	
DOLR-MORD	**PMKSY Watershed** Supplementary water management activities	Farm ponds **WS**	118	118	19	19	19	19	18	94	Table 5.10
		Check dams **WS**	1185	11850	1185	1185	1185	1185	1184	5924	
		Nallah bunds **WS**	681	3405	681	681	681	681	680	3404	
		Percolation tank **WS**	1494	-	1494	1494	1494	1494	1496	7472	
		Mini percolation tank **WS**	1273	-	255	255	255	255	253	1273	

DORD-MORD	CMMGNREGA	Renovation of tanks (Secondary storage structures) **MI**	32	320	160	160	160	160	160	800	Table 5.11
		Borewell Recharge **A**	10500	10500	840	840	840	840	840	4200	
State Funded Plan	State Irrigation dept	**MaI**	1/0.001	371	4	4	4	4	4	20	Table 5.12
				52764	**7693**	**7963**	**7963**	**7963**	**7960**	**38462**	

*Area covered under subsurface drainage: **private investment
$ calculated @Rs1.5lakh/well : #calculated @ Rs30,000/ha
&& calculated @ Rs 25 lakh/ tank: &calculated @ Rs500000/structure
^calculated @ Rs60000/structure :$$ Calculated@ Rs 4lakh/ structure
@@ suggested in 43% safe area as per CGWB report
***calculated @Rs40,000/bore well

Note: *Numbers of water harvesting structures(farm ponds, check dams and percolation tank) and their costs proposed in the plan are according to the information supplied by JDA, Chitradurga*

Fig 5.7 : Component wise irrigation potential to be created in Holalkere taluk (ha)

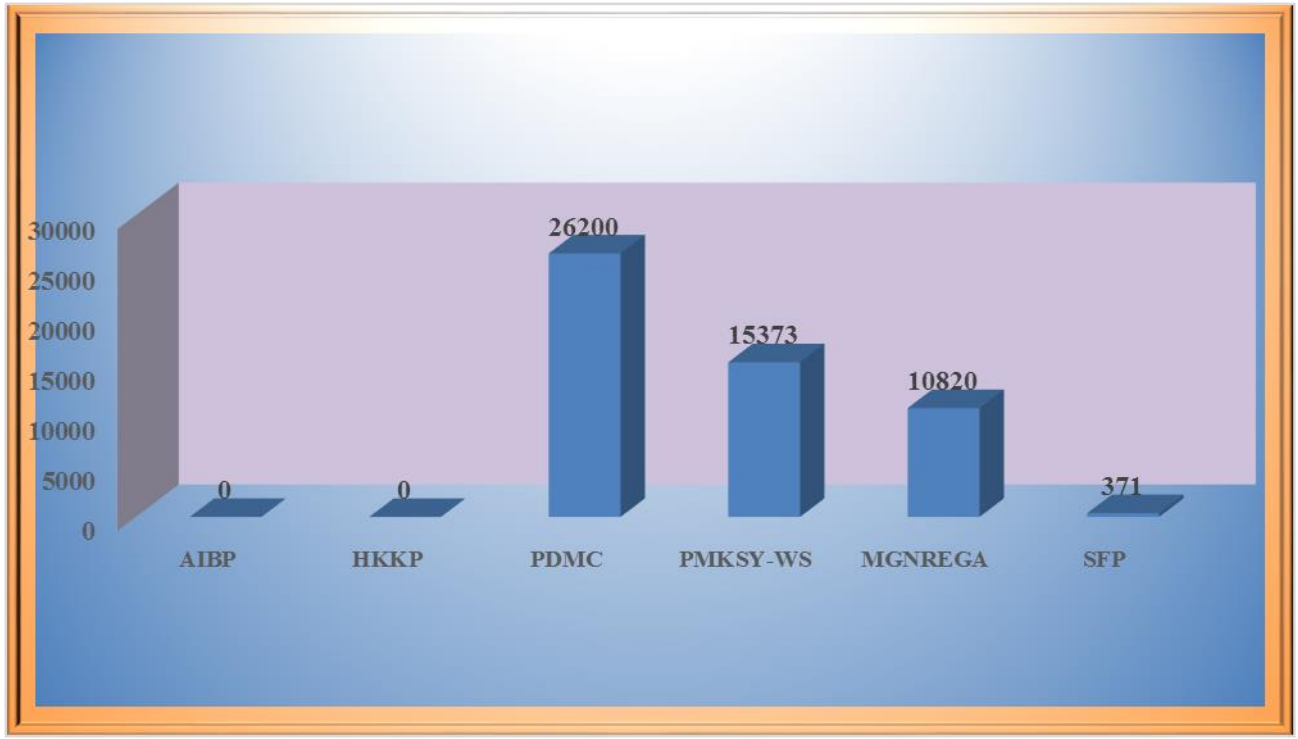
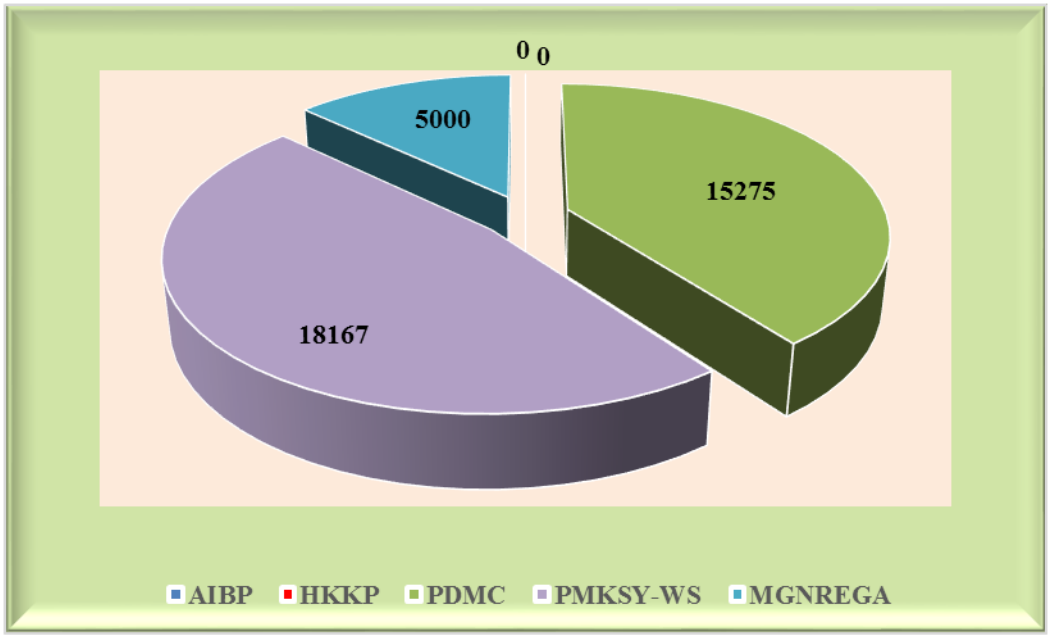


Fig 5.8: Component wise budget allotment (Rs in lakhs) in Holalkere taluk



HOSADURGA TALUKA

Table 5.5: STRATEGIC ACTION PLAN FOR HOSADURGA TALUK

Concerned Ministry / Dept.	Component	Activity	Total number/capacity (cum)	Command Area/ Irrigation Potential (Ha)	Iyr	II yr	III yr	IV yr	V yr	Estimated cost (Rs. In Lakhs)	Table No on District plan
MOA&FW DAC&FW	PDMC (micro irrigat*ion)*	Micro irrigation DPAP drip **H** Non DPAP drip **A** Non DPAP sprinkler **A**	2500 6000 1000	2800 6875 1400	217 1290 60	217 1290 60	217 1290 60	217 1290 60	218 1290 60	1086 6450 300	Table 5.9
MOA&FW DAC&FW		Sprinkler + pump sets Agri **A**	12000	12000	2200	2200	2200	2200	2200	11000	
DOLR-MORD	**PMKSY Watershed** Supplementary water management activities	Farm ponds **WS**	173	118	28	28	28	28	27	139	Table 5.10
		Check dams **WS**	1449	14490	1449	1449	1449	1449	1449	7245	
		Nallah bunds **WS**	843	4165	833	833	833	833	831	4163	
		Percolation tank **WS**	1983	-	1983	1983	1983	1983	1985	9917	
		Mini percolation tank **WS**	1273	-	255	255	255	255	253	1273	

DORD-MORD	CMMGNREGA	Renovation of tanks (Secondary storage structures) **MI**	36	360	180	180	180	180	180	900	Table 5.11
		Bore well Recharge **A**	7500	7500	600	600	600	600	600	3000	
State Funded Plan	State Irrigation dept	**MaI**	1/0.167 BCM 0.0167 BCM	44608	48800 420	48800 420	48800 420	48800 420	48800 420	244000 2100	Table 5.12
		TOTAL		**93361**	**58315**	**58315**	**58315**	**58315**	**58313**	**291573**	

Note: *Numbers of water harvesting structures(farm ponds, check dams and percolation tank) and their costs proposed in the plan are according to the information supplied by JDA, Chitradurga*

Fig 5.9 : Component wise irrigation potential to be created in Hosadurga taluk (ha)

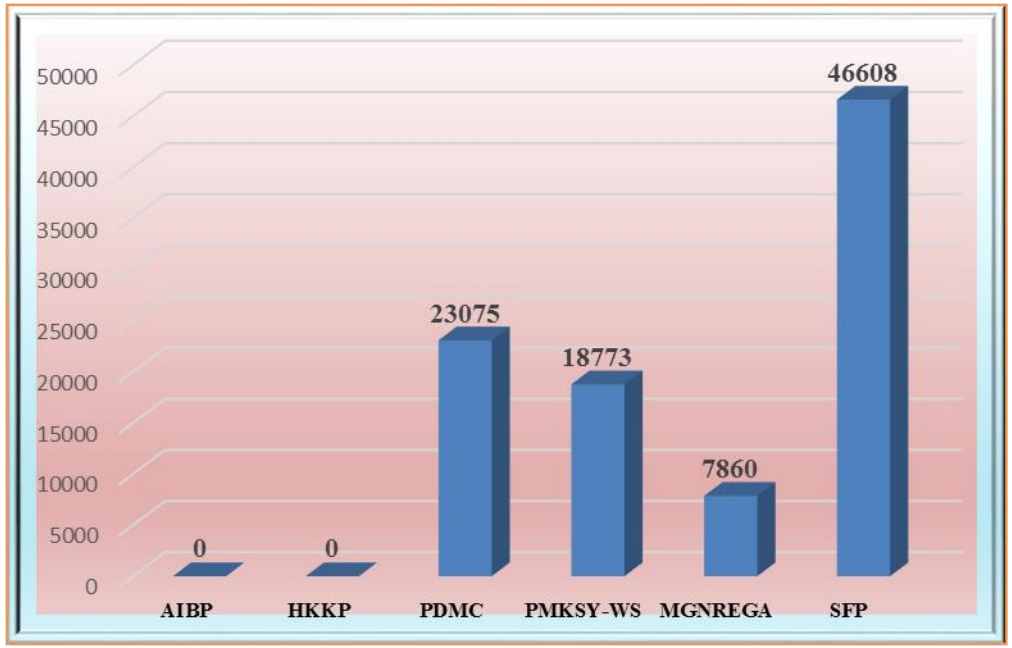
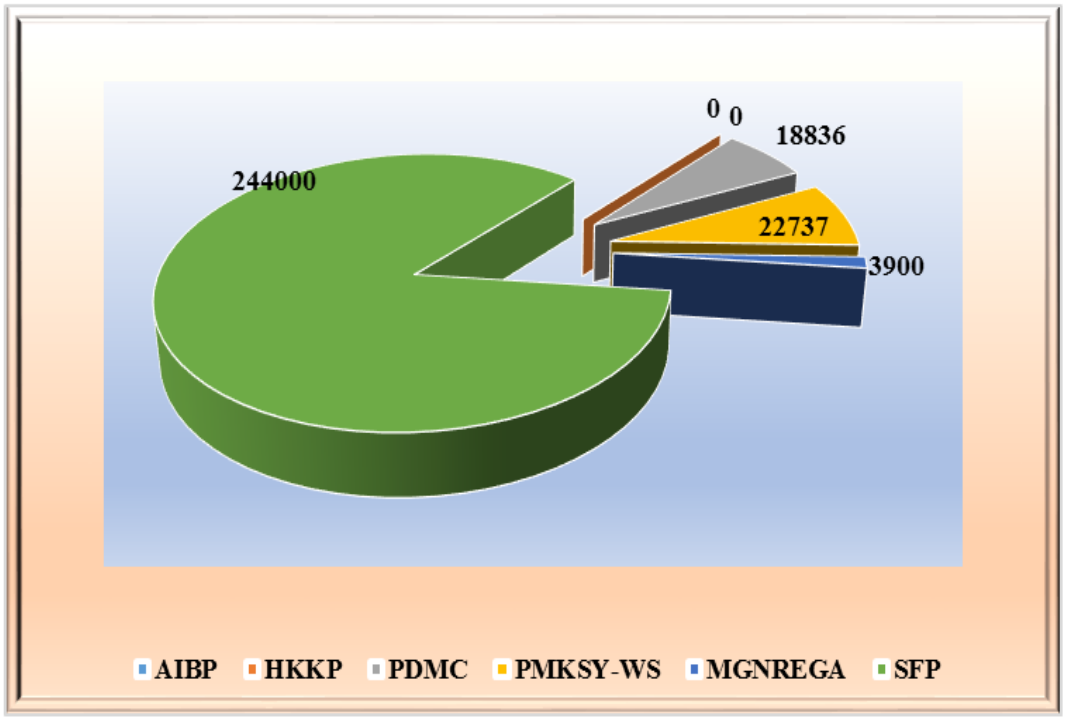


Fig 5.10: Component wise budget allotment (Rs in lakh) in Hosadurga taluk



MOLAKALMURU TALUKA
Table 5.6: STRATEGIC ACTION PLAN FOR MOLAKALMURU TALUKA

Concerned Ministry / Dept.	Component	Activity	Total number/capacity (cum)	Command Area/ Irrigation Potential (Ha)	I yr	II yr	III yr	IV yr	V yr	Estimated cost (Rs. In Lakhs)	Table No in District plan
MoWR	**A.I.B.P**	Minor Irrigation (Check Dams) **MI**	3/0.15 0.15	75 75	89 89	89 89	89 89	89 89	89 89	445 445	Table 5.7
MoWR	**Har Khet ko pani**	Lift Irrigation **MI**	4 / 15.36 0.36	470 120	337 37	337 37	337 37	337 37	337 37	1685 185	Table 5.8
		Ground Water Development **MI**	1/ 0.25	150.00	40	40	40	40	40	200.00	
		RRR of water Bodies **MaI**	4/ 0.20 0.15	300 225	80 60	80 60	80 60	80 60	80 60	400 300	
		Construction of Field Channels									
		Lined Field Channels **MaI**	1/0.02 0.02	40 40	50 50	50 50	50 50	50 50	50 50	250 250	
		Unlined Channels	-	-	-					-	
MOA&FW DAC&FW	Per drop more crop (Micro Irrigation)	DPAP Drip **H**	500	500	60	60	60	60	60	300.00	Table 5.9
		Sprinkler + pump sets **A**	12000	12000	2200	2200	2200	2200	2200	11000	
MOA&FW DAC&FW		DPAP Sprinkler									

