



GOVERNMENT OF KARNATAKA



DISTRICT IRRIGATION PLAN

UNDER

**PRADHAN MANTRI KRISHI SINCHAYEE
YOJANA (PMKSY)
2016-17**



**RAICHUR DISTRICT
(KARNATAKA STATE)**



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**Department of Agriculture &
Department of Irrigation & CAD**

**RAICHUR DISTRICT
(KARNATAKA STATE)**

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EXECUTIVE SUMMARY

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 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). Ministry of Agriculture, and the Ministry of Water Resources and Rural Development will implement the scheme.

in addition, the ministry of rural development is to mainly undertake rainwater conservation, construction of farm pond, water harvesting structures, small check dams and contour bunding etc. and 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 projected 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, MGNREGS, application of science etc. through comprehensive plan. state level sanctioning committee (SLSC) chaired by the chief secretary of the state will vested with the authority to oversee its implementation and sanction projects. the programme will supervised and monitored by an inter-ministerial national steering committee (NSC) constituted under the chairmanship of prime minister with union ministers from concerned ministries. a national executive committee (NEC) will constituted under the chairmanship of vice chairman, niti aayog to oversee programme implementation, allocation of resources, inter-ministerial coordination, monitoring & performance assessment, addressing administrative issues etc.

Components and responsible Ministries/ Departments

1. AIBP by MoWR, RD &GR To focus on faster completion of ongoing Major and Medium Irrigation including National Projects.
2. PMKSY (Har Khetko 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 rainwater harvesting structures.
 - Command area development. At least 10% of the command area to be covered under micro/precision irrigation
 - Strengthening and creation of distribution network from source to the farm.
 - Improvement of water management and distribution system for water bodies to take advantage of the available source, which is not tap to its fullest capacity (deriving benefits from low hanging fruits).
 - Diversion of water from source of different location where it is plenty to nearby water scarce areas, lift irrigation from water bodies/rivers at lower elevation to supplement requirements beyond IWMP and MGNREGS irrespective of irrigation command.
3. PMKSY (Watershed) by Dept. of Land Resources, MoRD Water harvesting structures such as check dams, Nala bund, Farm ponds, Peripheral bund, Marginal Bund, Pond and Tanks etc.

Capacity building, Entry point activities, Ridge area treatment, Drainage line treatment, Soil and moisture conservation, Nursery raising, Afforestation, Horticulture ,Pasture development, Livelihood activities for the asset-less persons and production system & micro enterprises for small and marginal farmers etc.

Effective rainfall management like field bunding, contour bunding/trenching, staggered trenching, land leveling, 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 Sinchan).
- Topping up of input cost of civil construction beyond permissible limit (40%), under MGNREGA for activities like lining inlet, outlet, silt traps distribution system etc.
- 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 MGNREGS.
- 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 pump sets including water carriage pipes.
- Extension activities for promotion of scientific moisture conservation and agronomic measures including cropping alignment to maximize use of available water including rainfall and minimize irrigation requirement (Jal sarankchan).
- 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 Plans (DIPs) shall be the cornerstone for planning and implementation of PMKSY. DIPs will identify the gaps in irrigation infrastructure after taking consideration of the District Agriculture Plans (DAPs) which already prepared for Rashtriya Krishi Vikas Yojana (RKVY).

The Irrigation infrastructures which are currently available and resources that will be added during XII Plan from other ongoing schemes (both State and Central).like Mahatma Gandhi National Rural Employment Guarantee Scheme (**MGNREGS**), **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. will also considered.

The gaps identified under Strategic Research & Extension Plan (SREGP) will used in the 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 take up as joint exercise of all participating departments. DIP will form the compendium of all existing and proposed water resources network system in the district.

The DIPs will prepared at the block and the district levels. Keeping in the view of the convenience of map preparation and data collection, the work will 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 prioritizing 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 further segregated into district/block level action plans. Use of satellite imagery, Topo sheets and available database may appropriately utilized for developing irrigation plans at least on pilot basis to begin with and subsequently may extended to all projects.

i) Background

Honorable President of India in his address to the joint Session of the Parliament of 16th Lok Sabha indicated, “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 of serious consideration to 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 rainwater through Jal Sanchay and Jal Sinchan we can nurture water conservation and ground water recharge. Micro irrigation will ensure ‘Per drop-More crop’. Nearly 141m.Ha of net area shown in the country, about 65 million hectare (45%) are presently covered under irrigation. Substantial dependency on rainfall makes cultivation in unirrigated areas a high risk, less productive profession. Empirical evidences suggest to assured 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) is 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 use the available water resources in the district at the maximum potential in an efficient way catering to 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. Objective,

iii) The broad objectives of PMKSY is to -

- a) Achieve convergence of investments in irrigation at the field level (preparation of district level and, if required, sub district level water use plans).
- b) Enhance the physical access of water on the farm and expand cultivable area under assured irrigation
(Har Khet KO Pani),

- c) Integration of water source, distribution and its efficient use, to make best use of water through appropriate technologies and practices.
- d) Improve on-farm water use efficiency to reduce wastage and increase availability both in duration and in extent,
- e) Enhance the adoption of precision-irrigation and other water saving technologies (More crop per drop).
- f) Enhance recharge of aquifers and introduce sustainable water conservation practices
- g) Ensure the integrated development of rain fed areas using the watershed approach towards soil and water conservation, regeneration of ground water, arresting runoff, providing livelihood options and other NRM activities.
- h) Promote extension activities relating to water harvesting, water management and crop alignment for farmers and grass root level field functionaries.
- i) To explore the feasibility of reusing treated municipal wastewater for peri-urban agriculture,
- j) Attract greater private investments in irrigation. This will increase agricultural production and productivity and enhance farm income.

iv) Strategy /approach

To achieve above objectives, PMKSY will strategize by focusing on end-to end solution in irrigation supply chain, viz. water sources, distribution network, efficient farm level applications, extension services on new technologies & information. Broadly, PMKSY will focus on-

- a) Creation of new water sources, repair, restoration and renovation of defunct water sources, construction of water harvesting structures, secondary & micro storage, groundwater development, enhancing potentials of traditional water bodies at village level like Jal Mandir (Gujarat), Khatri, Kuhl (H.P.),Zabo (Nagaland); Eri, Ooranis (T.N.),Dongs (Assam), Katas, Bandhas (Odisha and M.P.) etc.

- b) Developing/augmenting distribution network where irrigation sources (both assured and protective) are available or created.
- c) Promotion of scientific moisture conservation and run off control measures to improve ground water recharge to create opportunities for farmer to access recharged water through shallow tube/dug wells.
- d) Promoting efficient water conveyance and field application devices within the farm, underground piping system, Drip & Sprinklers, pivots, rain-guns and other application devices etc.
- e) Encouraging community irrigation through registered user groups/farmer producers' organisations/NGOs.
- f) 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.
- g) The previously mentioned areas only outline the broad contours of PMKSY; combination of interventions may be required depending on location specific conditions and requirements, which will identified through District and State Irrigation Plans.

Methodology:

The preparation of District Irrigation plan is an integration of geospatial technology, Space application technologies and spatial and non-spatial data.

1. Transformation of available thematic information (district provided Gyan data) on to the village level on Bhuvan portal and extract geo-referenced village map data.
2. Integration of thematic layers with socio-economic data for classification of area into specific composite land units on village level.
3. Preparation of appropriate action plan based on potential of composite land units and developmental needs of study area in based on available data.

Available thematic information for preparation for water resource and land resources and development plan.

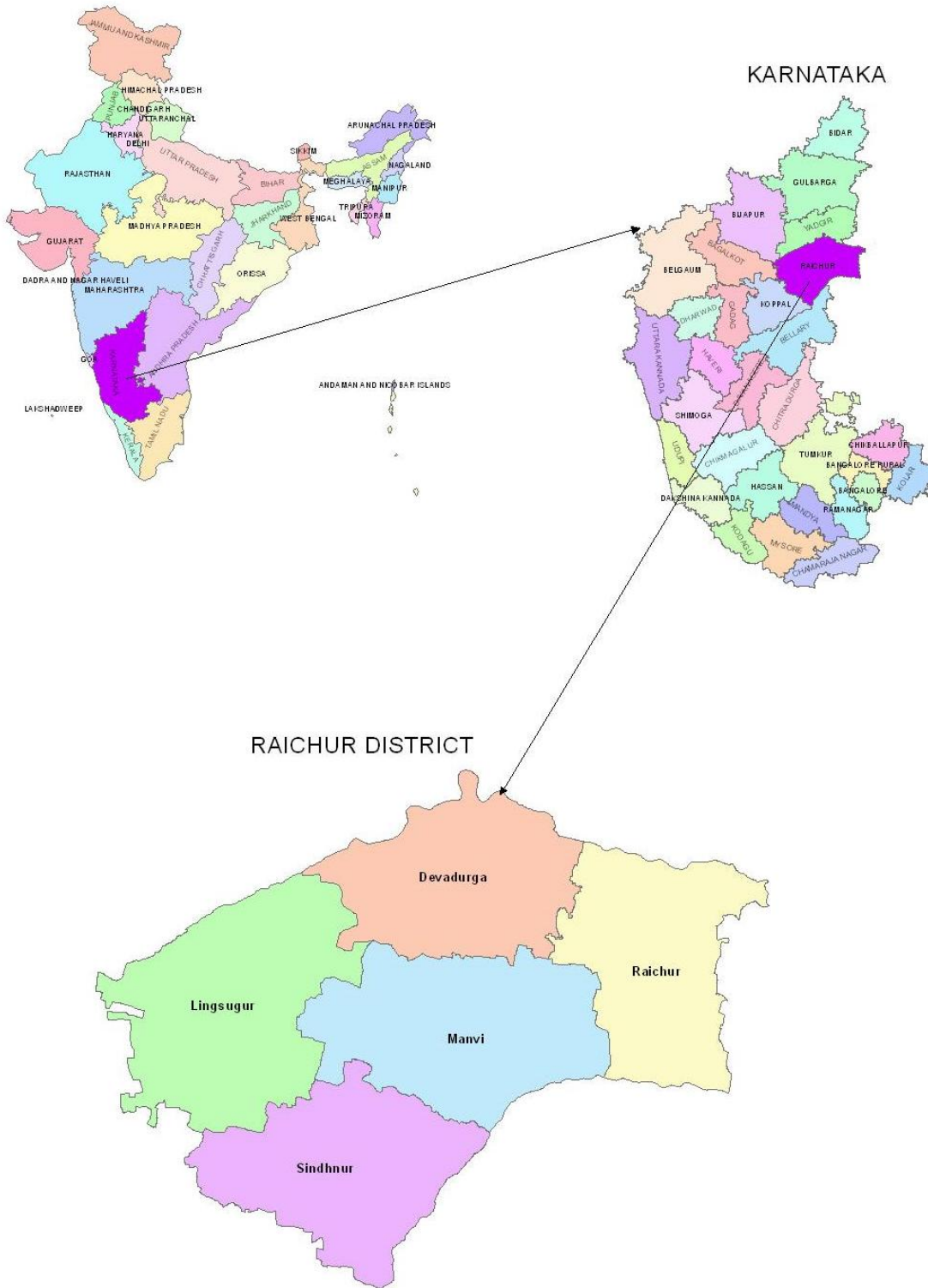
- Land use / land cover map
- Groundwater potential map
- Soil map - depth, texture, erosion and land capability
- Slope map.
- High-resolution Satellite imagery through Bhuvan portal.
- Lithology.
- Hydro geomorphology. Area for development of water resources structure geospatial technology has been used in this process first identify the area of crop land based on high resolution satellite data and then identify the irrigated area by different source of irrigation methods. To identify the unirrigated area an overlay method is used. District irrigation plan covers the following planning component of the district in sustainable development approach:
 - Increase in vegetation/biomass in the district.
 - More number of surface water bodies in district.
 - Shift from annual crop to perennial.
 - Increase in the extent of crop area.
 - Improvement in the soil moisture availability
 - Reclamation of wastelands.
 - Convergence of investments in irrigation at the field level.
 - Enhance the physical access of water on the farm and expand cultivable area under assured irrigation (Har Khet Ko Pani)
 - Best use of water through appropriate technologies and practices.
 - Improve on-farm water use efficiency.