DOLR-MORD	**PMKSY Water Shed**	**Newly created WHS**									
		Farm ponds WS	72	72	12	12	12	12	10	58	Table 5.10
		Check dam WS	540	5400	540	540	540	540	541	2701	
		Nallah bunds WS	348	1740	348	348	348	348	347	1739	
		Percolation tank WS	828	-	828	828	828	828	830	4142	
		Mini percolation tank WS	532	-	106	106	106	106	108	532	
	"	Other Ground water Recharge Structure	-	-	-					-	
DOLR-MORD	**CMMGNREGA**	**Renovated WHS**									
		Check Dams **WS**	1 / 0.02	45	5	5	5	5	5	25	Table 5.11
		Percolation tank **WS**	0.06	50	30	30	30	30	30	150	
DORD-MORD	**CMMGNREGA**	**Newly created**									
		: Bore well recharging **A**	2500	2500	200	200	200	200	200	1000	Table 5.11

		Renovation									
Minor Irrigation		Renovation of water bodies including desilting : **MI**	7	70	35	35	35	35	35	175	Table 5.11
State Planned Scheme of Irrigation											
State Irrigation Department	Name Of the Scheme	Minor Irrigation **MI**	1/0.001 BCM	350	1400	1400	1400	1400	1400	7000	Table 5.12
	TOTAL			**24152**	**6596**	**6596**	**6596**	**6596**	**6598**	**32982**	

Note: *Numbers of water harvesting structures 3 (farm ponds, check dams and percolation tank) and their costs proposed in the plan are according to the information supplied by JDA, Chitradurga*

Fig 5.11: Component wise irrigation potential to be created in Molakalmur taluk (ha)

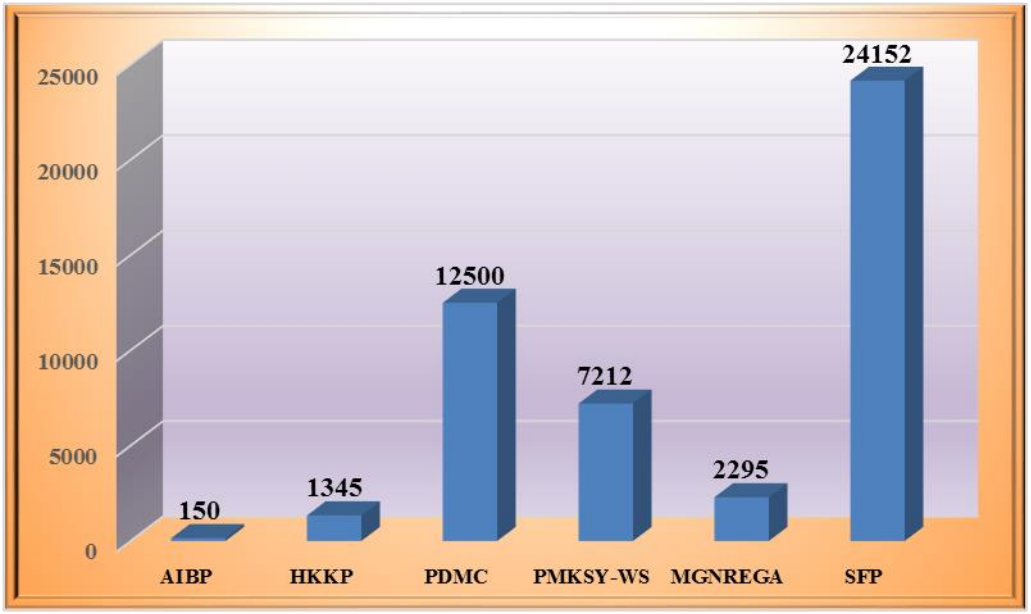
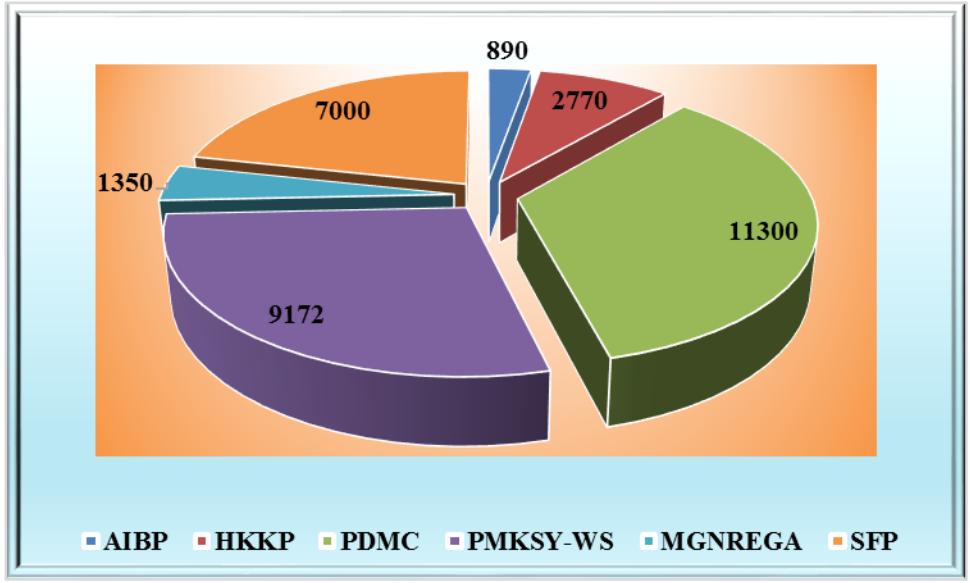


Fig 5.12: Component wise budget allotment (Rs in lakhs) in Molakalmur taluk



5.3 STRATEGIC ACTION PLAN FOR CHITRADURGA DISTRICT

Table 5.7 : DISTRICT IRRIGATION PLAN - AIBP WORKS

Sl. No	Name of the Blocks/sub Districts	Concerned Ministry/ Department	Activity	Total Number/ Capacity (cum)	Command Area/Irrigation Potential (Ha)	Period of Implementation (5/7yrs)	Estimated cost (in lakh Rs.)
1	Challakere	MoWR	Minor irrigation-check dams "	13/0.57 0.57	720.00	5	1990
2	Chitradurg	"		10/ 0.67 0.815	870	5	2840
3	hiriyuru			5/0.45 0.09	515.00	5	2450
4	Molakalmuru			3/0.15 0.15	150.00	5	890
				TOTAL			8170

Table 5.8 DISTRICT IRRIGATION PLAN- KAR KHET KO PANI

Sl. No	Name of the Blocks/sub Districts	Concerned Ministry/ Department	Activity	Total Number/ Capacity (cum)	Command Area/Irrigation Potential (Ha)	Period of Implementation (5/7yrs)	Estimated cost (in lakh Rs.)
4		MoWR	Lift irrigation				
	Chitradurga			1/0.12 15.12	500.00	5	2100.0
	Molakalmuru			4/15.36 0.36	590.00	5	1870.00
			Ground water Development				
	Challakere			2/3.52 0.30	300.00	5	410.00
	Chitradurga			7/0.66 0.790	830.00	5	980.00
	Hiriyuru			1/ 2.56	500.00	5	6500.00
	Molakalmuru			1/0.25	150.00	5	200.00
6		MoWR	RRR of water Bodies				
	Challakere			31/61.9 59.33	8824.81	5	9000.00
	Chitradurga			13/20.75 18.57	2246.9	5	2650.00
	Hiriyuru			6/2.71 2.71	1010.00	5	1220.00
	Molakalmuru			4/0.20 0.15	525.00	5	700.00

7		MoWR	Construction of Field Channels				
7.1		MoWR	Lined Field channels				
	Challakere			8/2.28 2.34	3390.00	5	6100.00
	Molakalmuru			1/0.02 0.02	48.00	5	500.00
7.2		MoWR	unlined Channels				
			Total				32230

Table5.9: DISTRICT IRRIGATION PLAN – PER DROP MORE CROP-MICRO IRRIGATION

Sl. No	Name of the Blocks/sub Districts	Concerned Ministry/ Department	Activity	Total Number/ Capacity (cum)	Command Area/Irrigation Potential (Ha)	Period of Implementation (5/7yrs)	Estimated cost (in lakh Rs.)
9		MOA&FWDAC&FW	DPAP Drip-horti	-	-	-	-
	Challakere tq		DPAP Drip-horti	3000	3250	5 yrs	1463
	Chitradurga tq		DPAP Drip-horti	3500	3800	5 yrs	1520
	Holalkere tq		DPAP Drip-horti	5000	5500	5 yrs	2475
	Hosadurga tq		DPAP Drip-horti	2500	2800	5 YRS	1086
	Molakalmuru tq		DPAP Drip-horti	500	500	5 yrs	300
10		MOA&FWDAC&FW	DPAP Sprinkler	-	-	-	-
	Challakere			12000.00	12000.00	5	11000
	chitradurga			12000.00	12000.00	5	11000
	Hiriyuru			12000.00	12000.00	5	11000
	holalkere			12000.00	12000.00	5	11000
	Hosadurga			12000	12000	5	11000

	molakalmuru			12000.00	12000.00	5	11000
11		MOA&FWDA C&FW	Non- DPAP DRIP- Horticulture	-	-	-	-
	Hiriyur tq			3800	4200	5 yrs	1784
	Tq	MOA&FWDA C&FW	Non-DPAP- Drip Agriculture				
	Holalkere			5000	7500	5	1500
	Chitradurga			5000	5500	5	1500
	Hiriyur			5500	7000	5	1750
	Hosadurga			6000	6875	5	6450
		MOA&FWDA C&FW	Non DPAP sprinkler				
	Holalkere			1000	1200.00	5	300.00
	Chitradurga			1000	1200	5	300
	Hiriyur			1000	1200	5	300
	Hosadurga			1000	1200	5	300
12			TOTAL				87028

Table 5.10: DISTRICT IRRIGATION PLAN - PMKSY WATER SHED

Sl. No	Name of the Blocks/sub Districts	Concerned Ministry/ Department	Activity	Total Number/ Capacity (cum)	Command Area/Irrigation Potential (Ha)	Period of Implementation (5/7yrs)	Estimated cost (in lakh Rs.)
17		DOLR-MORD	Newly created WHS				
17.1		DOLR-MORD	Check dams			5 years	
	Challakere			11/7.47 3028	1410 30280	5	3815 15140
	Chitradurg			11/7.47 1904	1410 19040	5	3815 9519
	Hiriyuru			11/7.47 1525	1410 15250	5	3815 7623
	Holalkere			1185	11850	5	5924
	Hosadurga			1449	14490	5	7245
	Molakalmuru			540	5400	5	2701
17.2		DOLR-MORD	Farm bonds				
	Challakere			221 362	221 362	5	177 290

	Chitradurga			221 1059	221 5295	5	176 5296
	Hiriyuru			204	204	5	164
	Holalkere			118	118	5	94
	Hosadurga			173	118	5	139
	Molakalmuru			72	72	5	58
17.3		DOLR-MORD	Nallah Bunds			5 years	
	Challakere			3/0.11 1415	125.00 7075	5	210 7073
	Chitradurga			0.17	165	5	250
	Hiriyuru			982	4910	5	4908
	Holalkere			681	3405	5	3404
	Hosadurga			833	4165	5	4163
	Molakalmuru			348	1740	5	1739
17.4		DOLR-MORD	Percolation Tanks				
	Challakere			1/ 0.06 4145	50.00	5	150 20726

	Chitradurg			1/ 0.06 2167	50.00	5	150 10834
	hiriyuru			1/ 0.06 2338	50.00	5	150 11692
	Holalkere			1494	-	5	7472
	Hosadurga			1983	-	5	9917
	Molakalmuru			828	-	5	4142
			Mini percolation tank				
	Challakere			1679 2335	-	5	1679 2335
	Chitradurg			1679	-	5	1679
	hiriyuru			1501	-	5	1501
	Holalkere			1273	-	5	1273
	Hosadurga			1273	-	5	1273
	Molakalmuru			532	-	5	532
17.5		DOLR-MORD	Other Ground Water Recharge Structure				
17.6		DOLR-MORD	Fishery ponds/cattle pond				
18		DOLR-MORD	Renovated WHS				
18.5		DOLR-MORD	Other Ground Water				

			Recharge Structure BORE WELL RECHARGE				
			Check dam				
	Challakere			10/3.04 3.04	1450.00	5	610
	Molakalmuru			1/0.02	45.00	5	25.
			Percolation tank				
	Molakalmuru			0.06	50.00	5	150
18.6		DOLR-MORD	Fishery ponds/cattle pond				

163852

Table 5.11: DISTRICT IRRIGATION PLAN; CONVERGENCE WITH MGNREGA

Sl. No	Name of the Blocks/sub Districts	Concerned Ministry/ Department	Activity	Total Number/ Capacity (cum)	Command Area/Irrigation Potential (Ha)	Period of Implementation (5/7yrs)	Estimated cost (in lakh Rs.)
19		DORD-MORD	Newly created				
19.1		DORD-MORD	Water Conservation				
19.2		DORD-MORD	Water Harvesting				
			Bore well recharging				
	Challakere			9500	9500	5	3800
	Chitradurga			9000	9000	5	3600
	Hiriyuru			8500	8500	5	3400
	Holalkere			10500	10500	5	5000
	Molakalmuru			7500	7500	5	1350
19.3	Hosadurga	DORD-MORD	Creation of irrigation canals and Drains Secondary storage structure	9750	9750	5	3900
	Holalkere			32	320	5	800

	Molakalmuru			36	360	5	900
19.4		DORD-MORD	Providing Infrastructure for Irrigation				
19.5		DORD-MORD	Land Development				
20		DORD-MORD	Renovation				
20.1		DORD-MORD	Renovation of water bodies including desilting				
	Chitradurga			16	180	5	400
	Hiriyuru			16	180	5	400
20.2		DORD-MORD	Renovation & Maintenance of Irrigation canals & Drains				
					55790		**21850**