- 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.
- 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 waste water for peri-urban agriculture,
- Attract greater private investments in irrigation

RAICHUR DISTRICT AT A GLANCE

1	Total Geographical Area	8442.0 Sq.Kms
	Taluks	5
	Raichur	1546 Sq.Kms
	Manvi	1809 Sq.Kms
	Devadurga	1504 Sq.Kms
	Lingasugur	1967 Sq.Kms
2	Sindhanur	1616 Sq.Kms
3	Total Population	1928812
4	Total Hobli's	37
5	Total Grampanchayats	165
6	Total Villages	885
7	Average Normal Rainfall	681mm
8	Actual Rainfall (2015)	698 mm
9	Forest Area	18167 ha
10	Area sown	678922 ha
11	Land not available for cultivation	40647 ha
12	Other uncultivable land	44212 ha
13	Fallow land	106220 ha
14	Permanent pastures	19816 ha
	Gross Irrigated area	293030 ha
	By canal Irrigation	256656 ha
	By tank Irrigation	282 ha
	By well Irrigation	9162 ha
	By bore well Irrigation	16579 ha
	By lift irrigation	9901 ha
16	General Crops	Kharif- Paddy, Tur, Hy. Bajra, Hy. Jowar, G.gram, S.flower etc.Rabi- Jowar, Gr.nut, B.gram, Sunflower, etc Summer - Paddy, Groundnut, etc

FIGURE-01 LOCATION MAP
INDIA



CHAPTER 1 GENERAL INFORMATION OF THE DISTRICT

Related to the general information of the district such as district profile, demography, biomass & livestock, agro- ecology, climate, hydrology and topography, soil profile, soil erosion and runoff status & land use pattern of district.

1.1 District Profile :

Raichur district is blessed with two major rivers Krishna in northern side and Tungabhadra in southern side. Raichur city is located 460 kms away from the state capital Bangalore. The charm of the Raichur district lies in its fabulous history and this piece of land has always been an apple of discord between kingdom of Vijayanagar and Bahamani Sultan. Both kingdoms have left their deep impressions and monuments like fort and temples. The famous Hatti gold mines are situated in the district.

Table : 1.1 : District Profile

SL. No	District	Taluk	Taluk code	Latitude		Longitude	
				From	To	From	To
1	Raichur	Devadurga	5460	76°-39'-00"	77°-13'-48"	16°-10'-48"	16°-33'-36"
2		Lingasugur	5459	76°-13'-48"	76°-48'-00"	15°-51'-00"	16°-21'-36"
3		Manvi	5462	76°-38'-24"	77°-16'-48"	15°-51'-00"	16°-13'-48"
4		Raichur	5461	77°-08'-24"	77°-36'-00"	15°-55'-48"	16°-25'-12"
5		Sindhanur	5463	76°-24'-36"	77°-18'-00"	15°-33'-00"	16°-00'-00"

Source: Gazetteer, Census Report

Flora and Fauna:

Devar Gudda: The two & half acre of hill covered completely with trees that nobody dares to touch or cut down located about 4. Km distance from Devadurga taluka of the Raichur District. The Legend has it that cutting these trees would expose them to the wrath of Gods. The local people of this area are so scared that they don't even take their cattle to hill for grazing. The hill which is named after saint Paramananda has a variety of trees and plants like Aegle Marmelos (In Kannada), Tulsi and Aloe Vera. You would also find medicinal plants like, Terminalia Chebula or Alalekai, used in the treatment of asthmatic disorders, and triphala in these forests. Another fore- area named BenkalDodd! is said to have flowering and ornamental plants like the Suvz Pushpa.

The Boabab Tree

Encyclopedia Brittanica describe it has one of the oldest tree on earth found mainly in the South Africa region however you would be surprised to know that a 450-year-old Baobab tree stands firmly Deodurga Taluka of Raichur District. The tree is enormously thick having 45 feet width and reaches up Baobab tree is known by many other names in India such as the Kalpavriksha, haathi tree) and the tree of life. In spite of being such an old tree it is not given much credit an about its value Raichur is also home to many migratory birds that come here in the winter months of November & December. Although it hasn't been documented but the locals say there are more than 200 species of birds that visit the place.

Mineral & Resources

In Karnataka is said to be one of the most mineral rich states of India and true to its claim you would find Raichur rich in gold, silver & granite. The Hutti Gold Mines present in the Raichur district is the only gold mine in India today more than 84% of the gold demand in the country is met through the gold mines present in Raichur. Pink granite deposits can also be found in Raichur

1.1 a) Administrative Setup

The District Comprises of 5 taluk, 209 Gram Panchayats and 884 total villages out of which 818 are habitated and 68 villages are un in habitated.

Table-1.1 a) : Taluka wise Area and number of Villages and Population

Sl.No	Taluka	Area (Sq.Km)	No. Of Villages		Population
			Inhabited	uninhabited	
1	Raichur	1546	146	15	498637
2	Manvi	1809	165	6	370670
3	Devadurga	1504	173	15	280606
4	Lingasgur	1967	186	6	385699
5	Sindhanur	1616	147	26	393200
	Total	8442	818	68	1928812

1.2 : Demography :

According To The 2011 Census Raichur District Has A Population Of 19,28,812 Out Of Which Male Population Is 9,64,511 And Female Population Is 9,64,301 Raichur Has A Sex Ratio Of 983 Females For Every 1000 Males.

Table: 1.2 : Taluk wise Demography Details:

Taluk	Population		Total	SC	ST	General	Total No. of household	Total No. of Members
	M	F		No. of Members	No. of Members	No. of Members		
Raichur	123267	124209	247476	54560	52636	140280	48199	247476
Manvi	160902	163303	324205	71236	83675	169294	62462	324205
Devadurga	125539	126138	251677	55320	88064	108293	43311	251677
Lingsugur	150029	147714	297743	72732	60393	164618	52181	297743
Sindhnur	158235	159128	317363	59733	49255	208375	61432	317363

The talukwise , Gram panchayat wise and village wise demography details are enclosed in **Annexure-I** (Page No.....)

1.3: Biomass and Livestock:

There are about 6.48 Lakh Sheep, 2.82 Lakh Goats and 5.184 large animals inclusive of indigenous Cow, Hybrid Cow. In descriptive Buffalo's depending on grazing Lands for fodder. Although there is about **19816 ha** of pasture land in the District with **20084 ha** of Barren land which solely depend on nature precipitation. The area under *Rabi* jowar, a major fodder source is getting diminished every year because of non profitability. The practice of growing green fodder and silage making needs to be accelerated and promoted to make it more palatable and to reduce wastage of fodder. The areas which are turning water logged, with Brackish water's under CADA area can be put to reuse after certain treatment for growing some of the perennial grasses for the cattle and reserve it as permanent pasture.

Table: 1.3 - Biomass and Livestock of the District

Block	Small Animals (No.)					Large Animals (No.)				Any other Milch or Meat Animal	Draft Animal (Buffalow/yak/ bulls/any
	Poultry	Ducks	Pigs	Goats	Sheeps	Indigeno us Cow	Hybrid Cow	In descriptive Buffalo	Hybrid Buffalo		
Raichur	104074	-	5630	48866	129897	33875	291	21539	-	-	25839
Manvi	59485	-	2505	48415	85318	37023	1173	33250	-	-	29290
Devadurga	58444	-	1272	70081	114548	45201	24	17748	-	-	31079
Lingasgur	87891	-	3705	85417	215323	48009	2238	21195	-	-	37231
Sindhanur	62794	-	960	28931	102463	53488	18645	43122	-	-	18089
Total	372688	-	14072	281710	647549	217596	22371	136854	-	-	141528

1.4: Agro Ecology, Climate, Hydrology and Topography

The District lies between 15⁰33' to 16⁰33' latitude north and 76⁰13' to 77⁰ 36' latitude east. The district is surrounded by Gulbarga district on the north, Bellary district on the south, Gadwal district of Andhra Pradesh on the east and Bagalkot and Koppal districts on the west. The District lies in North eastern Dry zone and Northern dry zone

1.4.1 Climate and Rainfall:

It is a charming city - one of its charms being a very bracing climate practically throughout the district and for the greater part of the year. April and may In Raichur are hot, but even during this hot weather, the heat is often broken by sharp and sudden thunder showers. By early June the south-west monsoon sets in with its pleasant coolness and the weather is back to its bracing glory. The cold weather is never too cold and the rainfall is never excessive though its excessive variation is often the cause, symptom and malaise of severe droughts. One other aspect of its charm is that it is full of history- every village and town being replete with monuments, legends, stories of valour, romance of beautiful princesses, long forgotten battles, feuding military adventurers and even of social reform movements that shook the very foundation and structure of medieval Hinduism.

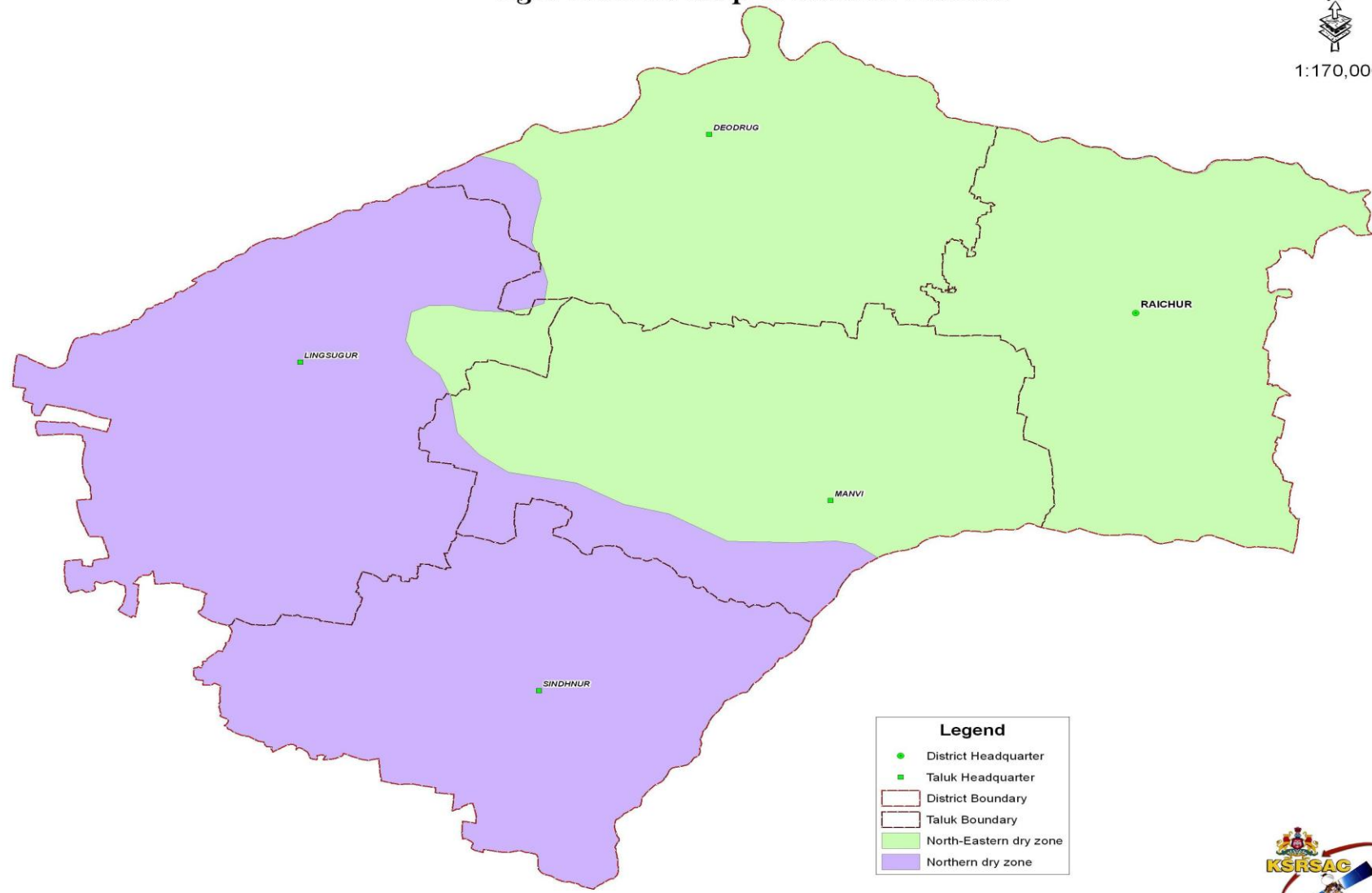
The winter season is from November to middle of February the minimum temperature during winter nights regularly hovers around 11-12 during December. December is the coldest month with mean daily maximum temperature of 41.5 C and mean daily minimum of 22 C. From the middle of the February, both day and night temperatures begin to rise rapidly. May is the hottest month with mean daily maximum temperature of 43 C and mean daily minimum of 28 C. With the withdrawal of southwest monsoon in the first week of October, there is slight increase in day temperature but night temperature does not decrease steadily. After October, both day and night temperatures decrease progressively.