Table 5.12: DISTRICT IRRIGATION PLAN - STATE PLAN GRANTS

Sl. No	Name of the Blocks/sub Districts	Concerned Ministry/ Department	Activity	Total Number/Capacity (cum)	Command Area/Irrigation Potential (Ha)	Period of Implementation (5/7yrs)	Estimated cost (in lakh Rs.)
1	Challakere	State	Upper bhadra	1/0.05 0.007	13266	5	93000
2.	Chitradurga			1/0.109	28966	5	158400
3.	Hiriyuru			1/0.251 0.001	67034	5	367400
4	Holalkere			1/0.001	371	5	20
5	hosadurga			1/0.167 00.0167	44608	5	246100
6.	Molakalmuru			1/0.001	-	5	7000
					154245		**871920**

FINAL ABSTRACT OF CHITRADURGA DISTRICT IRRIGATION PLAN :

Table 5.13 COMPONENT WISE TALUK WISE IRRIGATION POTENTIAL CREATED (in HA)

Sl. No.	COMPONENT	Challakere	Chitradurga	Hiriyur	Holalkere	Hosadurga	Molakalmuru	Total
1	AIBP	720	870	515	0	0	150	**2255**
2	HKKP	12515	3576.91	1510	0	0	1345	**18947**
3	PDMC	15250	22500	24400	26200	23075	12500	**123925**
4	PMKSY-WS	40973	21945	16914	15373	18773	7212	**121190**
5	MGNREGA	9500	9000	8500	10820	7860	2595	**48275**
6	State Irri Dept.	13266	28966	67034	371	44608	350	**154595**
Total		**92224**	**86858**	**118873**	**52764**	**94316**	**24152**	**469187**

Fig 5.13 Component wise taluk wise irrigation potential to be created in Chitradurga district (ha)

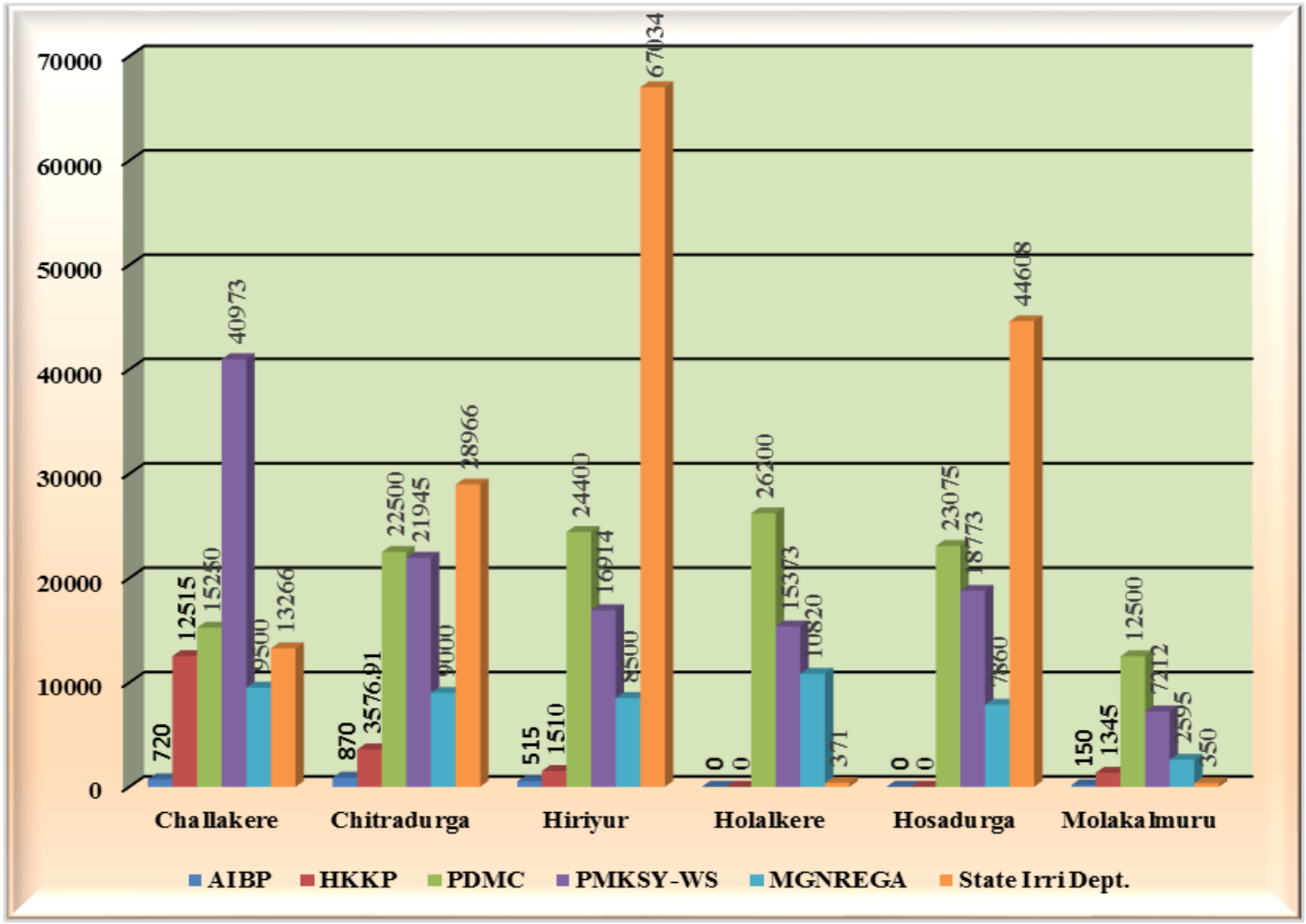


Table 5.14 COMPONENT WISE TALUK WISE BUDGET REQUIREMENT (in lakh Rs)

COMPONENT	Challakere	Chitradurga	Hiriyur	Holalkere	Hosadurga	Molakalmuru	Total
AIBP	1990	2840	2450	-	-	890	**8170**
HKKP	15510	5730	7720	-	-	3270	**32230**
PDMC	12463	14320	14834	15275	18836	11300	**87028**
PMKSY-WS	52204	31719	29853	18167	22737	9172	**163852**
MGNREGA	3800	4000	3800	5000	3900	1350	**21850**
State Irri Dept.	93000	158400	367400	20	246100	7000	**871920**
TOTAL	**178967**	**217009**	**426057**	**38462**	**291573**	**32982**	**1185050**

Fig 5.14 Component wise budget requirement (in lakh Rs)

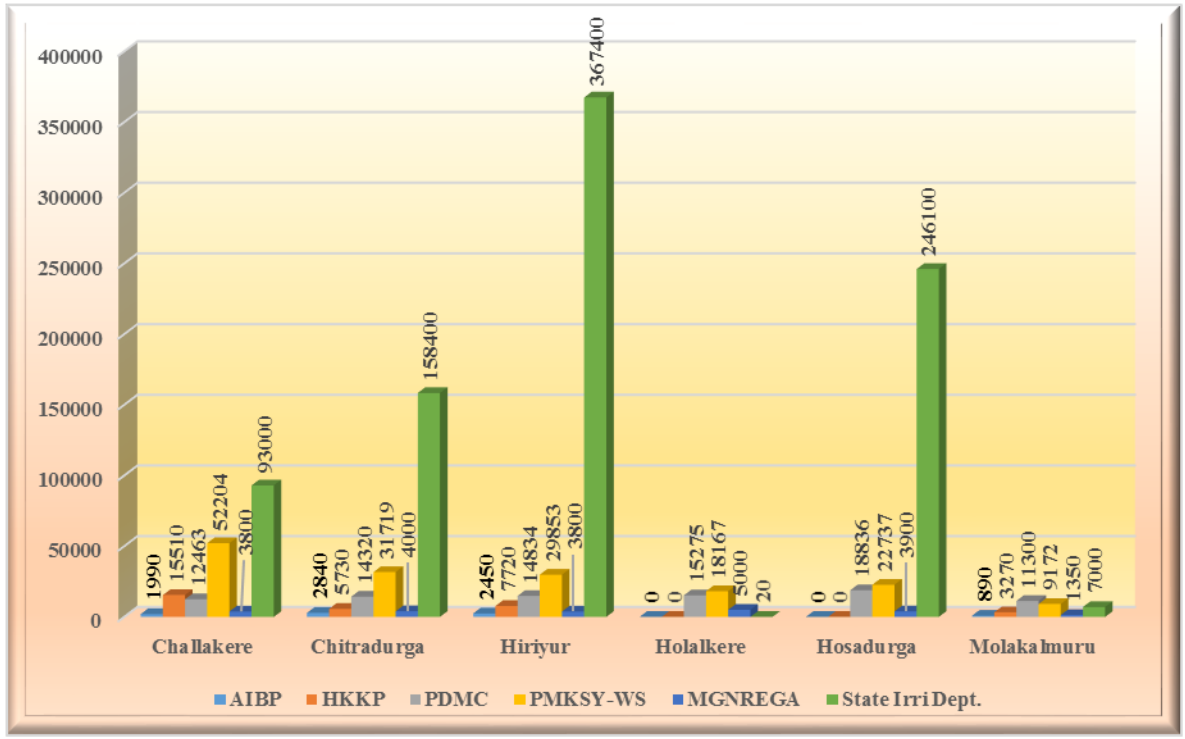


Table 5.15 TALUK WISE YEAR WISE BUDGET REQUIREMENT (in lakh Rs)

Year	Challakere	Chitradurga	Hiriyur	Holalkere	Hosadurga	Molakalmuru	Total
I	63693	90922	195432	7693	58315	6596	**422651**
II	63693	90922	195432	7693	58315	6596	**422651**
III	17193	11722	11732	7693	58315	6596	**113251**
IV	17194	11722	11732	7693	58315	6596	**113252**
V	17194	11721	11729	7690	58313	6598	**113245**
TOTAL	**178967**	**217009**	**426057**	**38462**	**291573**	**32982**	**1185050**

Table 5.16 TALUK WISE DEPARTMENT WISE BUDGET REQUIREMENT (in lakh Rs)

Department	Challakere	Chitradurg	Hiriyur	Holalkere	Hosadurg	Molakalmur	Total
Agriculture	14800	16400	16450	17000	20750	12000	**97400**
Horticulture	1463	1520	1784	2475	1086	300	**8628**
Major Irrigation	108100	161050	368620	20	246100	1200	**885090**
Minor Irrigation	2400	6320	9350	800	900	10135	**29905**
Watershed	52204	31719	29853	18167	22737	9347	**164027**
Total	**178967**	**217009**	**426057**	**38462**	**291573**	**32982**	**1185050**

Abbreviations used:

AIBP- Accelerated Irrigation benefit Programme of GoI
HKKP- Har Khet Ko Pani, which was envisaged to bring in more irrigated area
PDMC-MI: Per drop more crops- Micro irrigation
PMKSY- WS : Pradhan mantra Krishi Sinchai Yojana- water shed
CMGNREGA :Convergence with Mahatma Gandhi National Rural Employment Guarantee

CONCLUSIONS

- Chitradurga district, known for poorly distributed rains, has no perennial rivers except Vedavathi river. But, Vedavathi river's catchment generally receives poor rainfall and collection of water in Vani Vilas Sagar dam is limited. It is generally sufficient to meet the drinking water demand of urban settlements of Chitradurga district.
- More efficient use of rain water by various water harvesting structures is the best solution to the problems of water shortage to agricultural fields in Chitradurga district.
- Similarly, most bore wells in the district are dependent on depleting underground source. Augmentation of natural recharge by artificial sources like bore well recharging and percolation tank can improv1e the status of ground water use.
- The analysis of taluk features in Chitradurga district indicates that more scope exists to harvest surface water by minor irrigation/ water shed structures in the taluks of Chitradurga, Chllakere, Hiriyur and Molakalmuru taluks.
- The district plan envisages creating 469187 ha of new irrigated area apart from existing 86020 ha of net irrigated area. This involves, an allocation of Rs 11850.50 crore over the next 5 years.
- However, Upper Bhadra Project, being implemented by the Government of Karnataka, is in the final stages of completion and irrigation may be made available within 1-2 years
- Out of total new irrigated area to be created, 154595 ha will be contributed by Upper Bhadra Project.

- Out of remaining new irrigated area, 123925 ha of irrigated area will be created by micro irrigation, including drip and sprinklers in both horticultural and agricultural crops. The plan also envisages desilting of tanks and bore well recharging on large scale and creating new irrigated area of 48610 ha.
- Harvesting of rain water by many other rain water harvesting structures will create an irrigated area of 121190 ha.
- Out of total expenditure that is planned, major share is handled by State funded plan Upper Bhadra Project. (885090 lakhs Rs), followed by water shed works (163852 lakh Rs) to harvest rain water.
- The allotment of budget for Minor irrigation department is expected to be of the order of Rs 29905 lakh , while major irrigation department will need an allotment of Rs 885090 lakh . Water shed and Agriculture departments will get allotment of Rs 164027 lakh and Rs 97400 lakh, respectively in the next five years
- Major beneficiary taluks will be Hiriyur (426057 lakh Rs) and Chitradurga (Rs217009 lakhs).

APPENDICES

1.1 District Profile				
S No	**Name of the District**	**District Code**	**Latitude**	**Longitude**
1	Chitradurga District	29120000000	$N13^{0}\,34^{1}$ to $15^{0}02^{1}$	$E75^{0}37^{0}$ to $77^{0}02^{1}$
2	Chitreadurga	29120030000	N14. 23 05594	E76.3984537
3	Challakere	29120020000	N14.3660000	E76.7210000
4	Hiriyur	29120060000	N13.9438209	E76.6160733
5	Holalkere	29120040000	N14.02945	E76.1976
6	Hosadurga	29120050000	N13.17834	E77.64274
7	Molakalmuru	29120010000	N14.7185341	E76.746293

Source:Gazetteer, Census Report, any other source of Government

1.3 Biomass and Livestock
Source: Livestock Census of India

Name of the State:Karnataka

Name of the District :Chitradurga

Name of the Block:

Name of the Taluk	Small Animals					Large Animals				Any other Milch or Meat Animal (Nos.)	Draft Animal (Buffalo/ yak/bulls /any other (Nos.)
	Poultry (Nos.)	Ducks (Nos.)	Pigs (Nos.)	Goats (Nos.)	Sheep(Nos.)	Indigenous Cow (Nos.)	Hybrid Cow (Nos.)	In descriptive Buffalo (Nos.)	Hybrid Buffalo (Nos.)		
Challakere	668546	-	1822	89296	284993	72151	2367	36183	-	-	-
Chitradurga	40046	-	603	42872	58719	50530	10153	31949	-	-	-
Hiriyur	44011	-	1247	103332	336292	39134	4253	27820	-	-	-
Holalkere	32500	-	200	27042	59280	45811	3604	40754	-	-	-
Hosadurga	785102	-	346	59661	132274	75714	2461	43521	-	-	-
Molakalmuru	1570204	-	489	46527	60378	33463	1358	13033	-	-	-
Dist. Total	3140409	-	4707	368730	931936	316803	24196	193260	-	-	-

1.4 Agro-Ecology, Climate

Sl.No	Agro Ecological Zone Type	Type of Terrain	Block Area(ha)	Normal Annual Rainfall (mm)	Average Monthly rainfall (mm)	No of Rainy days(No)	Maximum Rainfall Intensity(mm)			Average weekly Temperature(C)							Elevation			
							Upto 15 days	Beyond 15 but upto 30 Min	Beyond 30 but upto 60 Min	Period							Cumulative	Min.	Max.	
										Summer (April-May)			Winter(Oct-Mar)		Rainy(June-Sept)					
										Min.	Max.	Mean	Min.	Max.	Mean	Min.	Max.	Mean		
1.CLK	Centrial dry zone-4	Highly to moderately rolling plain	194380	464.5	37.5	23														
2.CTA			123502	653.9	59.7	38														
3.HYR			137423	549.9	52.3	29														
4.HLK			135868	718.4	58.1	41														
5.HSD			112574	626.4	32.1	32														
6.MLK			66955	541.5	26.2	28														
Dist Total			**770702**	**592.5**	**44.3**	**40**				**35.5**	**36.0**	**35.75**	**15.9**	**19.8**	**17.85**	**29.5**	**32.5**	**31**		**486.57**

1.5 Soil Profile **Source : SLUSI,NBSS, Indian Institute of Soil Science, Department of land Resources**

Name of the State: Karnataka

Name of the District: Chitradurga

Name of the Block:

Name of the Taluk	Soil Type					Land Slope			
	Major Soil Classes (Area(ha))					0-3%(ha)	3-8%(ha)	8-25%(ha)	>25%(ha)
	Garvely red loam	Gravely red clay	Non gravely red clay	Black	Deep black				
Challakere	127855	42046	19684	4430	365	19860	126738	47300	482
Chitradurga	27844	44254	30541	12362	8501	14050	82509	21003	5940
Hiriyur	48576	42796	31636	11947	2468	21900	81964	28900	4659
Holalkere	56096	48981	20468	9860	463	13800	93340	27008	1720
Hosadurga	53088	34162	16144	8837	341	11305	74920	24360	1989
Molakalmuru	38398	18641	9540	348	28	5105	39197	21561	1092
Total	**351857**	**230880**	**128013**	**47784**	**12166**	**86020**	**498668**	**170132**	**15882**

1.7 Land Use Pattern Source: DAP, PPR, Land Use Plan

Name of the State:Karnataka

Name of the District: Chitradurga

Name of the Block*:

Area in ha

Sl. No	Name of the Taluk	Total Geographical Area	Area under Agriculture				Area under Forest	Area under Watershed	Area under other uses
			Gross Cropped Area(1)	Net Sown Area(2)	Area sown more than once(1-2)	Cropping Intensity(%)			
1	Challakere	194380	92198	80716	11482	74.65	6987	1793	17462
2	Chitradurga	123502	131869	112431	19438	67.84	12049	14307	41217
3	Hiriyur	137423	99777	72535	27242	72.6	11358	10429	15859
4	Holalkere	135868	85524	78812	6712	62.94	8878	14528	26938
5	Hosadurga	112574	82329	59804	22525	73.13	19074	5116	6055
6	Molakalmuru	66955	33217	30094	3123	49.61	15373	9103	9262
	Dist. Total	**770702**	**524914**	**434392**	**90522**	**400.77**	**73719**	**55276**	**116793**

District/ CD Block/ Town	Total/ Rural/ Urban	Area in Square Kilometre	Number of households	Total population (including institutional and houseless population)		
				Persons	Males	Females
2	3	4	5	6	7	8
Chitradurga - District	**Total**	**8,436.00**	**3,57,003**	**16,59,456**	**8,40,843**	**8,18,613**
	Rural	**8,295.99**	**2,83,669**	**13,29,923**	**6,75,573**	**6,54,350**
	Urban	**140.01**	**73,334**	**3,29,533**	**1,65,270**	**1,64,263**
Molakalmuru	Total	693.44	24,202	1,25,487	64,095	61,392
	Rural	693.44	24,202	1,25,487	64,095	61,392
	Urban	0.00	-	-	-	-
Challakere	Total	2,032.13	64,311	3,10,590	1,58,343	1,52,247
	Rural	2,032.13	64,311	3,10,590	1,58,343	1,52,247
	Urban	0.00	-	-	-	-
Chitradurga	Total	1,350.76	59,546	2,83,673	1,44,431	1,39,242
	Rural	1,346.12	56,845	2,72,142	1,38,532	1,33,610
	Urban	4.64	2,701	11,531	5,899	5,632
Medehalli (OG) (Part) WARD NO.-0036 (Rural MDDS CODE:605585)	Urban	NA	1,400	5,647	2,888	2,759
Matadakurubarahatti (CT)	Urban	4.64	1,301	5,884	3,011	2,873
Holalkere	Total	1,097.10	42,324	1,91,477	96,988	94,489
	Rural	1,087.62	40,855	1,85,241	93,964	91,277
	Urban	9.48	1,469	6,236	3,024	3,212
Chikkajajur (CT)	Urban	9.48	1,469	6,236	3,024	3,212
Hosdurga	Total	1,332.38	46,441	2,06,746	1,04,605	1,02,141
	Rural	1,332.38	46,441	2,06,746	1,04,605	1,02,141
	Urban	0.00	-	-	-	-
Hiriyur	Total	1,681.06	51,015	2,29,717	1,16,034	1,13,683
	Rural	1,681.06	51,015	2,29,717	1,16,034	1,13,683
	Urban	0.00	-	-	-	-
URBAN						
Molakalmuru (TP)	Urban	43.06	3,349	15,797	7,954	7,843
Challakere (TMC)	Urban	30.71	12,050	55,194	27,588	27,606
Chitradurga (CMC + OG)	Urban	25.98	32,110	1,45,853	73,020	72,833
Matadakurubarahatti (CT)	Urban	4.64	1,301	5,884	3,011	2,873
Holalkere (TP)	Urban	0.66	3,406	15,783	8,004	7,779
Chikkajajur (CT)	Urban	9.48	1,469	6,236	3,024	3,212
Hosdurga (TMC)	Urban	5.26	6,578	28,370	14,543	13,827
Hiriyur (TMC)	Urban	20.22	13,071	56,416	28,126	28,290

2.1 Area wise crop wise Irrigation Status				Source : Department of Agriculture, Agriculture Statistic of State Agristat.											
Name of the State :															
Name of the District :															
Name of the Block :															
Crop Type	**Kharif (Area in Ha)**			**Rabi (Area in Ha)**			**Summer Crop (Area in Ha)**			**Total (Area in Ha)**			**Harticulture & Plantation Crops (Area in Ha)**		
	Irrigated	**Rain fed**	**Total**	**Irrigated**	**Rain fed**	**Total**	**Irrigated**	**Rain fed**	**Total**	**Irrigated**	**Rain fed**	**Total**	**Irrigated**	**Rain fed**	**Total**
Coarse Cereals	8996	146349	155345	4979	11118	16097	4223		4223	18198	157467	175665	-	-	-
Pulses	25	19577	19602	171	35402	35573	182		182	378	54979	55357	-	-	-
Oil Seeds	1095	133729	134824	235	3840	4075	2463		2463	3793	137569	141362	-	-	-
Fibres	8189	19446	27635	27635	465	28100	90		90	35914	19911	55825	-	-	-
Total	18305	319101	337406	33020	50825	83845	6958	0	6958	58283	369926	428209			

2.3 Irrigation Based Classification			**Source : Agriculture Statistic, Irrigation Statistic of CWC, Indian Statistic, Open Government Data Platform.**	
Name of the State : Karnataka				
Name of the District : Chitradurga				
Name of the Block : Hiriyur				
Irrigated (Area in Ha)			**Rainfed (Area in Ha)**	
	Gross Irrigated Area	**Net Irrigated Area**	**Partially Irrigated / Protective Irrigation**	**Un - Irrigated of Totally Rainfed**
Vani vilas Sagara	14000	12135	NA	NA
Gayathri dam	2406	2305		
Total	**16406**	**14440**		
Challakere	703.7	105.56	-	-
Chitradurga	311.03	46.65	-	-
Hiriyur	334.94	50.24	-	-
Holalkere	499.39	74.91	-	-
Hosadurga	664.98	99.75	-	-
Molakalmuru	142.16	21.32	-	-

3.1 Status of Water Availability				Source : CWC, CGWB, District Irrigation and Agriculture office records		
						BCM per Ha
Sl No	**Sources**	**Live Capacity of tank**	**Kharif**	**Rabi**	**Summer**	**Total**
1	Surface Irrigation					
(i)	Canal (Major & Medium Irrigation					
(ii)	Minor Irrigation Tanks					
	Vanivilas Sagar		-	-	2.915*10-6	2.915*10-6
	Gayathri		-	-	8.226*10-6	8.226*10-6
	Challakere	691.92	69.19	34.60	-	103.79
	Chitradurga	237.42	23.74	11.87	-	35.61
	Hiriyur	892.58	89.26	44.63	-	133.89
	Holalkere	193.46	19.35	9.67	-	29.02
	Hosadurga	745.32	74.53	37.27	-	111.8
	Molakalmuru	2.17	0.22	0.11	-	0.33
	Total	2762.87	276.29	138.15	0	414.44
(iii)	Lift Irrigation / Diversion					
(iv)	Various Water Bodies including Rain Water Harvesting					
(v)	Treated Effluent Received from STP					
(vi)	Untreated Effluent					
(vii)	Perennial Sources of Water					
2	Ground Water					
(i)	Open Well					
(ii)	Deep Tube Well					
(iii)	Medium Tube Wells					
(iv)	Shallow Tube Wells					

Annexure I Tables For Collating information on DIP

3.3 Status of Command Area

Name of the State : Karnataka

Name of the District : Chitradurga

Name of the Block :

in Hect

Sl .No	Name of the Village	Information of canal Command		
		Total Area	Developed Area	Un developed Area
1	2	3	4	5
	Chitradurga Taluk			
1	Hampanuru			
2	M.K.Hatty	37.63	5.64	31.99
3	Manangi	22.66	3.40	19.26
4	Katihally	7.11	1.07	6.04
5	Kalgere	31.96	4.79	27.17
6	Palavanahalli	28.16	4.22	23.94
7	Chikkabennuru	14.57	2.19	12.38
8	Yammehatty	22.65	3.40	19.25
9	Halavudara	13.75	2.06	11.69
10	Cheelangi	29.94	4.49	25.45
11	Godabanahal	18.20	2.73	15.47
12	Cheelangi	4.39	0.66	3.73
13	Sirigere	31.56	4.73	26.83
14	Bommakkanhally	10.62	1.59	9.03
15	Yalagodu	37.83	5.67	32.16
16	Panjaiahnahatti	0.00	0.00	0.00
		311.03	**46.65**	**264.38**
	Challakere Taluk			
1	Bommasamudra	37.60	5.64	31.96
2	Meerasabihally	11.00	1.65	9.35
3	Bandethimalapura	24.70	3.71	21.00
4	Obannanahalli	24.00	3.60	20.40
5	Gunthakolammanahally	31.80	4.77	27.03
6	Mustalagummi	5.80	0.87	4.93
7	Neralagunte	9.70	1.46	8.25
8	Metlagere	37.00	5.55	31.45
9	Kaparahally	0.00	0.00	0.00
10	Obenahally	0.00	0.00	0.00
11	Chikkachelluru	30.40	4.56	25.84
12	Gosikere	34.80	5.22	29.58
13	Katamdeverakote	30.00	4.50	25.50
14	Donnehally	25.50	3.83	21.68
15	Tappagondanahally	0.00	0.00	0.00
16	Gudihally	0.00	0.00	0.00
17	Kamasamudra	14.00	2.10	11.90
18	Valase	24.00	3.60	20.40
19	Jannenahally	22.30	3.35	18.96
20	Nannivala	49.00	7.35	41.65
21	Junjargunte	23.50	3.53	19.98
22	Vrundavanahally	30.80	4.62	26.18
23	Purlahally	39.80	5.97	33.83
24	Haravigondanahally	15.00	2.25	12.75
25	Parasurampura	15.40	2.31	13.09
26	Pillahally	0.00	0.00	0.00
27	P.Gowripura			

Sl .No	Name of the Village	Information of canal Command		
		Total Area	Developed Area	Un developed Area
28	Thammenahally	33.00	4.95	28.05
29	Budnahatty	78.00	11.70	66.30
30	Duggavara	36.40	5.46	30.94
31	N.Gowripura	0.00	0.00	0.00
32	Bhoganahalli	0.00	0.00	0.00
		703.70	**105.56**	**598.15**
	Hiriyur Taluk			
1	Vaddanahally	25.84	3.88	21.96
2	Malagondanahally	8.00	1.20	6.80
3	Katanayakanahally	5.25	0.79	4.46
4	Dindavara	4.85	0.73	4.12
5	Shravanagere	33.60	5.04	28.56
6	Sakra	26.02	3.90	22.12
7	Maddihally	28.35	4.25	24.10
8	Paramenahally	1.45	0.22	1.23
9	Benakanahally	35.20	5.28	29.92
10	Abbinahole	39.34	5.90	33.44
11	Gudunurahally	40.48	6.07	34.41
12	Bidarakere	25.50	3.83	21.68
13	Mavinamadu	23.06	3.46	19.60
14	Venakalgudda	18.00	2.70	15.30
15	Yaradakatte	20.00	3.00	17.00
16	Gudunurahally	0.00	0.00	0.00
		334.94	**50.24**	**284.70**
	Holalkere Taluk			
1	Udogere	0.51	0.08	0.43
2	Kalagatta	33.12	4.97	28.15
3	Hiriyur	21.50	3.23	18.28
4	Nandihally	12.25	1.84	10.41
5	Rangavvanahally	8.72	1.31	7.41
6	S.H.hally	19.66	2.95	16.71
7	Gungiganuru	0.00	0.00	0.00
8	Chikkajajuru	24.38	3.66	20.72
9	Channapatna	12.65	1.90	10.75
10	Harenahally	7.88	1.18	6.70
11	Kunagali	18.86	2.83	16.03
12	Hullemalali	34.9	5.24	29.67
13	Holalkere	33.48	5.02	28.46
14	Gundimadu	18.96	2.84	16.12
15	Holalkere	7.6	1.14	6.46
16	Arehally	27.97	4.20	23.77
17	Bommanakatte	0.73	0.11	0.62
18	Lokadolalu	36.93	5.54	31.39
19	Viswanathanahally	0	0.00	0.00
20	Basapura	0	0.00	0.00
21	R.Nulenuru	20.25	3.04	17.21
22	Ramagiri	0	0.00	0.00
23	Gowdihally	46.83	7.02	39.81
24	Halehally	34.16	5.12	29.04
25	Kalkere	14.84	2.23	12.61
26	Kandawadi	25.19	3.78	21.41
27	N.D.Hosuru	21.83	3.27	18.56
28	H.D.Pura	6.47	0.97	5.50
29	Kaduru	0	0.00	0.00
30	Banagere	2.02	0.30	1.72