The climate of the district is dry throughout the year except in the south-West monsoon months. The relative humidity is high during the South-West monsoon season and Lower in the summer. The district enjoys four seasons viz.,

1. Summer season from middle of February to first week of June:
2. Monsoon season from middle of June till the end of September:
3. Post monsoon season during October and November months; and
4. cold season from December to middle of February.

FIGURE-03 Agro Climatic Map of Raichur District

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Legend

- District Headquarter
- Taluk Headquarter
- ▭ District Boundary
- ▭ Taluk Boundary
- North-Eastern dry zone
- Northern dry zone



The district is prominently influenced by the South-West monsoon. The long term average annual rainfall of the district is 630mm. The monthly recorded maximum and minimum rainfall of the district during monsoon period is given in table below.

Table : 1.4 a) Taluka wise Seasonal and Annual normal rainfall in Raichur District for the period from 2001 to 2014

Sl.No	Taluka	Pre-Monsoon (in mm)	SW Monsoon (in mm)	NE Monsoon (in mm)	Annual (in mm)
1	Devdurga	63	478	142	683
2	Lingasugur	73	401	151	625
3	Manvi	62	437	132	631
4	Raichur	71	510	131	712
5	Sindhanur	70	441	163	674

(Source: CGWB report,2014)

Table1.4 b) : Data on Climatic parameters

Sl. No.	Taluk	Rainfall		Temperature Degree Centigrade		Humidity Per cent	
		No. of rainy days	Average rainfall (mm)	Min.	Max.	Min	Max
1	2	3	4	5	6	7	8
1	Devdurga	39	736	23	42	46	66
2	Lingasugur	37	607	22	42	55	69
3	Manvi	39	640	21	41	53	70
4	Raichur	42	682	22	44	50	78
5	Sindhanur	39	666	21	41	53	70
Total		39	666	22	41.5	51	71

The rainfall as shown above rains mainly from June to October with the heavy intensity, rainfall generally is spread over 41 to 50days. Nearly 75% to 80% of annual rainfall is during the period of southwest monsoon which results in water drains out from fields to nala and then to river. Due to the heavy and uneven rains the maximum loss of fertile soils of the fields. A few showers are also received during the North-East Monsoon, generally in the month of November and December. Hence the watershed activity to be taken up in the fields to reduce the soil losses and also increase the *in situ* moisture, by which the crop yields increases,

Table-1.4 c) : Taluka wise Normal rainfall in Raichur District

Sl.No	Taluka	No. Of Rain Gauges	Rainfall (in mm)		Rainy Days	
			Nominal 1941 to 1990	Actual Rainfall 2015	Nominal 1941 to 1990	Actual Rainfall 2015
1	Devdurga	5	736	843.8	34	41
2	Lingasugur	5	598	469.8	38	41
3	Manvi	10	651	771.6	35	44
4	Raichur	9	729	618.7	44	42
5	Sindhanur	14	689	787.3	39	45
	Average	43	680.6	698.24	38	42

(Source: Statistical Dept, GOK)

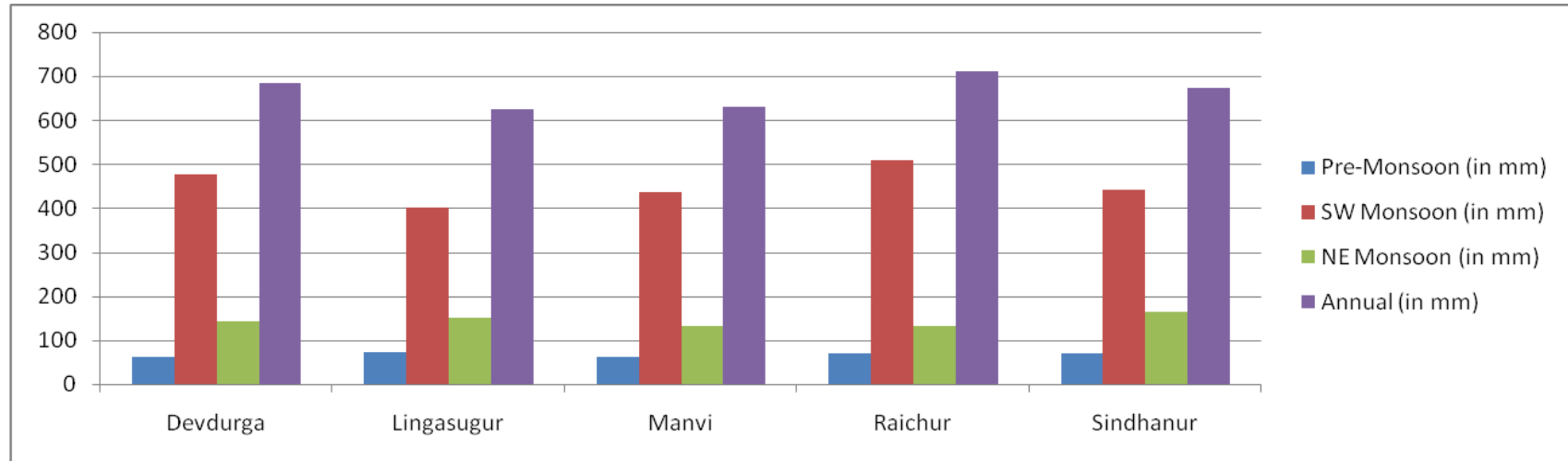


FIGURE-04: Taluka wise Seasonal and Annual normal rainfall in Raichur District

Table-1.4 d) Agro Ecology, Climate, Hydrology and Topography

Name of the State: Karnataka

Source: IMD, regional ICAR centre(s), SAUs, KVKs etc.

Name of the District: Raichur

Name of the Block*: Raichur

Sl No.	Agro Ecological Zone Type	Type of Terrain	Block area (ha)	Average Monthly Rainfall (mm)			No Of Rainy days	Maximum Rainfall Intensity			Average Weekly Temperature (*C)									Potential Evapo Transpiration (PET)				Elevation		
								Upto 15 Min.	Beyond 15 but upto 30 Min	Beyond 30 but upto 60 Min	Period									Period			Cumulative Total	Min	Max	Mean
											Summer (April/May)			Winter (Oct-Mar.)			Rainy (June-Sept)			Summer	Winter	Rainy Season				
											Min	Max	Mean	Min	Max	Mean	Min	Max	Mean							
1	North-Eastern Dry Zone	Plain and Partly Hilly	151415	Jan	2.5	0	NOT AVAILABLE	26	39	45.5	20	32	36.3	23	33	39.4				81.3	407 meters (1335 ft)					
2				Feb	3.5	0														111.6						
3				Mar	5.8	0														205.9						
4				Apr	16.9	1														310						
5				May	33.1	3														327						
6				Jun	94.2	6														236						
7				Jul	119.1	7														187.3						
8				Aug	124.8	8														161.7						
9				Sep	148.1	8														146.3						
10				Oct	96.9	5														128						
11				Nov	23.3	2														92.9						
12				Dec	4.2	1														67.4						
				56.03	3.42														171.28							

Table-1.4 f) Agro Ecology, Climate, Hydrology and Topography

Name of the State: Karnataka

Source: IMD, regional ICAR centre(s), SAUs, KVKs etc.

Name of the District: Raichur

Name of the Block*: Deodurga

Sl No.	Agro Ecological Zone Type	Type of Terrain	Block area (ha)	Average Monthly Rainfall (mm)		No Of Rainy days	Maximum Rainfall Intensity			Average Weekly Temperature (*C)									Potential Evapo Transpiration (PET)			Elevation			
							Upto 15 Min.	Beyond 15 but upto 30 Min	Beyond 30 but upto 60 Min	Period									Period			Cumulative Total	Min	Max	Mean
										Summer (April/May)			Winter (Oct-Mar.)			Rainy (June-Sept)			Summer	Winter	Rainy Season				
										Min	Max	Mean	Min	Max	Mean	Min	Max	Mean							
1	North-Eastern Dry Zone	Plain and Partly Hilly	150979	Jan	7	NOT AVAILABLE	26	39	45.5	20	32	36.3	23	33	39.4				81.3	407 meters (1335 ft)					
2				Feb	6														111.6						
3				Mar	15														205.9						
4				Apr	15														310						
5				May	29														327						
6				Jun	87														236						
7				Jul	177														187.3						
8				Aug	199														161.7						
9				Sep	190														146.3						
10				Oct	77														128						
11				Nov	13														92.9						
12				Dec	6														67.4						
				821	0													171.28							

Table-1.4 g) Agro Ecology, Climate, Hydrology and Topography

Name of the State: Karnataka

Source: IMD, regional ICAR centre(s), SAUs, KVKs etc.

Name of the District: Raichur

Name of the Block*:

Lingasagur

SI No.	Agro Ecological Zone Type	Type of Terrain	Block area (ha)	Average Monthly Rainfall (mm)		No Of Rainy days	Maximum Rainfall Intensity			Average Weekly Temperature (*C)									Potential Evapo Transpiration (PET)			Elevation			
							Up to 15 Min.	Beyond 15 but up to 30 Min	Beyond 30 but up to 60 Min	Period									Period			Cumulative Total	Min	Max	Mean
										Summer (April/May)			Winter (Oct-Mar.)			Rainy (June-Sept)			Summer	Winter	Rainy Season				
										Min	Max	Mean	Min	Max	Mean	Min	Max	Mean							
1	Northern dry Zone	Plain and Partly Hilly	194010	Jan	7	NOT AVAILABLE	26	39	45.5	20	32	36.3	23	33	39.4				81.3	407 meters (1335 ft)					
2				Feb	6														111.6						
3				Mar	15														205.9						
4				Apr	15														310						
5				May	29														327						
6				Jun	87														236						
7				Jul	177														187.3						
8				Aug	199														161.7						
9				Sep	190														146.3						
10				Oct	77														128						
11				Nov	13														92.9						
12				Dec	6														67.4						
				821	0													171.28							

Table-1.4 h) 1.4 Agro Ecology, Climate, Hydrology and Topography

Name of the State: Karnataka

Source: IMD, regional ICAR centre(s), SAUs, KVKs etc.

Name of the District: Raichur

Name of the Block*: Sindhanur

SI No.	Agro Ecological Zone Type	Type of Terrain	Block area (ha)	Average Monthly Rainfall (mm)		No Of Rainy days	Maximum Rainfall Intensity			Average Weekly Temperature (*C)									Potential Evapo Transpiration (PET)			Elevation			
							Up to 15 Min.	Beyond 15 but up to 30 Min	Beyond 30 but up to 60 Min	Period									Cumulative Total	Min	Max	Mean			
										Summer (April/May)			Winter (Oct-Mar.)			Rainy (June-Sept)							Summer	Winter	Rainy Season
										Min	Max	Mean	Min	Max	Mean	Min	Max	Mean							
1	Northern dry Zone	Plain and Partly Hilly	194019	Jan	7	NOT AVAILABLE	26	39	45.5	20	32	36.3	23	33	39.4				81.3	407 meters (1335 ft)					
2				Feb	6														111.6						
3				Mar	15														205.9						
4				Apr	15														310						
5				May	29														327						
6				Jun	87														236						
7				Jul	177														187.3						
8				Aug	199														161.7						
9				Sep	190														146.3						
10				Oct	77														128						
11				Nov	13														92.9						
12				December	6														67.4						
				821	0										171.28										

1.5: Soil Profile :

The soils of the district can be classified broadly into the following four types namely: Mixed red and black soils, Medium black soils, Deep black soils and Red sandy soils.

The district is bestowed with varied soil resources comprising 57.6% of black soil and 42.4% of red soil. Within the black soil, 44.2 per cent is deep black soil followed by 41.6 per cent medium black and 14.2 per cent shallow soils. Among the red soils, 48.9 per cent area is constituted by loamy soils while remaining 51.1 per cent comprises of sandy soils.

Mixed red and black soils usually occur on gently undulating plains or complex geological formations comprising granitic gneisses and schists, which occupy the central parts of the district. Red soils are coarse grained and have better drainage capacity than the black soils. These soils respond better to water management practices. The crops grown under rain fed cultivation are jowar, cotton, groundnut, chillies, wheat and pulses. The crops grown under irrigation are paddy, sugarcane, maize, wheat, chillies, cotton, pulses, tobacco and plantains

Medium black soils are seen in the western part of the district overlying the Peninsular Gneisses. The soils are moderately deep, about one meter thick and are dark to greyish, brown to dark reddish brown or black in colour, usually calcareous, cracking clayey soils. Adequate soil and water management techniques are required to get sustainable yields. The crops grown under rain fed cultivation are jowar, wheat, millets, cotton, sunflower, tobacco, and groundnut. Under irrigation, crops like paddy, sugarcane, vegetables, onion, chillies, jowar, cotton, wheat, tobacco and plantains are grown.

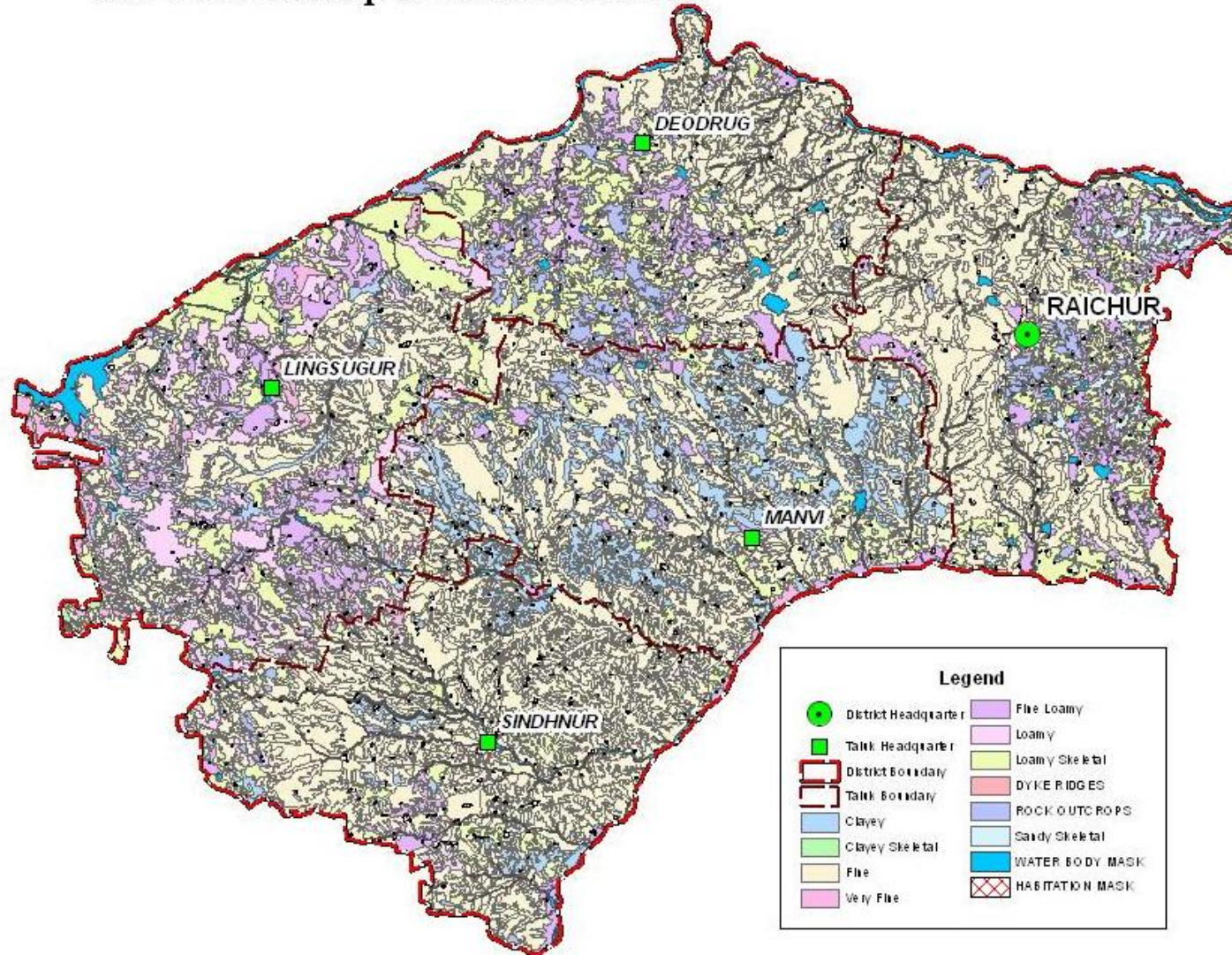
Deep black soils occur on gently sloping to nearly even or low grounds on parent rocks like gneisses, schists of mixed origin and occupy considerable areas in the northern parts of the district. Nearly a meter in thickness, these soils are dark brown, dark greyish brown or black in colour. The texture is usually clayey throughout the section and at places on the surface clayey loam to silty clay texture. Lime concretions on the surface and sub surface are also present. These soils are generally fertile and produce good yields. Good drainage facilities are essential to obtain sustainable yields; otherwise, salinity and water logging conditions may develop. Crops similar to medium black soils can be grown here.

Table 1.5 : Soil Profile of RAichur District

Name of the Block	Soil Type		Land Slope						
	Major Soil Classes	Area (ha)	0-1% (ha)	1-3% (ha)	3-5% (ha)	5-10% (ha)	10-15% (ha)	15-35% (ha)	35-50% (ha)
Devadurga		149544.62	41521.81	73119.69	18097.95	6258.77	5271.86	2640.11	2634.43
Lingasagur		195414.27	43685.48	98580.47	34148.18	14363.62	3731.07	558.79	346.66
Manvi		180920.65	63386.46	99238.69	9449.01	4444.87	2451.51	1254.8	695.31
Raichur		154179.53	58659.62	75447.54	15757.72	2281.95	1084.03	149.08	799.59
Sindhanur		161239.66	62514.24	90762.77	4383.8	1185.93	1213.97	508.61	670.34
Total		841298.73	269767.61	437149.2	81836.66	28535.14	13752.44	5111.39	5146.33

SLUSI, NBSS, Indian Institute of Soil Science

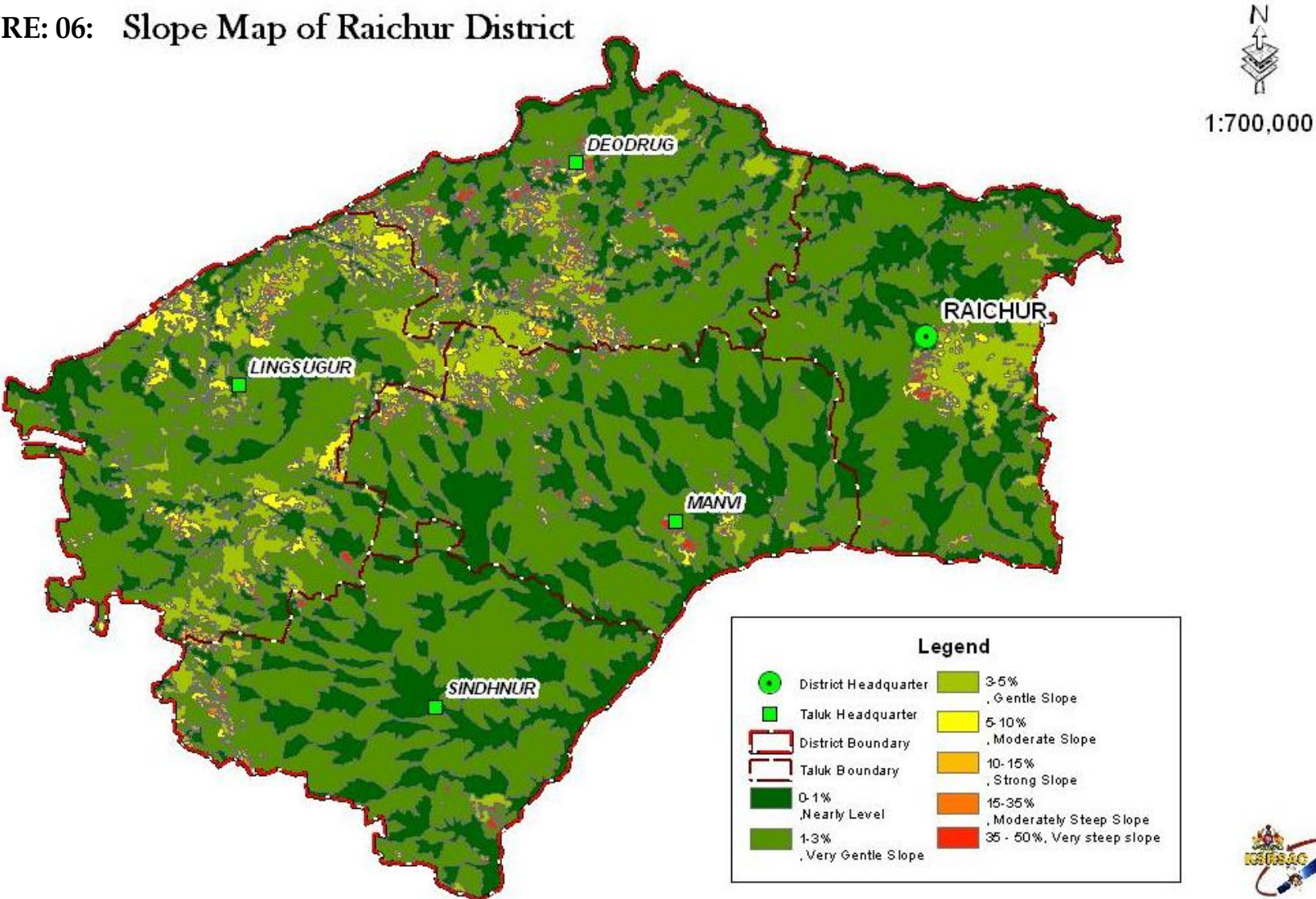
FIGURE-05: Soil Texture Map of Raichur District