Sl .No	Name of the Village	Information of canal Command		
		Total Area	Developed Area	Un developed Area
31	Dummi	7.7	1.16	6.55
32	Adanur	0.00	0.00	0.00
		499.39	**74.91**	**424.48**
	Hosadurga Taluk			
1	Aralihally	21.00	3.15	17.85
2	Seeranakatte	9.69	1.45	8.24
3	Sodaranal	25.45	3.82	21.63
4	Lakkihally	8.50	1.28	7.23
5	Matthodu	6.86	1.03	5.83
6	Matthodu	37.16	5.57	31.59
7	Doddakarpuradakatte	27.06	4.06	23.00
8	Kashappanahally	29.08	4.36	24.72
9	Agasarahally	8.08	1.21	6.87
10	Tarikere	8.50	1.28	7.23
11	Kodihally	11.74	1.76	9.98
12	Kamanakere	34.74	5.21	29.53
13	Bansihally	38.78	5.82	32.96
14	Honnenahally	8.48	1.27	7.21
15	Garaga	29.80	4.47	25.33
16	Kurubarahally	32.38	4.86	27.52
17	Kabbala	22.62	3.39	19.23
18	Tandaga	6.07	0.91	5.16
19	Krishnapura	12.35	1.85	10.50
20	S.Neralakere	13.83	2.07	11.76
21	Gulihally	8.89	1.33	7.56
22	Kainadu	32.40	4.86	27.54
23	Heggere	34.41	5.16	29.25
24	Heggere	21.80	3.27	18.53
25	Devigere	19.43	2.91	16.52
26	Madhure	4.85	0.73	4.12
27	Hebballi	5.72	0.86	4.86
28	Janthikolalu	30.76	4.61	26.15
29	Sanihally	4.05	0.61	3.44
30	Sanihally	4.05	0.61	3.44
31	Sanihally	4.05	0.61	3.44
32	Hottaragondanahally	4.85	0.73	4.12
33	Kyadigere	31.98	4.80	27.18
34	Doddathekalavatty	28.40	4.26	24.14
35	Menasinodu	37.17	5.58	31.59
36	Doddakarpuradakatte	0.00	0.00	0.00
		664.98	**99.75**	**565.23**
	Molakalmur Taluk			
1	Gundluru	20.23	3.03	17.20
2	Chikkobbaihnahally	37.09	5.56	31.53
3	Katanayakanahally	24.00	3.60	20.40
4	Hangal	0.00	0.00	0.00
5	Hucchangidurga	8.90	1.34	7.57
6	Devasamudra	0.00	0.00	0.00
7	Santhegudda	51.94	7.79	44.15
		142.16	**21.32**	**120.84**
	Total :	**2656.20**	**398.43**	**2257.77**

Annexure I Tables For Collating information on DIP

3.4 Existing type of irrigation

Name of the State : Karnataka

Name of the District : Chitradurga

Name of the Block :

Canal (in Kms)

Sl No	Name of Block	Source of Irrigation (ZP Tanks)	Surface irrigation (1)				
			Canal Based		Tanks/ Ponds/ Reservoirs		
			Govt Canal (in Kms)	Communitiy/ Private	Community ponds including small	Individual/ Private ponds	Govt. Reservoir / Dams
1	2	3	4	5	6	7	8
1	Chitradurga	16	21.60	-	-	-	-
2	Challakere	32	54.35	-	-	-	-
3	Hiriyur	16	7.45	-	-	-	-
4	Holalkere	32	14.05	-	-	-	-
5	Hosadurga	36	9.56	-	-	-	-
6	Molakalmur	7	13.33	-	-	-	-
Total :		**139**	**120.34**	**-**	-	-	-

Name of the State : Karnataka

Name of the District : Chitradurga

Name of the Block :

Sl No	Name of the Blocks/ Sub Districts	No of Tanks	Concerned Ministry/ Department	Component	Activity	Total Number/ Capacity (cum)	Command Area / Irrigation Potential(Ha)	Period of Implementations(5/7 years)	Estimated Cos (in Rs)
1	2	3	4	5	6	7	8	9	10
1	Chitradurga	16	R.D.P.R./ P.R.E.D	Her Khet ko pani	Repairs and Improvements of bunds, revetment, pitching, waste weir and resiltation of ZP Tanks	-	-	-	40000000.00
2	Challakere	32							80000000.00
3	Hiriyur	16							40000000.00
4	Holalkere	32							80000000.00
5	Hosadurga	36							90000000.00
6	Molakalmur	7							17500000.00
TOTAL :		139	-	-	-	-	-	-	347500000.00

Executive Engineer
PRE Dn , Chitradurga

Chapter V : Strategic Action Plan for Irrigation in District Under PMKSY

Sl. No	Name of the Blocks/ Sub-district	Concerned Ministry/ Department	Component	Activity	Total Number/ Capacity (cum)	Command Area/Irrigation Potential (Ha)	Period of Implementations (5/7/yrs)	Estimated cost (in Rs. Crores)
1		Mowr	AIBP	Major Irrigation				
2		Mowr		Medium Irrigation				
3	Chitradurga, District Challakere Taluk	State Irrigation Department	Upper Bhadra Project Barrage across Vedavati river-4 No	Major Irrigation	7079204.98	Drinking water/ Ground water recharge	2 Years	24.00

Executive Engineer,
KNNL, UBP, Division No.06
Challakere.

Supplying of surface water to Habitations from RDWS&S Division, Chitradurga, Animal Husbandry and Veterinary Services (Live Stocks) & District Industries Center, Chitradurga.

Sl. No	Taluk	Populations as per 2011 census	Total No. of Habitations in Chitradurga District (RDWSD)	Total No. of Animal Husbandry and Veterinary Services (Live) Stocks	Total No. of Industries (DIC)	Per capita supply (LPCD)	Project Cost (Rs. in Crore)
1	Challakere	311264	374	845827	06	135 LPCD	706.09
2	Chitradurga	296826	268	509301	06	135 LPCD	312.21
3	Hiriyur	304418	287	478521	05	135 LPCD	237.17
4	Holalkere	197988	223	240815	01	135 LPCD	193.04
5	Hosadurga	209619	350	642133	04	135 LPCD	515.31
6	Molakalmuru	133540	135	1342279	01	135 LPCD	579.37
	TOTAL	**1453655**	**1637**	**4058876**	**23**		**2543.19**

4.4 Industrial Water Demand						
SL NO	***Block***	***Name of the industry***	***Water demand (BCM)/year***	***Water demand in 2020 (BCM)***	***Existing Water potential (BCM)/year***	***Water potential to be created (BCM)/year***
LARGE SCALE INDUSTRIES						
1	Hosadurga	MD : Ramachandra Dambal, Madarass Cement Pvtd.Ltd, Mattodu, Hosadurga Tq, Ph No. 08199-240117	0.0000072	0.000036	0.00000432	0.000009
2	Challakere	MD: Mallikarjuna Rao, R.K. Powergen, PVtt, LTD, Challakere Road, Ph No. 9449399544	0.0000036	0.000018	0.00000288	0.0000054
3	Hiriyur	MD: Vinay Lod, V.S.L. Steel Limited, Paramenahalli, Hiriyur Tq. Ph No. 9900158077	0	0	0	0
4	Hiriyur	Entire Ceramic PVT.LTD, Maradihalli, Hiriyur Tq	0.0000036	0.000018	0.00000324	0.0000198
		Total	0.0000144	0.000072	0.00001044	0.0000198

MEDIUAM SCALE INDUSTRIES						
2	Challakere	Md :Sandeep Prakash Spong Iron & Power Pvtd, Ltd, Heggere Village, Challakere Tq Ph No : 9880933033	0.0000054	0.000027	0.0000016	0.000027
3	Hiriyur	Md : Mohammed Khan Habib Proteen & Fats Extracts , Metikurke, Hiriyur Tq Ph No : 08193-200888	0.0000036	0.000018	0.0000014	0.0000019
4	Chitradurga	Md : Narayan SKM Animal feeds & Foods, Pvtd, Ltd, Jattalahalli, Kolahal.po. , Chitradurga Dist. Ph No : 9945853876	0.0000031	0.000016	0.0000012	0.0000017
5	Chitradurga	Md: Rajive Basaveshwara Rice Mill, NH-13, G.R.Halli, Chitradurga Tq Ph No: 9886259750	0.0000012	0.000006	0.0000012	0.000002
6	Chitradurga	Md: Pradeep Gurudeva Industries,G.R. Halli, Chitradurga Tq.Ph No: 9886259750	0.0000012	0.000006	0.0000012	0.0000018
7	Challakere	Md : Raghu Venkateshwara Rice Mill, Bellary Road, Challakere Ph No : 9926514799	0.0000014	0.000007	0.0000012	0.00001

11	Chitradurga	Md : Padmanamba , Ananth Spinning Pvtd, Ltd, Industrial Area, Kelagote, Chitradurga Ph No : 9448279899	0.0000013	0.0000065	0.0000011	0.000001
12	Challakere	Md: Thippeswamy Abhishake Solvent Pvtd, Ltd, Bangalore Road, Challakere Ph No : 08195-222363	0.0000072	0.000036	0.0000013	0.00
13	Hiriyur	Md : Kamal Pasha Golden Feeds, Anesidri, J.G. Halli, Hiriyur Tq Ph No : 9901734430	0.0000032	0.000016	0.0000011	0.000008
14	Hiriyur	Md : Naveen Kumar Nanda Feeds, Metikurke, NH-4, Hiriyur Ph No : 9900081998	0.0000031	0.0000155	0.0000011	0.000009
15	Challakere	M.D. Naghabhshan Anantha Refineries, Bangalore Road, Challakere	0.0000036	0.000018	0.0000012	0.000008
16	Holalkere	M.D. Nagaraja Amruth Organics Malladihalli, Holalkere Tq	0.0000012	0.000006	0.0000012	0.000003
17	Hosadurga	M.D. Prasanna kumar Prakash Co.Co. Coir Pith Kondlahalli, Hosadurga Tq	0.0000014	0.000007	0.0000011	0.000002
18	Challakere	M.K. Agro private limited , Hiriyur Road, Challakere	0.0000036	0.000018	0.0000011	0.000005

		Total	**0.0000405**	**0.0002025**	**0.000017**	**0.0000824**
SMAL SCALE INDUSTRIES						
1	Chitradurga dist	10843 Units	0.00195174	0.0097587	0.001171044	0.002342088

Joint Director
District Industries Centre
Chitradurga

Chapter V: Strategic Action Plan for Irrigation in District under PMKSY

Strategic Action Plan for Irrigation in District Under PMKSY

S.No	Name of the Blocks/Sub Taluk	Concerned Ministry/Department	Component	Activity	Total Number/ Capacity (cum)	Command Area/Irrigation potential (Ha)	Avarage Unit cost / ha	Period of implementation (5/7 yrs)	Estimated cost (in Rs.)
1	CHITRADURGA	MOA & FW-DAC&FW	Per drop more crops (Micro irrigation)	DPAP Drip	3500 numbers	3800	40000	5	152000000
1	Challakere	MOA & FW-DAC&FW	Per drop more crops (Micro irrigation)	DPAP Drip	3000 numbers	3250	45000	5	146250000
2	Hiriyur	MOA & FW-DAC&FW	Per drop more crops (Micro irrigation)	NoN DPAP Drip	3800 numbers	4200	42000	5	176400000
3	Holalkere	MOA & FW-DAC&FW	Per drop more crops (Micro irrigation)	DPAP Drip	5000 numbers	5500	45000	5	247500000
4	HOSADURGA	MOA & FW-DAC&FW	Per drop more crops (Micro	DPAP Drip	2500 Numbers	2800	38786	5	108600000

			irrigation)						
5	Molakalmuru	MOA & FW-DAC&FW	Per drop more crops (Micro irrigation)	DPAP Drip	500 numbers	500	60000	5	30000000
	Grand Total				**18300 numbers**	**20050**			**860750000**

Deputy Director of Horticulture,
(ZP), Chitradurga.

Chapter V: Strategic Action Plan for Irrigation in District under PMKSY

Strategic Action Plan for Irrigation in District Under PMKSY

S. No	Name of the Blocks/Sub Districts	Concerned Ministry/Department	Component Activity	Total Number/ Capacity (cum)	Average Unit cost / ha	Command Area/Irrigation potential (Ha)	Period of implementation (5/7 yrs)	Estimated cost (in Rs.)
1	MOA & FW-DAC&FW	Per drop more crop (Micro irrigation)	DPAP Drip	14500	43180	15850	5	684350000
2	MOA & FW-DAC&FW		Non-DPAP Drip	3800	42000	4200	5	176400000

Deputy Director of Horticulture, (ZP), Chitradurga

Name of the State: Karnataka

Name of the District: Chitradurga

Season	Kharif (Area in ha)			Rabi (Area in ha)			Summer crop (Area in ha)			Total (Area in ha)			Horticulture & Plantation Crops (Area in ha)		
	Irrigated	Rainfed	Total	Irrigated	Rainfed	Total	Irrigated	Rainfed	Total	Irrigated	Rainfed	Total	Irrigated	Rainfed	Total
Onion	7934	2600	**10534**	1310	0	**1310**	524	0	**524**	9768	2600	**12368**	9039	2755	**11794**
Banana	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	5244	0	**5244**
Pomogranate	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	2298	0	**2298**
Papaya	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	637	0	**637**
Coconut	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	23134	10508	**33642**
Arecanut	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	20773	0	**20773**
Mango	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	571	0	**571**
Tomoto	555	0	**555**	198	0	**198**	111	0	**111**	864	0	**864**	0	0	**0**
Chillies	750	560	**1310**	0	0	**0**	0	0	**0**	750	560	**1310**	0	0	**0**
Flowers	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	103	0	**103**
Sapota	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	177	0	**177**
Total	**9239**	**3160**	**12399**	**1508**	**0**	**1508**	**635**	**0**	**635**	**11382**	**3160**	**14542**	**61976**	**13263**	**75239**