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FIGURE: 06: Slope Map of Raichur District



Geomorphology

The undulating black cotton soil strips, cut by numerous nallahs, characterize the region of the Dharwar schist, which is now practically denuded of trees and presents a monotonous landscape, while the gneissic region is generally more or less broken and covered with a thin mantle of red loamy soil. Gneissic hills, Sedimentary formations, which cover a small belt of the region adjoining the confluence of the Krishna and the Tungabhadra rivers, occupy more or less flat plateaus. Regionally viewed, the hills in the area present some structural features, which are of interest in relation to the geology of the area: Geo morphologically, Raichur district can be broadly classified into three major zones viz,

- (a) The Northern rugged plateau, ii.
- (b) The Southern lower plains with inselbergs and isolated hillocks and
- (c) Valley fills.

Continuous range of hills are absent in the district but a few cluster of hills are seen towards east, west, northwest, centre, and southwest. The general slope of the terrain is towards the Krishna River in the northern part of the district and towards the Tungabhadra River in the southern part. One hill range extends from west of Raichur towards Yergara for about 20 kms and another runs in the Raichur and Manvi taluks for about 15 kms and a third hill range extends south of Raichur towards Alampur in Kurnool district of Andhra Pradesh. Most of these hillocks are composed of granitic gneisses and partly schists.

Regionally viewed, the hills in the area present some structural features, which are of interest in relation to the geology of the area:

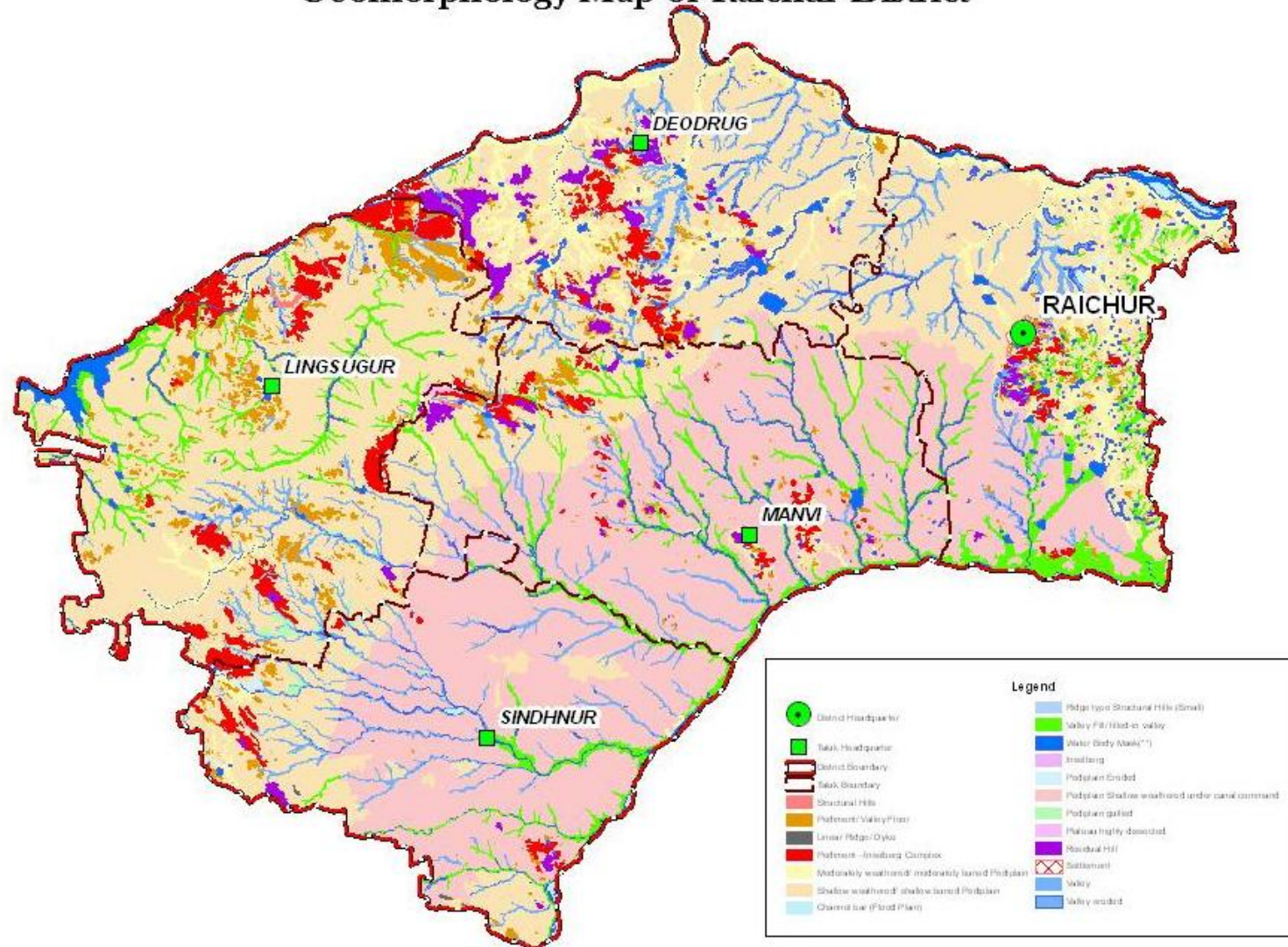
- a) Taking the most South Westerly group, the hills of Karigudda, Manvi and Rabhinakal show continuity along roughly North-West and South-East direction;
- b) From Sirwar and Yermasagar, running in a roughly South-East direction, may be recognized the hill of Madhugiri, Neermanvi, Gorkal, Kurvi and the one two miles West of Kamalahatti;
- c) Between Masarakal and Gabbur, a number of gneissic hills are seen at Kakargal. Jinnapur, Hungundabad. Ramdurga, Jagatkal, Khardigud, Maladkal and Gabbur. The hills around Uttanur are seen to be in line with the south-western group of hillocks in the above area as also the hill-clusters around Kalmala and Kallur, are seen to be situated in the same north-west and South-east disposition as that of the group of gneissic hills enumerated above;
- d) The hills around Raichur, which constitute a prominent landmark in the area, may also be seen roughly to display north-west and southeast trends.

Raichur is situated at an altitude of 400 Mtrs above Mean Sea Level, the district is endowed with good water sources in perennial rivers the Krishna & the Tungabhadra The general slope of the district is from the north-west towards the south-east, its average height above the Mean Sea-Level being just 1,311 feet.

FIGURE-07 Geomorphology Map of Raichur District



1:700,000



1.6: Soil Erosion and Runoff Status

Table 1.6: Soil Erosion and Runoff Status

Name of the State: Karnataka

Name of District: Raichur

Name of the Block: Manvi

Name of the Micro Watershed	Name of the Sediment Monitoring Station	Longitude	Latitude	Soil Erosion (Tons/ha)	Runoff					Drought Frequency	
					Peak Rate (cum/hr)	Frequency of Peak (No in Months)	Total Runoff Volume of rainy Season (ha-m)	Time of return of Maximum flood			
								5 Years	10 Years		In Years
Pratapur Manvi	Pratapur	16° 7' 375"	76° 53' 19 5"	1.2-1.7	7500	01-Feb	8654				Twice in 5 year

* Source: ICAR Regional Centre and sediment monitoring stations

1.7: Land Use Pattern:

Out of total geographical area of 8,35,793 ha, net sown area is 5,26,607 ha (63.00%), forest area is 18,167 ha(2.17%), land under non-agricultural use is 20,563 ha(2.46%), cultivable waste is 10712 ha(1.28%), barren land is 20884 ha (2.50%), Permanent pasture is 19816ha(2.37%), land under trees and grooves is 13684 ha (1.63%), current fallow is 165098 ha(19.75%) and other fallow is 41392 ha(4.95%). Raichur district is having a gross cropped area of 6,78,922 ha with a cropping intensity of 128.92%. The district has two agro-climatic zones. Raichur, Devadurga and Manvi taluks are in north eastern dry zone (Zone-II), whereas Lingsugur and Sindhanur are in northern dry zone (Zone-III). The talukwise land use pattern (Table 1.7 a to 1.7 e) is given in Annexure-II (Page No.....)

Table No: 1.7 I) Taluk wise land utilisation in Raichur district (in sq.km)

Sl. No.	Taluk	Area (sq.km)	Forest	Land not available for cultivation	Un-cultivable land	Fallow Land	Area sown		
							Net Sown	Sown > once	Total
1	Devdurg	1504	53.01	99.78	93.55	222.04	1008.41	124.78	1133.19
2	Lingsugur	1967	90.77	130.13	113.34	119.23	1443.90	192.09	1635.99
3	Raichur	1546	4.01	21.72	111.13	354.45	992.75	90.96	1083.71
4	Manvi	1809	23.13	41.30	61.52	411.60	1245.75	124.65	1370.40
5	Sindhanur	1616	10.75	113.54	62.42	413.96	1123.32	334.39	1457.71
Total		8442	181.67	406.47	441.96	1521.28	5814.13	866.87	6681.00

FIGURE-08 Land use / Land cover Map of Raichur District

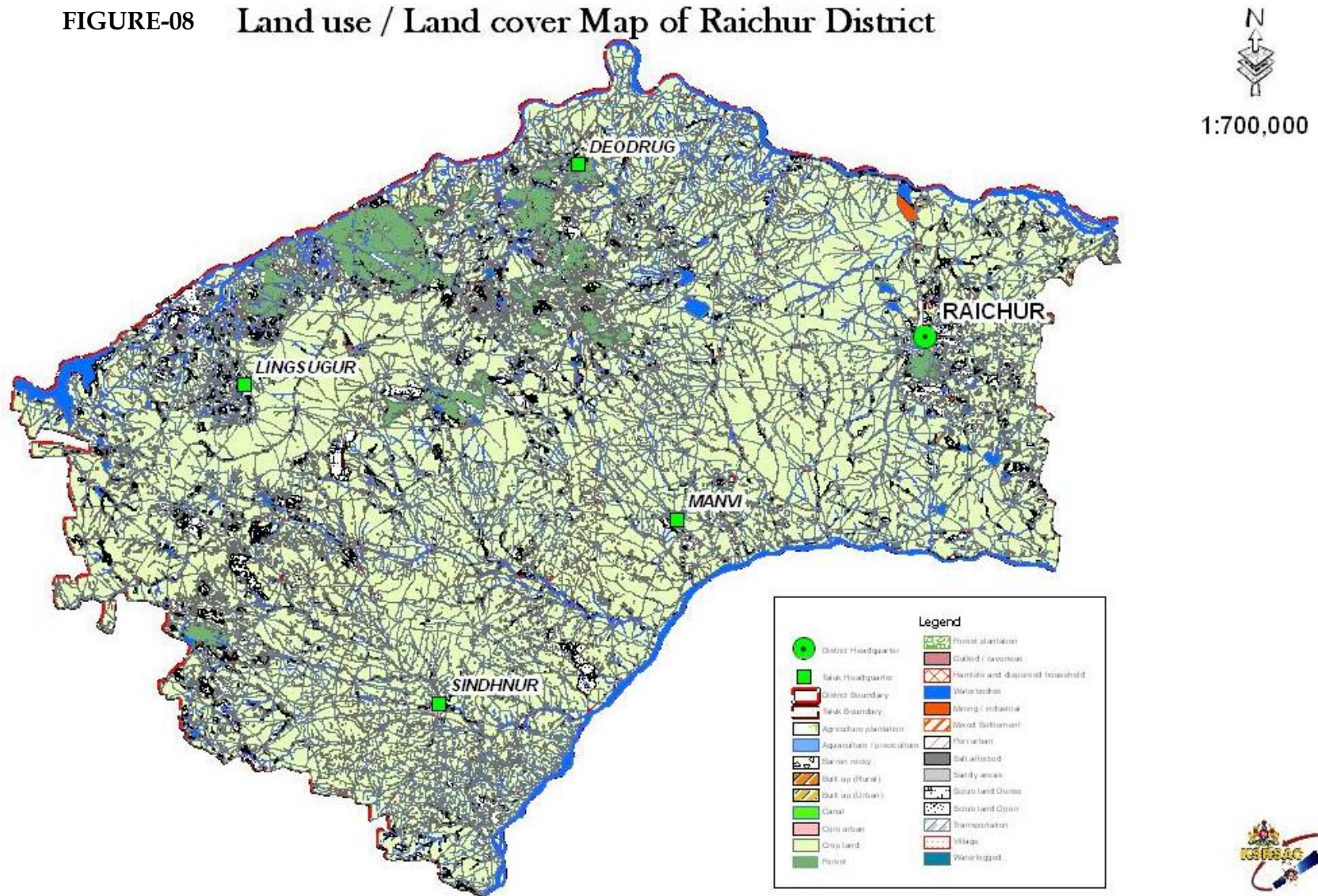


Table 1.7 II) : Land Utilization in Raichur District

(in ha)

Sl. No.	Taluk	Geographical area	Forest area	Land under Non-agric. use	Cultivable waste	Barren land	Permanent pastures
1	Devadurga	150979	5301	4999	2832	4979	5707
2	Lingasugur	194010	9077	7357	3732	5656	3436
3	Manvi	179273	2313	3518	2439	612	3723
4	Raichur	151415	401	784	931	1388	2722
5	Sindhaur	160116	1075	3905	778	7449	4228
Total		835793	18167	20563	10712	20084	19816

Sl No	Taluk	Land under tree crops & Grooves	Current Fellow	Other Fellow	Net Sown area	Gross cropped Area	Cropping intensity (%)
1	Devadurga	816	28059	5211	93075	124119	133.35
2	Lingasugur	4166	16571	4901	139124	162763	116.99
3	Manvi	4	40937	3352	122375	135972	111.11
4	Raichur	7460	31520	14989	91490	132948	145.31
5	Sindhaur	1238	48011	12939	80543	123120	152.86
Total		13684	165098	41392	526607	678922	128.92

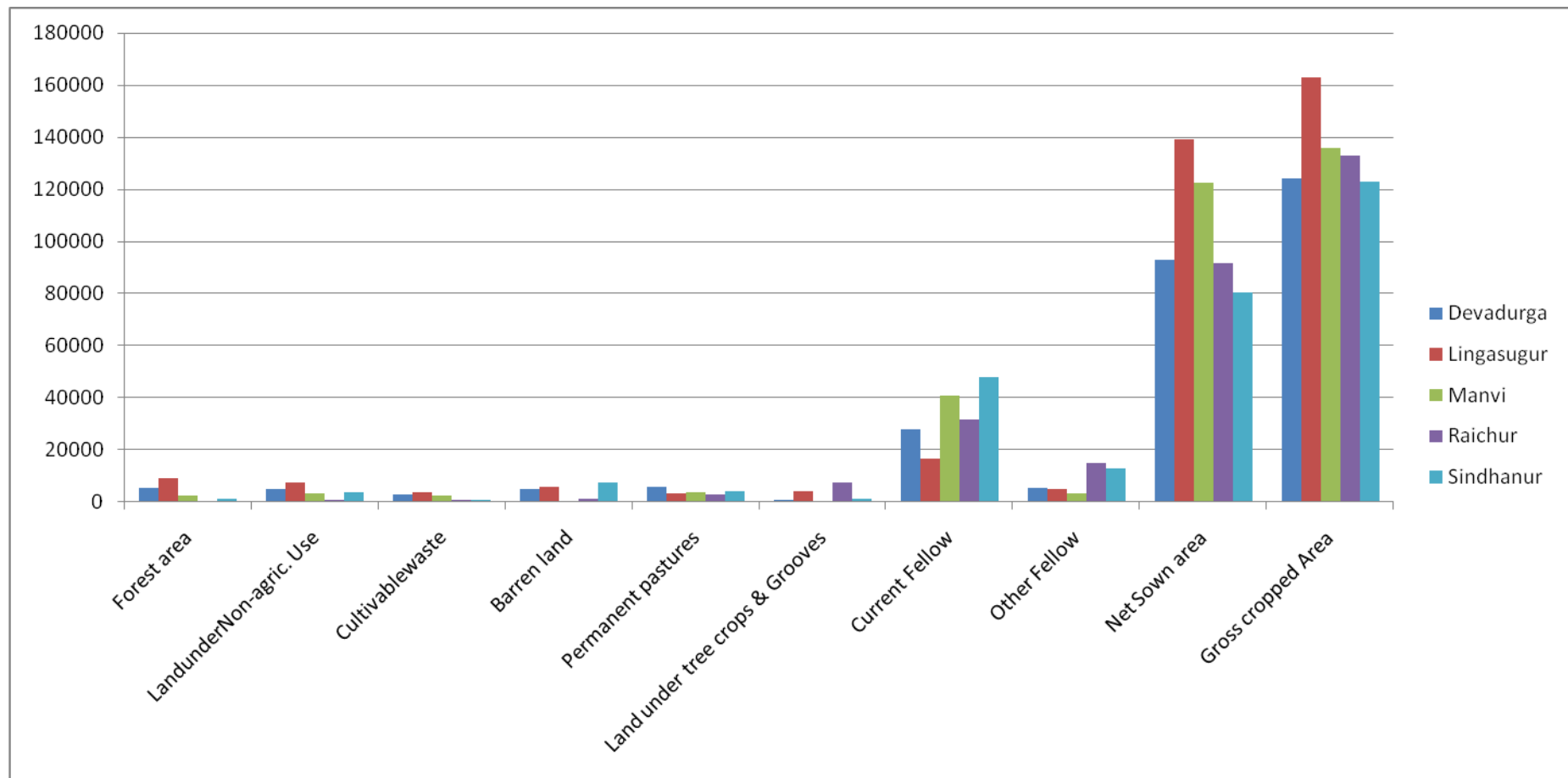


FIGURE-09: Land Utilisation in ha

Size of agricultural holdings:

Table 1.7 III) : Size of agricultural holdings:

Sl.	Taluk	Table 12: Land Holdings (Agriculture Census 2010--11) District Raichur (Holdings in numbers and area in ha)											
		Marginal Farmers		Small Farmers		Semi-med. Farmers		Medium farmers		Large farmers		Total	
		No.	Area	No.	Area	No.	Area	No.	Area	No.	Area	No.	Area
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Devadurga	16837	10006.31	20092	29281.6	14230	38865.6	5790	33602.01	804	10678.33	57753	122433.91
2	Lingasugur	12729	8034.9	25982	37667.4	20348	54938.9	8639	49293.03	1056	15073.63	68754	165007.85
3	Manvi	25484	14656.62	23135	32804.4	16462	44560.4	8166	46956.98	1058	13573.94	74305	152552.29
4	Raichur	19110	10032.72	20856	29293.6	12479	34126.1	6610	38548.44	898	11839.75	59953	123840.56
5	Sindhanur	27262	15436.84	21794	31031.5	15000	40278.7	6560	36949.71	652	8264.28	71268	131961.03
Total		101422	58167.39	111859	160078	78519	212770	35765	205350.17	4468	59429.93	332033	695795.6

Cropping pattern

Table 1.7 IV) : Area under Major Crops of Raichur District

Sl No	Crops/ Taluk	Deodurga	Lingasugur	Manvi	Raichur	Sindhanur	Total
1	Paddy	15830	5214	45415	21979	89918	178356
2	Jowar	19507	31825	19202	18953	6225	95712
3	Bajra	11379	29783	7111	786	2002	51061
4	Maize	0	243	0	0	137	380
5	Wheat	35	1006	0	0	13	1054
Total cereals		46751	68071	71728	41718	98295	326563
6	Redgram	4205	11602	6415	15418	682	38322
7	Greengram	490	1496	295	79	62	2422
8	Bengalgram	17120	30411	24910	45681	9732	127854
9	Others	35	515	0	115	0	665
Total pulses		21850	44024	31620	61293	10476	169263
10	Groundnut	21943	15833	4502	10397	90	52765.
11	Sunflower	13812	26936	14373	3910	4345	63376
12	Safflower	35	696	30	0	20	781
13	Others	0	2243	63	1011	51	3368
Total oilseeds		35790	45708	18968	15318	4506	120290
14	Cotton	15813	4111	12440	14380	9011	55755
15	Sugarcane	149	0	27	93	76	345
Commercial crops		15962	4111	12467	14473	9087	56100

Table 1.7 V) Comparison of average yield with Nation and State

Crops	Average Yield of India	Average Yield in State	Average Yield in the District	Kg/ha Potentiality of the district
Hy.Jowar	1800	1653	1477	2200
Rabi Jowar	803	862	1479	1600
Bajra	718	620	1174	1350
Maize	1817	2878	3579	3800
Paddy	3612	4743	5039	6000
Wheat	2692	917	1046	2000
Greengram	-	271	331	550
Bengalgram	796	606	1047	1250
Groundnut	970	841	940	1400
Sunflower	552	438	607	1150
Cotton	532	508	530	850