Season	Rainfed			Irrigated			Total			
	Area (ha)	Product on (qtn/yr)	Productivity or Yield (kgs/ha)	Cost of Cultivation (rs./ha)	Product on (qtn/yr)	Productivity or Yield (kgs/ha)	Cost of Cultivation (rs./ha)	Product on (qtn/yr)	Productivity or Yield (kgs/ha)	Cost of Cultivation (rs./ha)
Onion	12191	220124	62438	57500	431313	84172	65000	651437	146610	122500
Banana	5244	0	0	0	1074845	462259	125000	1074845	462259	125000
Pomogranate	2298	0	0	0	161192	245999	112500	161192	245999	112500
Papaya	637	0	0	0	477750	213758	125000	477750	213758	125000
Coconut	33642	57000000	6000	0	6750814	153128	50000	63750814	159128	50000
Arecanut	20773	0	0	0	375007	14427	87500	375007	14427	87500
Mango	1826	24500	700	0	115381	2000	50000	139881	2700	50000
Tomoto	864	0	0	0	87861	13900	125000	87861	13900	125000
Chillies	1310	42000	7500	0	75000	10000	80000	117000	17500	80000
Flowers	103	0	0	0	684	650	80000	684	650	80000
Sapota	177	0	0	0	1416	8000	50000	1416	8000	50000
Total	**79065**	**57286624**	**76638**	**57500**	**9551263**	**1208293**	**950000**	**66837887**	**1284931**	**1007500**

Chapter V : Strategic Action Plan for Irrigation in District under PMKSY:

5. Strategic Action Plan for Irrigation in District under PMKSY.

Sl No.	Name of the Blocks / Sub Districts	Concerned Ministry / Department	Component	Activity	Total Number / Capacity (cum)	Command Area / Irrigation Potential (Ha)	Period of Implementation (5/7 Yrs)	Estimated Cost (in Crores)
17	Chitradurga / Chitradurga	DoLR-MoRD	PMKSY Watershed	Newly Created WHS				
17.1		DoLR-MoRD		Farm Ponds	221		2016-17 to 2020-21	1.764
17.2		DoLR-MoRD		Check Dams	1904		2016-17-2020-21	95.189
17.3		DoLR-MoRD		Nallah Bunds	1059		2016-17-2020-21	52.964
17.4		DoLR-MoRD		Percolation Tanks	2167		2016-17-2020-21	108.341
17.5		DoLR-MoRD		Mini Perculation Tank	1679		2016-17-2020-21	16.790
17.8				**Chitradurga Taluk Total**				**275.047**
17.9	Holalkere / Chitradurga	DoLR-MoRD	PMKSY Watershed	Farm Ponds	118		2016-17-2020-21	0.943
17.10		DoLR-MoRD		Check Dams	1185		2016-17-2020-21	59.235
17.11		DoLR-MoRD		Nallah Bunds	681		2016-17-2020-21	34.039
17.12		DoLR-MoRD		Percolation Tanks	1494		2016-17-2020-21	74.722
17.13		DoLR-MoRD		Mini Perculation Tank	958		2016-17-2020-21	9.581
17.16				**Holalkere Taluk Total**				**178.519**
17.17	Hosadurga /	DoLR-	PMKSY	Farm Ponds	173		2016-17-2020-	1.387

	Chitradurga	MoRD	Watershed				21	
17.18		DoLR-MoRD		Check Dams	1449		2016-17-2020-21	72.445
17.19		DoLR-MoRD		Nallah Bunds	833		2016-17-2020-21	41.630
17.20		DoLR-MoRD		Percolation Tanks	1983		2016-17-2020-21	99.172
17.21		DoLR-MoRD		Mini Perculation Tank	1273		2016-17-2020-21	12.730
17.24				**Hosadurga Taluk Total**				**227.363**
17.25	Challakere / Chitradurga	DoLR-MoRD	PMKSY Watershed	Farm Ponds	362		2016-17-2020-21	2.898
17.26		DoLR-MoRD		Check Dams	3028		2016-17-2020-21	151.408
17.27		DoLR-MoRD		Nallah Bunds	1415		2016-17-2020-21	70.734
17.28		DoLR-MoRD		Percolation Tanks	4145		2016-17-2020-21	207.267
17.29		DoLR-MoRD		Mini Perculation Tank	2335		2016-17-2020-21	23.351
17.32				**Challakere Taluk Total**				**455.658**
17.33	Hiriyur / Chitradurga	DoLR-MoRD	PMKSY Watershed	Farm Ponds	204		2016-17-2020-21	1.635
17.34		DoLR-MoRD		Check Dams	1525		2016-17-2020-21	76.232
17.35		DoLR-MoRD		Nallah Bunds	982		2016-17-2020-21	49.081
17.36		DoLR-MoRD		Percolation Tanks	2338		2016-17-2020-21	116.921
17.37		DoLR-MoRD		Mini Perculation Tank	1501		2016-17-2020-21	15.008
17.40				**Hiriyur Taluk Total**				**258.877**

17.33	Molakalmuru / Chitradurga	DoLR-MoRD	PMKSY Watershed	Farm Ponds	72		2016-17-2020-21	0.579
17.34		DoLR-MoRD		Check Dams	540		2016-17-2020-21	27.005
17.35		DoLR-MoRD		Nallah Bunds	348		2016-17-2020-21	17.387
17.36		DoLR-MoRD		Percolation Tanks	828		2016-17-2020-21	41.419
17.37		DoLR-MoRD		Mini Perculation Tank	532		2016-17-2020-21	5.317
17.40				**Molakalmuru Taluk Total**				**91.707**
17.33	**Chitradurga**	**DoLR-MoRD**	**PMKSY Watershed**	**Farm Ponds**	**1151**		2016-17-2020-21	**9.205**
17.34		**DoLR-MoRD**		**Check Dams**	**9630**		2016-17-2020-21	**481.513**
17.35		**DoLR-MoRD**		**Nallah Bunds**	**5317**		2016-17-2020-21	**265.834**
17.36		**DoLR-MoRD**		**Percolation Tanks**	**12957**		2016-17-2020-21	**647.842**
17.37		**DoLR-MoRD**		**Mini Perculation Tank**	**8278**		2016-17-2020-21	**82.776**
17.40		**DoLR-MoRD**		**Chitradurga District Total**				**1487.17**

MINOR IRRIGATION DETAILS FOR CHITRADURGA DISTRICT

5 Strategic Action Plan for Irrigation in District under PMKSY : CHALLAKERE

SL. No.	Name of the Blocks/ Sub District	Concerned Ministry / Dept.	Component	Activity	Total number/capacity (cum)	Command Area/ Irrigation Potential (Ha)	Period of implementation (5/7 yrs)	Estimated cost (Rs. In Lakhs)
1	Chitradurga	Minor Irrigation	**A.I.B.P**	Minor Irrigation (Check Dams)	13/0.57	365.00	5	1020.00
2	Chitradurga	Minor Irrigation	**HarKhetkopani**	Lift Irrigation	0	0.00	0	0.00
3				Ground Water Development	2/ 3.52	150.00	5	205.00
4				RRR of water Bodies	31/ 61.90	4412.81	5	4500.00
				Construction of Field Channels				
5				Lined Field Channels	8/ 2.28	1695.00	5	3050.00
6				Unlined Channels	-	-	-	-
	Chitradurga	Minor Irrigation	**PMKSY Watershed**	**Newly created WHS**				
7	Chitradurga	Minor Irrigation	"	Check Dams	11 /7.47	1410.00	5	3815.00
8	Chitradurga	Minor Irrigation	"	Nallah Bunds	3/0.11	125.00	5	210.00
9	Chitradurga	Minor Irrigation	"	Percolation Tanks	1/ 0.06	50.00	5	150.00
10	Chitradurga	Minor Irrigation	"	Other Ground water Recharge Structure	-	-	-	-
	Chitradurga	Minor Irrigation	"	**Renovated WHS**				
11	Chitradurga	Minor Irrigation	"	Check Dams	10 / 3.04	725.00	5	305.00

	Chitradurga	Minor Irrigation	**Convergence with MGNREGA**	**Newly created**				
12	Chitradurga	Minor Irrigation	**Convergence with MGNREGA**	Water Conservation :				
13	Chitradurga	Minor Irrigation	**Convergence with MGNREGA**	Water Harvesting :				
14	Chitradurga	Minor Irrigation	**Convergence with MGNREGA**	Creation of Irrigation Canal and Drains :				
15	Chitradurga	Minor Irrigation	"	Providing Infrastructure for Irrigation :				
16	Chitradurga	Minor Irrigation	"	Land Development				
	Chitradurga	Minor Irrigation	"	**Renovation**				
17	Chitradurga	Minor Irrigation	"	Renovation of water bodies including desilting :				
18	Chitradurga	Minor Irrigation	"	Renovation of water bodies including desilting :				
		State Planned Scheme of Irrigation						
19	Chitradurga	State Irrigation Department	Neme Of the Scheme	Minor Irrigation				
				Total for Challakere Tq., is Rs.				**13255.00**

Executive Engineer

Minor Irrigation Division, Chitradurga

5 Strategic Action Plan for Irrigation in District under PMKSY : CHITRADURGA TALUK

SL. No.	Name of the Blocks/ Sub District	Concerned Ministry / Dept.	Component	Activity	Total number/capacity (cum)	Command Area/ Irrigation Potential (Ha)	Period of implementation (5/7 yrs)	Estimated cost (Rs. In Lakhs)
1	Chitradurga	Minor Irrigation	**A.I.B.P**	Minor Irrigation (Check Dams)	10/ 0.67	385.00	5	1290.00
2	Chitradurga	Minor Irrigation	**HarKhetkopani**	Lift Irrigation	1 / 0.12	75.00	5	300.00
3				Ground Water Development	7/0.66	415.00	5	490.00
4				RRR of water Bodies	13/20.75	1284.21	5	1415.00
				Construction of Field Channels				
5				Lined Field Channels	0	0.00	0	0.00
6				Unlined Channels	-	-	-	-
	Chitradurga	Minor Irrigation	**PMKSY Watershed**	**Newly created WHS**				
7	Chitradurga	Minor Irrigation	"	Check Dams	13/0.52	520.00	5	1025.00
8	Chitradurga	Minor Irrigation	"	Nallah Bunds	4/0.12	165.00	5	250.00
9	Chitradurga	Minor Irrigation	"	Percolation Tanks	3/0.84	230.00	5	520.00
10	Chitradurga	Minor Irrigation	"	Other Ground water Recharge Structure	-	-	-	-
	Chitradurga	Minor Irrigation	"	**Renovated WHS**				
11	Chitradurga	Minor Irrigation	"	Check Dams	5/0.78	280.00	5	100.00
	Chitradurga	Minor Irrigation	**Convergence with MGNREGA**	**Newly created**				

12	Chitradurga	Minor Irrigation	**Convergence with MGNREGA**	Water Conservation :				
13	Chitradurga	Minor Irrigation	**Convergence with MGNREGA**	Water Harvesting :				
14	Chitradurga	Minor Irrigation	**Convergence with MGNREGA**	Creation of Irrigation Canal and Drains :				
15	Chitradurga	Minor Irrigation	"	Providing Infrastructure for Irrigation :				
16	Chitradurga	Minor Irrigation	"	Land Development				
	Chitradurga	Minor Irrigation	"	**Renovation**				
17	Chitradurga	Minor Irrigation	"	Renovation of water bodies including desilting :				
18	Chitradurga	Minor Irrigation	"	Renovation of water bodies including desilting :				
		State Planned Scheme of Irrigation						
19	Chitradurga	State Irrigation Department	Neme Of the Scheme	Minor Irrigation				

Total for Chitradurga Tq., is Rs. 5390.00

Assistant Executive Engineer
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Minor Irrigation Division
Chitradurga

5 Strategic Action Plan for Irrigation in District under PMKSY :HIRIYUR

SL. No.	Name of the Blocks/ Sub District	Concerned Ministry / Dept.	Component	Activity	Total number/capacity (cum)	Command Area/ Irrigation Potential (Ha)	Period of implementation (5/7 yrs)	Estimated cost (Rs. In Lakhs)
1	Chitradurga	Minor Irrigation	**A.I.B.P**	Minor Irrigation (Check Dams)	5/ 0.45	415.00	5	2050.00
2	Chitradurga	Minor Irrigation	**HarKhetkopani**	Lift Irrigation	0	0.00	0	0.00
3				Ground Water Development	1/ 2.56	500.00	5	6500.00
4				RRR of water Bodies	6/ 2.71	505.00	5	610.00
				Construction of Field Channels				
5				Lined Field Channels	0	0.00	0	0.00
6				Unlined Channels	-	-	-	-
	Chitradurga	Minor Irrigation	**PMKSY Watershed**	**Newly created WHS**				
7	Chitradurga	Minor Irrigation	"	Check Dams	0	0.00	0	0.00
8	Chitradurga	Minor Irrigation	"	Nallah Bunds	0	0.00	0	0.00
9	Chitradurga	Minor Irrigation	"	Percolation Tanks	1/ 0.05	60.00	5	100.00
10	Chitradurga	Minor Irrigation	"	Other Ground water Recharge Structure	-	-	-	-
	Chitradurga	Minor Irrigation	"	**Renovated WHS**				
11	Chitradurga	Minor Irrigation	"	Check Dams	0	0.00	0	0.00

	Chitradurga	Minor Irrigation	**Convergence with MGNREGA**	**Newly created**				
12	Chitradurga	Minor Irrigation	**Convergence with MGNREGA**	Water Conservation :				
13	Chitradurga	Minor Irrigation	**Convergence with MGNREGA**	Water Harvesting :				
14	Chitradurga	Minor Irrigation	**Convergence with MGNREGA**	Creation of Irrigation Canal and Drains :				
15	Chitradurga	Minor Irrigation	"	Providing Infrastructure for Irrigation :				
16	Chitradurga	Minor Irrigation	"	Land Development				
	Chitradurga	Minor Irrigation	"	**Renovation**				
17	Chitradurga	Minor Irrigation	"	Renovation of water bodies including desilting :				
18	Chitradurga	Minor Irrigation	"	Renovation of water bodies including desilting :				
		State Planned Scheme of Irrigation						
19	Chitradurga	State Irrigation Department	Neme Of the Scheme	Minor Irrigation				

Total for Hiriyur Tq., is Rs. 9260.00

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Chitradurga

5 Strategic Action Plan for Irrigation in District under PMKSY: MOLAKALMURU

SL. No.	Name of the Blocks/ Sub District	Concerned Ministry / Dept.	Component	Activity	Total number/capacity (cum)	Command Area/ Irrigation Potential (Ha)	Period of implementation (5/7 yrs)	Estimated cost (Rs. In Lakhs)
1	Chitradurga	Minor Irrigation	**A.I.B.P**	Minor Irrigation (Check Dams)	3/0.15	75.00	5	445.00
2	Chitradurga	Minor Irrigation	**HarKhetkopani**	Lift Irrigation	4 / 15.36	470.00	5	1685.00
3				Ground Water Development	1/ 0.25	150.00	5	200.00
4				RRR of water Bodies	4/ 0.20	300.00	5	400.00
				Construction of Field Channels				
5				Lined Field Channels	1/0.02	40.00	5	150.00
6				Unlined Channels	-	-	-	-
	Chitradurga	Minor Irrigation	**PMKSY Watershed**	**Newly created WHS**				
7	Chitradurga	Minor Irrigation	"	Check Dams	0	0.00	0	0.00
8	Chitradurga	Minor Irrigation	"	Nallah Bunds	0	0.00	0	0.00
9	Chitradurga	Minor Irrigation	"	Percolation Tanks	1/ 0.06	50.00	5	150.00
10	Chitradurga	Minor Irrigation	"	Other Ground water Recharge Structure	-	-	-	-
	Chitradurga	Minor Irrigation	"	**Renovated WHS**				
11	Chitradurga	Minor Irrigation	"	Check Dams	1 / 0.02	45.00	5	25.00