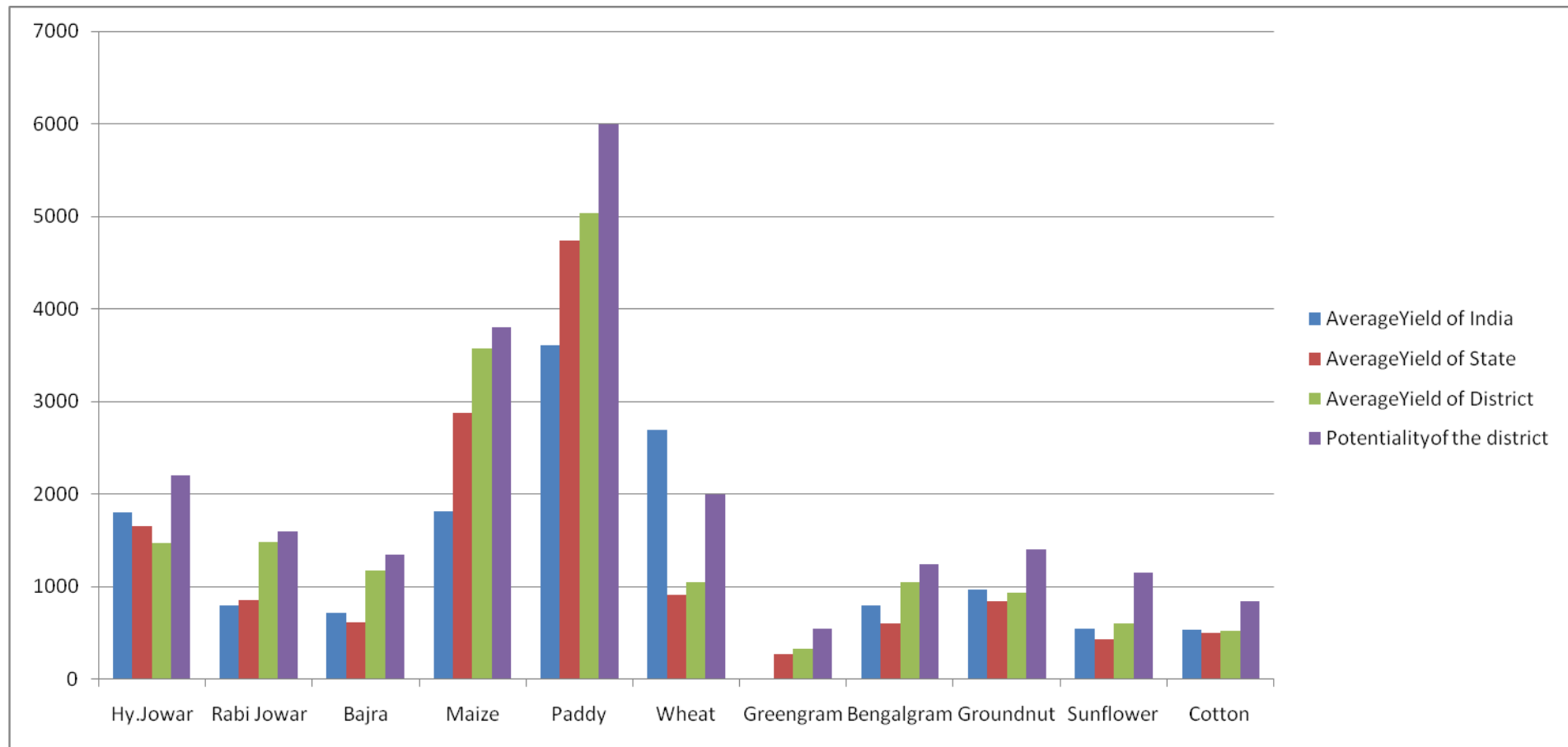


FIGURE-10: Comparison of average yield with Nation and State

CHAPTER 2

DISTRICT WATER PROFILE

Related to the literature review, aspects of ground water, irrigation, agriculture, rainfed agriculture, water resource planning & management and opinions of various authors.

Water is one of the essential for the survival of life, and without it plant and animal life would not been possible. Water is a central component of Earth's system, providing important controls on the world's weather and climate. Water is also essential to our economic well-being, supporting agriculture, forestry, navigation, waste processing, and hydroelectricity. Recreation and tourism are other primary uses supported by water.

The crisis about water resources development and management arises in Raichur District, Karnataka state mostly because of the highly uneven spatial distribution of rainfall that too since two years and the intensity of the rainfall was unfortunate.

Accordingly, the importance of water has been recognized and greater emphasis is being laid on its economic use and better management. Although the water in the dams, lakes and reservoirs represents a relatively small percentage of total available water on earth, dams and the under ground water are used as a reliable source of drinking and for irrigation.

Water availability in the dams is an important source of agricultural water need. Changes in the water levels are because of temporal variation of inflow to the existing dams. These changes mainly reflect changes in rainfall, evapotranspiration (ET), infiltration, runoff and human activities over the catchment area. It is observed that these fluctuations constitute a sensitive indicator of past and present climate and human activity changes at a local and regional scale.

Groundwater Recharge / Depletion

DYNAMIC GROUND WATER RESOURCES OF KARNATAKA (2009-2011)

Ground water resources of the state of Karnataka was last assessed based on Groundwater Estimation Methodology (GEM) 2007. The assessment was done on a watershed basis using the database of 2011. The resources so assessed were apportioned and presented on a taluk basis to facilitate planning of developmental activities. GEM 2007 recognizes that the methodology has considerable scope for refinements and improvements, which can be achieved in a phased manner, as per the guidance of the R&D advisory committee on Groundwater Estimation. The methodology envisages that the groundwater assessments may be made once in three years, however later on it was decided to have the re-estimation once in two years. As part of that the groundwater resources was re estimated for the state of Karnataka as on March 2011 using the Minor irrigation data on well census and the data collected by the district level officers of Department of Mines and Geology as the base data on an watershed basis. There are 234 watersheds in the state .For the re estimation of groundwater potential in the state of Karnataka the following committee was constituted vide GO No. MID 05 AaJaAa 2012 Bangalore dated 25th May 2012 from Under Secretary to Government, Water Resources Department (Minor Irrigation), Government of Karnataka

FIGURE: 11 Ground Water Prospect Map of Raichur District

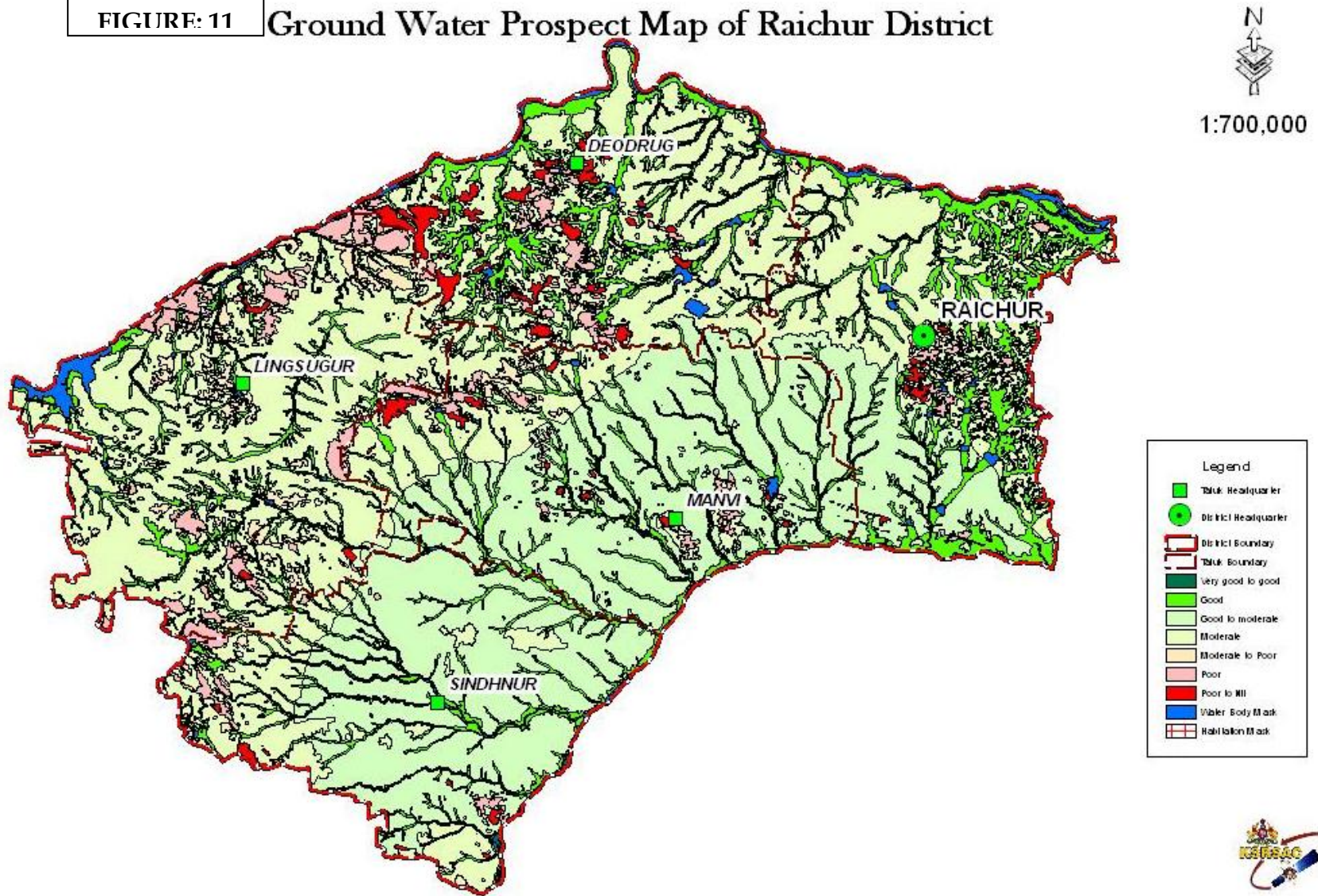


Table 2.1 a) Area-wise, Crop-wise Irrigation Status Source: Department of Agriculture, Agriculture Statistic of State, Agristat

Name of the State: Karnataka

Name of the District : Raichur

Name of the Block: Raichur

Crop Type	Kharif (Area in ha)			Rabi Area in ha			Summer Crop (Area in ha)			Total Area in ha		
	Irrigated	Rainfed	Total	Irrigated	Rainfed	Total	Irrigated	Rainfed	Total	Irrigated	Rainfed	Total
A) Cereals	12407	573	12980	300	14560	14860	4137	0	4137	16844	15133	31977
B) Coarse Cereals			0			0			0	0	0	0
C) Pulses	0	14123	14123	0	12240	12240	0	0	0	0	26363	26363
D) Oil Seeds	587	1924	2511	0	0	0	0	4896	4896	587	6820	7407
E) cotton	7858	24636	32494	0	0	0	0	0	0	7858	24636	32494
F) Sugar Cane	4	0	4	0	0	0	0	0	0	4	0	4

Table 2.1 b) Area-wise, Crop-wise Irrigation Status												
Source: Department of Agriculture, Agriculture Statistic of State, Agristat												
Name of the State: Karnataka												
Name of the District : Raichur												
Name of the Block: Manvi												
Crop Type	Kharif (Area in ha)			Rabi Area in ha			Summer Crop (Area in ha)			Total Area in ha		
	Irrigated	Rainfed	Total	Irrigated	Rainfed	Total	Irrigated	Rainfed	Total	Irrigated	Rainfed	Total
A) Cereals	28375	5591	33966	320	20250	20570	13800		13800	42495	25841	68336
B) Coarse Cereals			0	0	0	0	0		0	0	0	0
C) Pulses	110	6935	7045	0	23400	23400	0		0	110	30335	30445
D) Oil Seeds	75	2050	2125	20	6320	6340	868		868	963	8370	9333
E) cotton	2940	15400	18340	0	0	0	0		0	2940	15400	18340
F) Sugar Cane	0	0	0	0	0	0	0		0	0	0	0

Table 2.1 c) Area-wise, Crop-wise Irrigation Status												
Source: Department of Agriculture, Agriculture Statistic of State, Agristat												
Name of the State: Karnataka												
Name of the District : Raichur												
Name of the Block: Devadurga												
Crop Type	Kharif (Area in ha)			Rabi Area in ha			Summer Crop (Area in ha)			Total Area in ha		
	Irrigated	Rainfed	Total	Irrigated	Rainfed	Total	Irrigated	Rainfed	Total	Irrigated	Rainfed	Total
A) Cereals	15390	9920	25310	0	24500	24500	15000	0	15000	30390	34420	64810
B) Coarse Cereals			0	0	0	0	0	0	0	0	0	0
C) Pulses	0	4010	4010	0	18600	18600	0	0	0	0	22610	22610
D) Oil Seeds	1375	4220	5595	0	1250	1250	13500	0	13500	14875	5470	20345
E) cotton	22330	2880	25210	0	0	0	0	0	0	22330	2880	25210
F) Sugar Cane	54	0	54	0	0	0	0	0	0	54	0	54