	Chitradurga	Minor Irrigation	**Convergence with MGNREGA**	**Newly created**				
12	Chitradurga	Minor Irrigation	**Convergence with MGNREGA**	Water Conservation :				
13	Chitradurga	Minor Irrigation	**Convergence with MGNREGA**	Water Harvesting :				
14	Chitradurga	Minor Irrigation	**Convergence with MGNREGA**	Creation of Irrigation Canal and Drains :				
15	Chitradurga	Minor Irrigation	"	Providing Infrastructure for Irrigation :				
16	Chitradurga	Minor Irrigation	"	Land Development				
	Chitradurga	Minor Irrigation	"	**Renovation**				
17	Chitradurga	Minor Irrigation	"	Renovation of water bodies including desilting :				
18	Chitradurga	Minor Irrigation	"	Renovation of water bodies including desilting :				
		State Planned Scheme of Irrigation						
19	Chitradurga	State Irrigation Department	Neme Of the Scheme	Minor Irrigation				

Total for Molakalmur Tq., is Rs. 3055.00

Chapter V : Strategic Action Plan for Irrigation in District under PMKSY :

5 Strategic Action Plan for Irrigation in District under PMKSY :

SL. No.	Name of the Blocks/ Sub District	Concerned Ministry / Dept.	Component	Activity	Total number/capacity (cum)	Command Area/ Irrigation Potential (Ha)	Period of implementation (5/7 yrs)	Estimated cost (Rs. In Lakhs)
1	Chitradurga	Minor Irrigation	**A.I.B.P**	Minor Irrigation (Check Dams)	30/ 1.63	595.00	5	2065.00
2	Chitradurga	Minor Irrigation	**HarKhetkopani**	Lift Irrigation	5 / 15.48	545.00	5	1985.00
3				Ground Water Development	9/ 0.96	565.00	5	695.00
4				RRR of water Bodies	52/ 80.76	6105.58	5	6645.00
				Construction of Field Channels				
5				Lined Field Channels	9/ 2.36	1735.00	5	3200.00
6				Unlined Channels	-	-	-	-
	Chitradurga	Minor Irrigation	**PMKSY Watershed**	**Newly created WHS**				
7	Chitradurga	Minor Irrigation	"	Check Dams	24 /7.99	1930.00	5	4840.00
8	Chitradurga	Minor Irrigation	"	Nallah Bunds	7/0.23	290.00	5	460.00
9	Chitradurga	Minor Irrigation	"	Percolation Tanks	6/ 1.01	390.00	5	890.00
10	Chitradurga	Minor Irrigation	"	Other Ground water Recharge Structure	-	-	-	-
	Chitradurga	Minor Irrigation	"	**Renovated WHS**				
11	Chitradurga	Minor Irrigation	"	Check Dams	11 / 3.60	825.00	5	320.00
	Chitradurga	Minor Irrigation	**Convergence with MGNREGA**	**Newly created**				

12	Chitradurga	Minor Irrigation	**Convergence with MGNREGA**	Water Conservation :				
13	Chitradurga	Minor Irrigation	**Convergence with MGNREGA**	Water Harvesting :				
14	Chitradurga	Minor Irrigation	**Convergence with MGNREGA**	Creation of Irrigation Canal and Drains :				
15	Chitradurga	Minor Irrigation	"	Providing Infrastructure for Irrigation :				
16	Chitradurga	Minor Irrigation	"	Land Development				
	Chitradurga	Minor Irrigation	"	**Renovation**				
17	Chitradurga	Minor Irrigation	"	Renovation of water bodies including desilting :				
18	Chitradurga	Minor Irrigation	"	Renovation of water bodies including desilting :				
		State Planned Scheme of Irrigation						
19	Chitradurga	State Irrigation Department	Neme Of the Scheme	Minor Irrigation				

Total for Chitradurga, Challakere, Hiriyur and Molakalmur Tq., is Rs. 21100.00

Assistant Executive Engineer
Minor Irrigation Sub Division

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Minor Irrigation Division

Chapter V : Strategic Action Plan for Irrigation in District under PMKSY :

5 Strategic Action Plan for Irrigation in District under PMKSY :

SL.No.	Name of the Blocks/ Sub District	Concerned Ministry / Dept.	Component	Activity	Capacity (Mcum)	Command Area/ Irrigation Potential (Ha)	Period of implementation (5/7 yrs)	Estimated cost (Rs. In Lakhs)
	Chitradurga	Minor Irrigation	**A.I.B.P**	**Check Dams**				
8		"	"	Constrcution of Check Dam across halla near Sanikere Village in ChallakereTq., Chitradurga Dist.,	0.05	25	5	90.00
9		"	"	Constrcution of Check Dam across halla near Amkundi Village in MOlakalmureTq., Chitradurga Dist.,	0.05	25	5	195.00
10		"	"	Constrcution of Check Dam across halla near Hirekerehalli Village in MOlakalmureTq., Chitradurga Dist.,	0.05	25	5	190.00
11		"	"	Constrcution of Check Dam across halla near Marlahalli Village in MolakalmureTq., Chitradurga Dist.,	0.05	25	5	60.00
12		"	"	Construction of CheckDam across halla near KhalahallyGollarahatty village in ChitradrugaTq.,Chitradurga Dist.,	0.05	30	5	150.00
17	"	"	"	Constrcution of Check Dam across halla near Sanikere Village in ChallakereTq., Chitradurga Dist.,	0.05	25	5	50.00

18	"	"	"	Constrcution of Check Dam across halla near Kaparahalli Village in ChallakereTq., Chitradurga Dist.,	0.05	25	5	50.00
19	"	"	"	Constrcution of Check Dam across halla near T. N. Kote Village in ChallakereTq., Chitradurga Dist.,	0.05	25	5	50.00
20	"	"	"	Constrcution of Check Dam across halla near Balenahalli Village in ChallakereTq., Chitradurga Dist.,	0.05	25	5	150.00
21	"	"	"	Constrcution of Check Dam across halla near Kadehude Village in ChallakereTq., Chitradurga Dist.,	0.05	25	5	75.00
22	"	"	"	Constrcution of Check Dam across halla near Doddachellur Village in ChallakereTq., Chitradurga Dist.,	0.05	25	5	80.00
23	"	"	"	Constrcution of Check Dam across halla near Gorlakatte Village in ChallakereTq., Chitradurga Dist.,	0.05	25	5	50.00
24	"	"	"	Constrcution of Check Dam across halla near Ramajogihalli Village in ChallakereTq., Chitradurga Dist.,	0.05	25	5	75.00
25	"	"	"	Construction of Checkdam across halla near Nayakanahatty in Challakere in Tq ., Chitradurga Dist.,	0.04	40	5	100.00
26	"	"	"	Construction of Checkdam across halla near Rekhalakere in ChallakereTq., Chitradurga Dist.,	0.02	25	5	50.00
27	"	"	"	Construcuction of Checkdam across halla near Devapuradahatty in ChitradurgaTq., Chitradurga Dist.,	0.05	35	5	100.00
28	"	"	"	Construction of CheckDam across halla near kundalagur in HiriyurTq.,Chitradurga Dist.,	0.09	100	5	400.00
29	"	"	"	Construction of Checkdam across halla near Nayakanahatty in Challakere in Tq ., Chitradurga Dist.,	0.04	40	5	100.00
30	"	"	"	Construction of Checkdam across halla near Rekhalakere in ChallakereTq., Chitradurga Dist.,	0.02	25	5	50.00
					0.91	**595.00**		**2065.00**

Assistant Engineer
Minor Irrigation Sub Division
Chitradurga

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Chitradurga

SL. No.	Name of the Blocks/ Sub District	Concerned Ministry / Dept.	Component	Activity	Capacity (Mcum)	Command Area/ Irrigation Potential (Ha)	Period of implementation (5/7 yrs)	Estimated cost (Rs. In Lakhs)
		"	"	Constrcution of Check Dam across halla near Alagavadi Village in ChitradurgaTq., Chitradurga Dist.,	0.075	40	5	75.00
		"	"	Constrcution of Check Dam across halla near Palakihalli Village in ChitradurgaTq., Chitradurga Dist.,	0.07	40	5	80.00
		"	"	Constrcution of Check Dam across halla near Bharamasagara Village in ChitradurgaTq., Chitradurga Dist.,	0.09	50	5	115.00
		"	"	Constrcution of Check Dam across halla near Kunabevu Village in ChitradurgaTq., Chitradurga Dist.,	0.09	40	5	120.00
		"	"	Constrcution of Check Dam across halla near Hayakal Village in ChitradurgaTq., Chitradurga Dist.,	0.05	40	5	125.00
		"	"	Constrcution of Check Dam across halla near Baggularangavanahalli Village in ChitradurgaTq., Chitradurga Dist.,	0.05	40	5	125.00
		"	"	Constrcution of Check Dam across halla near Chikkajagalore Village in ChitradurgaTq., Chitradurga Dist.,	0.05	25	5	80.00

"	"	Constrcution of Check Dam across halla near Kunabevu Village in ChitradurgaTq., Chitradurga Dist.,	0.09	40	5	195.00
"	"	Constrcution of Check Dam across halla near Hayakal Village in ChitradurgaTq., Chitradurga Dist.,	0.05	40	5	125.00
"	"	Constrcution of Check Dam across halla near Baggularangavanahalli Village in ChitradurgaTq., Chitradurga Dist.,	0.05	40	5	185.00
"	"	Constrcution of Check Dam across halla near Chikkajagalore Village in ChitradurgaTq., Chitradurga Dist.,	0.05	25	5	75.00

Chapter V : Strategic Action Plan for Irrigation in District under PMKSY :

5 Strategic Action Plan for Irrigation in District under PMKSY :

SL. No.	Name of the Blocks/ Sub District	Concerned Ministry / Dept.	Component	Activity	Capacity (Mcum)	Command Area/ Irrigation Potential (Ha)	Period of implementation (5/7 yrs)	Estimated cost (Rs. In Lakhs)
1	2	3	4	5	6	7	8	9
	Chitradurga	Minor Irrigation	HarKhetkopani	**Lift Irrigation**	15	350	5	1500
1	"	"	"	Improvements Gonur Lift Irrigation in ChitradurgaTq., Chitradurga Dist.,	0.12	75	5	300
2	"	"	"	Improvements Bommalinganahalli Lift Irrigation in MolakalmurTq., Chitradurga Dist.,	0.09	30	5	35
3	"	"	"	Improvements Yarapotajogihalli Lift Irrigation in MolakalmurTq., Chitradurga Dist.,	0.09	30	5	50
4	"	"	"	Improvements Siddaihainakote Lift Irrigation in MolakalmurTq., Chitradurga Dist.,	0.09	30	5	50
5	"	"	"	Improvements Manamahinahatti Lift Irrigation in MolakalmurTq., Chitradurga Dist.,	0.09	30	5	50
					15.48	**545.00**		**1985.00**
	"	"	"	**Ground Water Development**				
1	"	"	"	Construction of Bhandhara across halla near Turuvanur village in ChitradurgaTq., Chitradurga Dist.,.	0.15	75	5	120

2	"	"	"	Construction of Bhandhara across halla near Chikkabennurgollarahatti village in ChitradurgaTq., Chitradurga Dist.,.	0.07	40	5	65
3	"	"	"	Construction of Bhandhara across halla near Yalagatte village in ChallakereTq., Chitradurga Dist.,.	0.15	75	5	85
4	"	"	"	Construction of Bhandhara across halla near Yalavarthi village in ChitradurgaTq., Chitradurga Dist.,.	0.075	75	5	50
5	"	"	"	Construction of Bhandhara across halla near Belagatta village in ChitradurgaTq., Chitradurga Dist.,.	0.15	75	5	75
6	"	"	"	Construction of Bhandhara across halla near Turuvanur village in ChitradurgaTq., Chitradurga Dist.,.	0.1	75	5	80
7	"	"	"	Construction of Bhandhara across halla near Gopanahalli village in ChallakereTq., Chitradurga Dist.,.	0.15	75	5	120
8	"	"	"	Construction of Bhandhara across halla near Godabanhal village in ChitradurgaTq., Chitradurga Dist.,	0.05	40	5	50
9	"	"	"	Construction of Bhandhara across halla near Hullur village in ChitradurgaTq., ChitradurgaDistr.,	0.06	35	5	50
					0.96	**565.00**		**695.00**
	"	"	"	**RRR of water Bodies**				
1	"	"	"	RRR of Kakabaluporculation tank in ChitradurgaTq., Chitradurga Dist.,	0.29	40.5	5	100
2	"	"	"	RRR of Issamudra tank in ChitradurgaTq., Chitradurga Dist.,	1.07	76.07	5	100
3	"	"	"	RRR of Sirigare tank in ChitradurgaTq., Chitradurga Dist.,	1.29	61.5	5	100
4	"	"	"	RRR of Bahaddurgatta tank in ChitradurgaTq., Chitradurga Dist.,	0.41	44	5	100

5				RRR of Nandihalli tank in ChitradurgaTq., Chitradurga Dist.,	0.16	52	5	75
6	"	"	"	RRR of Sulthanipura tank in ChitradurgaTq., Chitradurga Dist.,	0.45	41.27	5	120
7	"	"	"	RRR of Doddagatta tank in ChitradurgaTq., Chitradurga Dist.,	1.93	77.27	5	120
8				RRR of Muddapura tank in ChitradurgaTq., Chitradurga Dist.,	1.6	48.54	5	120
9	"	"	"	RRR of GorlakatteDuggammanakere tank in ChallakereTq., Chitradurga Dist.,	0.25	59.49	5	120
10	"	"	"	RRR of Dodderi tank in ChallakereTq., Chitradurga Dist.,	2.38	329	5	120
11	"	"	"	RRR of Chikkamadure tank in ChallakereTq., Chitradurga Dist.,	3.29	155.8	5	120
12	"	"	"	RRR of Marikunte tank in ChallakereTq., Chitradurga Dist.,	1.13	46.59	5	120
13	"	"	"	RRR of Ranikere tank in ChallakereTq., Chitradurga Dist.,	14.24	891	5	750
14	"	"	"	RRR of Durggavara tank in ChallakereTq., Chitradurga Dist.,	1.5	52	5	120
15	"	"	"	RRR of Nagaramgere tank in ChallakereTq., Chitradurga Dist.,	1.45	50.15	5	150
16	"	"	"	RRR of Siddeswaranadurga tank in ChallakereTq., Chitradurga Dist.,	2.47	140.04	5	120
17	"	"	"	RRR of Kyadigunte tank in ChallakereTq., Chitradurga Dist.,	0.62	57.87	5	100
18	"	"	"	RRR of MahadevapuraChikkakere tank in ChallakereTq., Chitradurga Dist.,	1.56	48.15	5	100

19	"	"	"	RRR of Kadehude tank in ChallakereTq., Chitradurga Dist.,	0.73	67.18	5	100
20	"	"	"	RRR of MahadevapuraDoddakere tank in ChallakereTq., Chitradurga Dist.,	1.48	57.08	5	120
21	"	"	"	RRR of Chowlur tank in ChallakereTq., Chitradurga Dist.,	0.63	62.75	5	150
22	"	"	"	RRR of T.N. Kote tank in ChallakereTq., Chitradurga Dist.,	1.16	61.91	5	150
23	"	"	"	RRR of Thippareddyhalli tank in ChallakereTq., Chitradurga Dist.,	0.55	72.87	5	100
24	"	"	"	RRR of Oblapura tank in ChallakereTq., Chitradurga Dist.,	1.52	96.31	5	100
25	"	"	"	RRR of Bommankunte tank in ChallakereTq., Chitradurga Dist.,	1.14	49.54	5	125
26	"	"	"	RRR of BelagereDoddakere tank in ChallakereTq., Chitradurga Dist.,	1.57	75.67	5	150
27	"	"	"	RRR of Chennamanagthihalli tank in ChallakereTq., Chitradurga Dist.,	1.28	71.22	5	120
28	"	"	"	RRR of Sanikere tank in ChallakereTq., Chitradurga Dist.,	4.55	100.76	5	150
29	"	"	"	RRR of Karekal tank in ChallakereTq., Chitradurga Dist.,	1.64	50.18	5	100
30	"	"	"	RRR of Ullarthi tank in ChallakereTq., Chitradurga Dist.,	1.07	86.25	5	100
31	"	"	"	RRR of Yadalagatta tank in ChallakereTq., Chitradurga Dist.,	2.74	66.08	5	100
32	"	"	"	RRR of Mylanahalli tank in ChallakereTq., Chitradurga Dist.,	0.88	47.87	5	120

33	"	"	"	RRR of Talaku tank in ChallakereTq., Chitradurga Dist.,	0.95	55.44	5	120
34	"	"	"	RRR of Jajur tank in ChallakereTq., Chitradurga Dist.,	0.42	170.37	5	150
35	"	"	"	RRR of Bommasamudra tank in ChallakereTq., Chitradurga Dist.,	0.78	47.64	5	100
36	"	"	"	RRR of Parashurampura old tank in ChallakereTq., Chitradurga Dist.,	2.02	263	5	200
37	"	"	"	RRR of Parashurampura New tank in ChallakereTq., Chitradurga Dist.,	4.27	402.6	5	175
38	"	"	"	RRR of NayakanahattyDoddakere tank in ChallakereTq., Chitradurga Dist.,	0	608	5	150
39	"	"	"	RRR of Hirikerehalli tank in MolakalmurTq., Chitradurga Dist.,	0.05	75	5	100
40	"	"	"	RRR of Rekalgere tank in MolakalmurTq., Chitradurga Dist.,	0.05	75	5	100
41	"	"	"	RRR of Hirehalli tank in MolakalmurTq., Chitradurga Dist.,	0.05	75	5	100
42	"	"	"	RRR of Dyamavannahalli in ChitradurgaTq., Chitradurga Dist.,	1.81	41.28	5	100
43	"	"	"	RRR of Khatral tank in ChitradurgaTq., Chitradurga Dist.,	5.55	254	5	100
44	"	"	"	RRR of Hullur tank in ChitradurgaTq., Chitradurga Dist.,	1.81	115.34	5	100
45	"	"	"	RRR of Khalahally tank in ChitradurgaTq., Chitradurga Dist.,	2.2	111	5	100
46	"	"	"	RRR of Ikkanur tank in HiriyurTq., Chitradurga Dist.,	0.4	100	5	100

47	"	"	"	RRR of Eswargere tank in HiriyurTq., Chitradurga Dist.,	0.41	80	5	90
48	"	"	"	RR RofBharamagere tank in HiriyurTq., Chitradurga dist.,	0.52	85	5	100
49	"	"	"	RRR of Kodihally in HiriyurTq., Chitradura Dist.,	0.41	85	5	120
50	"	"	"	RRR of Harthikote in HiriyurTq., Chitradurga Distr.,	0.44	75	5	100
51	"	"	"	RRR of Chikkasidavanahally tank in HiriyurTq., Chitradurga Dist.,	0.53	80	5	100
52	"	"	"	RRR of Rekhalagere tank in ChallakereTq. Chitradurga Dist.,	1.06	70	5	100
					80.76	**6105.58**		**6645.00**
	"	"	"	**Lined Field Channeles**				
1	"	"	"	Improvements to Field Channels near Haravigondahalli village in ChallakereTq., Chityradurga Dist.	0.02	40	5	150
2	"	"	"	Improvements to Field Channels near Nagagondanahalli village in ChallakereTq., Chityradurga Dist.	0.02	40	5	150
3	"	"	"	Improvements to Field Channels near Viswesharapura i village in ChallakereTq., Chityradurga Dist.	0.02	40	5	150
4	"	"	"	Improvements to Narayanpura Right bank canal in ChallakereTq., Chityradurga Dist.	2.2	1415	5	2000
5	"	"	"	Improvements to Field Channels near Chattekambha i village in ChallakereTq., Chityradurga Dist.	0.02	40	5	150
6	"	"	"	Improvements to Field Channels near Hiremallanahole village in ChallakereTq., Chityradurga Dist.	0.02	40	5	150

7	"	"	"	Improvements to Field Channels near Ghatparthi village in ChallakereTq., Chityradurga Dist.	0.02	40	5	150
8	"	"	"	Improvements to Field Channels near Talaku village in ChallakereTq., Chityradurga Dist.	0.02	40	5	150
9	"	"	"	Improvements to Field Channels near Chikkanahalli village in MolakalmurTq., Chityradurga Dist.	0.02	40	5	150
					2.36	**1735.00**		**3200.00**
	"	"	"	**Unlined Channels**				
				Nill				

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Chapter V : Strategic Action Plan for Irrigation in District under PMKSY :

5 Strategic Action Plan for Irrigation in District under PMKSY :

SL. No.	Name of the Blocks/ Sub District	Concerned Ministry / Dept.	Component	Activity	Total number/capacity (cum)	Command Area/ Irrigation Potential (Ha)	Period of implementation (5/7 yrs)	Estimated cost (Rs. In Lakhs)
1	2	3	4	5	6	7	8	9
	Chitradurga	Minor Irrigation	PMKSY Watershed	**Newly created WHS**				
	Chitradurga	Minor Irrigation	"	**Check Dams**				
1	"	"	"	Construction of Check Dam across halla near Hunasekatte Village in ChitradurgaTq., Chitradurga Dist.,	0.04	40	5	90.00
2	"	"	"	Construction of Check Dam across halla near Gorlakatte Village in Chitradurga Tq., Chitradurga Dist.,	0.04	40	5	90.00
3	"	"	"	Construction of Check Dam across halla near Erajjanahatty in Chitradurga Tq., Chitradurga Dist.,	0.04	40	5	100.00
4	"	"	"	Construction of Check Dam across halla in Borappanahatti in Challakere Tq., Chitradurga Dist.,	0.04	40	5	75.00
5	"	"	"	Construction of Check Dam across halla near Pelavarahatti in Chitradurga Tq., Chitradurga Dist.,	0.04	40	5	75.00
6	"	"	"	Construction of Check Dam across halla near Khenadalu in Chitradurga Tq., Chitradurga Dist.,	0.04	40	5	70.00
7	"	"	"	Construction of Check Dam across halla near Muddapura in Chitradurga Tq., Chitradurga Dist.,	0.04	40	5	75.00

8	"	"	"	Construction of Check Dam across halla near Hirekabbigere in Chitradurga Tq., Chitradurga Dist.,	0.04	40	5	80.00
9	"	"	"	Construction of Check Dam across halla near Chikkabennure in Chitradurga Tq., Chitradurga Dist.,	0.04	40	5	60.00
10	"	"	"	Construction of Check Dam across halla near Hampanure in Chitradurga Tq., Chitradurga Dist.,	0.04	40	5	100.00
11	"	"	"	Construction of Check Dam across halla near Bahaddurgatta in ChitradurgaTq., Chitradurga Dist.,	0.04	40	5	70.00
12	"	"	"	Construction of Check Dam across halla near Kogunde in Chitradurga Tq., Chitradurga Dist.,	0.04	40	5	85.00
13	"	"	"	Construction of Check Dam across halla near BahaddurgattaHosahatti in Chitradurga Tq., Chitradurga Dist.,	0.04	40	5	60.00
14	"	"	"	Construction of Check Dam across halla near Bastihalli in Chitradurga Tq., Chitradurga Dist.,	0.04	40	5	75.00
15	"	"	"	Construction of Check Dam across halla near Palakihalli in Chitradurga Tq., Chitradurga Dist.,	0.04	40	5	85.00
16	"	"	"	Construction of Check Dam across halla in Obenahally in Challakere Tq., Chitradurga Dist.,	0.03	35	5	50.00
17	"	"	"	Construction of Check Dam across halla in Kavalarahatti in Challakere Tq., Chitradurga Dist.,	0.03	35	5	50.00
18	"	"	"	Construction of CheckDam across halla in P.Mahadavapura in Challakere Tq., ChitrauragaDistr,	0.03	35	5	50.00
19	"	"	"	Construction of CheckDam across halla in Gopanahalli in Challakere Tq., Chitrauraga Distr,	0.75	120	5	150.00
20	"	"	"	Construction of Barrage across Vedavathi river near Gosikere in Challakere Tq., Chitrauraga Distr,	1.25	220	5	650.00
21	"	"	"	Construction of Barrage across Vedavathi river near Chowlure in Challakere Tq., ChitrauragaDistr,	1.5	220	5	675.00

22	"	"	"	Construction of Barrage across Vedavathi river near Parashurampura in Challakere Tq., ChitrauragaDistr,	1.3	225	5	625.00
23	"	"	"	Construction n of Barrage across Vedavathi river near Halagondanahalli in ChallakereTq., ChitrauragaDistr,	1.25	220	5	650.00
24	"	"	"	Construction of Barrage cum Bridge across Vedavathi river near Kalamaranahalli - Hosahalli in ChallakereTq., ChitrauragaDistr,	1.25	220	5	750.00
					7.99	**1930.00**		**4840.00**
	Chitradurga	Minor Irrigation	"	**Nallah Bunds**				
1	"	"	"	Construction of Nallha Bund to Jinigihalla near Lingadahalli village in Chitradurgatq., Chitradurga Dist.,	0.04	40	5	100
2	"	"	"	Construction of Nallha Bund to halla near Gataparthi village in Challakeretq., Chitradurga Dist.,	0.04	40	5	100
3	"	"	"	Construction of Nalha Bund of hallaSasalahatty village in Chitradurga	0.04	40	5	50
4	"	"	"	Construction of Nala bund to halla near kakabaluChitradurgaTq., in Cgitradurga Dist.,	0.04	40	5	25
5	"	"	"	Construction of Nalha Bund of halla near Rekhalakere village in ChallekereTq., ChitradurgaDist	0.04	45	5	100
6	"	"	"	Construction of Nalha Bund of halla near Ramajogihalli in ChallekereTq., ChitradurgaDist	0.03	40	5	10
7	"	"	"	Construction of Nalha Bund to halla near Gonur Village in ChitradurgaTq., Chitradurga Dist.,	0..05	45	5	75
					0.23	**290.00**		**460.00**
9	Chitradurga	Minor Irrigation	"	**Percolation Tanks**				

1	"	"	"	Constrcution of Perculation tank near Kadabanakattemyasarahatti Village in ChitradurgaTq., Chitradurga Dist.,	0.06	50	5	150.00
2	"	"	"	Constrcution of Perculation tank near Baggularangavanahalli Village in ChitradurgaTq., Chitradurga Dist.,	0.08	100	5	195.00
3	"	"	"	Constrcution of Perculation tank near Hampanur Village in ChitradurgaTq., Chitradurga Dist.,	0.7	80	5	175.00
4	"	"	"	Constrcution of Perculation tank near Kommanapatte in MolakalmurTq., Chitradurga Dist.,	0.06	50	5	150.00
5	"	"	"	Constrcution of Perculation tank near Ramajogihalli Village in ChallakereTq., Chitradurga Dist.,	0.06	50	5	150.00
6	"	"	"	Construction of perculation tank near paramenahally in HiriyuraTq., Chitradurga Distr.,	0.05	60	5	70.00
					1.01	**390.00**		**890.00**
	Chitradurga	Minor Irrigation	"	**Other Ground water Recharge Structure**				
	"	"	"	**Rennovated WHS**				
	"	"	"	**Check Dams**				
1	"	"	"	Improvements to Check Dam Near Ganjigunte Village in ChallakereTq., Chitradurga Dist.,	0.07	45	5	45.00
2	"	"	"	Improvements to Barrage Near Jajur Village in ChallakereTq., Chitradurga Dist.,	0.56	100	5	75.00
3	"	"	"	Improvements to Barrage Near Dodderi Village in ChallakereTq., Chitradurga Dist.,	0.56	100	5	40.00
4	"	"	"	Improvements to Barrage Near Gopanahalli Village in ChallakereTq., Chitradurga Dist.,	0.56	100	5	25.00
5	"	"	"	Improvements to Barrage Near Visweshapura Village in ChallakereTq., Chitradurga Dist.,	0.56	100	5	30.00

6	"	"	"	Improvements to Barrage Near Chikkamadure Village in ChallakereTq., Chitradurga Dist.,	0.56	100	5	40.00
7	"	"	"	Improvements to Barrage Near Sondekola Village in ChitradurgaTq., Chitradurga Dist.,	0.56	100	5	15.00
8	"	"	"	Improvements to Check Dam Near Kaluvehalli Village in ChallakereTq., Chitradurga Dist.,	0.09	45	5	20.00
9	"	"	"	Improvements to Check Dam Near Sondekola Village in ChallakereTq., Chitradurga Dist.,	0.04	45	5	10.00
10	"	"	"	Improvements to Check Dam cum Causeway Near Kogunde Village in ChallakereTq., Chitradurga Dist.,	0.02	45	5	10.00
11	"	"	"	Improvements to Check Dam Near Ramjogihalli Village in ChallakereTq., Chitradurga Dist.,	0.02	45	5	10.00
					3.60	**825.00**		**320.00**

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