Table 2.1 d) Area-wise, Crop-wise Irrigation Status

Source: Department of Agriculture, Agriculture Statistic of State, Agristat

Name of the State: Karnataka

Name of the District : Raichur

Name of the Block: Lingasugur

Crop Type	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
A) Cereals	5040	25748	30788	359	28873	29232	857	0	857	6256	54621	60877			
B) Coarse Cereals	0	0	0	0	0	0	0	0	0	0	0	0			
C) Pulses	95	13002	13097	406	25751	26157	0	0	0	501	38753	39254			
D) Oil Seeds	472	6304	6776	351	8520	8871	11994	0	11994	12817	14824	27641			
E) cotton	2165	12832	14997	0	0	0	0	0	0	2165	12832	14997			
F) Sugar Cane	0	0	0	0	0	0	0	0	0	0	0	0			

Table 2.1 e) Area-wise, Crop-wise Irrigation Status

Source: Department of Agriculture, Agriculture Statistic of State, Agristat

Name of the State: Karnataka

Name of the District : Raichur

Name of the Block: Sindhanur

Crop Type	Kharif (Area in ha)			Rabi Area in ha			Summer Crop (Area in ha)			Total Area in ha		
	Irrigated	Rainfed	Total	Irrigated	Rainfed	Total	Irrigated	Rainfed	Total	Irrigated	Rainfed	Total
A) Cereals	36264	2342	38606	700	5400	6100	41265	0	41265	78229	7742	85971
B) Coarse Cereals			0			0	0	0	0	0	0	0
C) Pulses	10	976	986	0	14000	14000	20	0	20	30	14976	15006
D) Oil Seeds	130	1189	1319	10	1390	1400	100	0	100	240	2579	2819
E) cotton	2338	10835	13173	0	0	0	0	0	0	2338	10835	13173
F) Sugar Cane	235	0	235	0	0	0	0	0	0	235	0	235

Table 2.1 f) Area-wise, Crop-wise Irrigation Status			
Source: Department of Agriculture, Agriculture Statistic of State, Agristat			
Name of the State: Karnataka			
Name of the District : Raichur			
Horticulture crops			
Crop Type	Horticulture & Plantation Crops (Area in ha)		
	Irrigated	Rainfed	Total
A) Fruits	2034		2034
B) Vegetables	6529		6529
C) Spice	4321		4321
D) Plantation	400		400
Total	13284	0	13284

Irrigation practices

The net sown area comprises 69% (5814 sq.km) of the total geographical area of the district (table 14). Paddy, Jowar, Maize, Cotton, Sugarcane, pulses and oil seed are the major crops grown in the district. Nearly 20% of the geographical area in the district is under irrigation. Canals, tanks, wells, bore wells, lift irrigation are the important sources for irrigation. A major dam has been constructed across the river Tungabhadra near Hospet in Bellary district. The Left Bank Canal of the project provides irrigation facility to an area of 123127 hectares of land in parts of Deodurg, Manvi, Raichur, Sindhanur and Lingsugur taluks of the district. The details of the area irrigated by different sources are given in table.

Report: Studies carried out by CGWB 2012-2013

Table No: 2.1 g) Gross Area Irrigated by different sources in Raichur district (in ha)

N o.	Taluk	Canals	Tanks	Dug wells	Bore wells	Lift irrigation	Other source	Total
1	Devdurg	49707	30	1226	2463	1906	0	55332
2	Lingsugur	29139	0	1989	3246	562	0	34932
3	Manvi	5866	150	2221	2791	890	0	64713
4	Raichur	20196	102	4125	7942	3902	0	36267
5	Sindhanur	98953	0	55	137	2641	0	101786
	Total	256656	282	9162	16579	9901	0	293030

Report: Dept. of statistics 2013-14

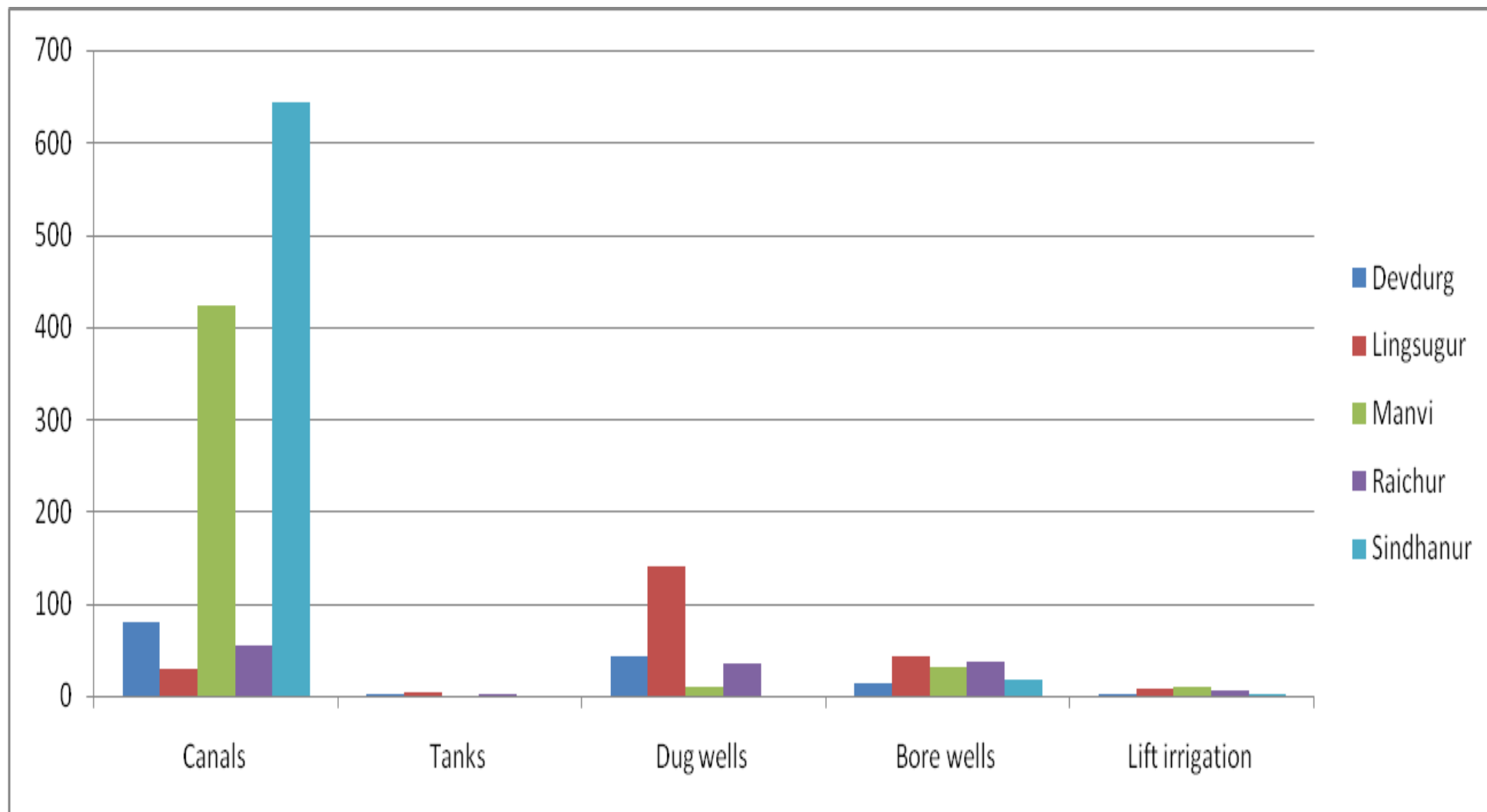


Figure 12: Net Area Irrigated by different sources in Raichur district (sq. km)

Rainfed Agriculture:

Rainfed agriculture covers a large area (60%) of agriculture and comprises of areas that are completely dependent on rain and areas with supplemental irrigation through rainwater harvesting or groundwater recharge.

However, urgent steps are needed in terms of institutional, technical, and policy innovations to harness the maximum benefits using science-led and demand driven watershed implementation for transforming the rainfed agriculture scenario in the country. New watershed initiatives such as Integrated Watershed Development Program (IWMP) and benefit the country at the same time. The Government of Karnataka with technical support from the ICRISAT-led consortium initiated a mission program “Bhoochetana”, which was implemented in developed watersheds to help increase the agricultural productivity in the state. In Bhoochetana, soil health mapping was used as an entry point activity and based on the soil health mapping, balanced and integrated nutrient management recommendations were developed, disseminated to the farmers’ through farmer facilitators, wall writings, soil health cards, and internet. In addition, it also ensured the availability of these inputs at the village level as well.

Through the convergence of schemes, incentivized supply of micronutrients and improved seeds along with innovative monitoring and evaluation system resulted in increased productivity for different crops by 20 to 66 per cent over the farmers’ conventional management practices. Based on the success of Bhoochetana project, the GOK decided to undertake an integrated system approach converging agriculture, horticulture, and livestock in four districts through a project named “Bhoosamrudhi. With the technical support from the eight international research institutions along with state agricultural universities led by ICRISAT. It is an innovative approach to break the existing silos and achieve convergence for attaining efficiency and impacts at the ground level.

There is an urgent need to transform the rainfed agriculture not only for increasing the agricultural production, profits and for minimizing land degradation but to make it attractive for the youth and women as a respectable profession, by using scientific tools for mechanization, knowledge sharing, establishing market linkages and value addition. Such practices ensure larger share of benefits through processing etc. that are retained in the villages with substantially increased investments.

2.2 Production and productivity of major crops

Agriculture: Out of the net sown area of 6.79 lakh ha, Cereals occupy nearly 48% area, followed by Pulses (24.9%), Oilseeds (17.7%) and Commercial crops (8.3%). The productivity of major crops such as Paddy is very low (2922 Kg/ha).

Table 2.2 a) Production and Productivity of major Crops

Source: DAP, Agriculture Statistic

Name of the State: **Karnataka**

Name of the District: **Raichur**

Name of the Block: **Raichur**

Season	Crop Sown (ha)						Rainfed				Irrigated			Total		
	Cereals	Coarse Cereals	Pulses	Oil Seeds	Fibre Crops	Any Other Crops	Area (ha)	Production (qtn/yr)	Productivity or Yield (Kgs/ha)	Cost of Cultivation (Rs./ha)	Production (qtn/yr)	Productivity (Kgs/ha)	Cost of Cultivation (Rs./ha)	Production (qtn/yr)	Productivity (Kgs/ha)	Cost of Cultivation (Rs./ha)
A. Kharif	12980	0	14123	2511	32494	4	62112	524719	1654.20	6000 to 12000	1153220	115280	10000 to 15000	1677939	116934.20	6000 to 15000
B. Rabi	14860	0	12240	0	0	0	27100	208440	562.5	5000 to 10000	11175	931.25	6000 to 12000	219615	1493.75	5000 to 12000
C. Summer	4137	0	0	4896	0	0	9033	134640	2750	0	289590	7000.00	8000	424230	9750.00	8000
TOTAL	31977	0	26363	7407	32494	4	98245	867799	4966.70		1453985	123211.25		2321784	128177.95	

Table 2.2 b) Production and Productivity of major Crops

Source: DAP, Agriculture Statistic

Name of the State: Karnataka																
Name of the District: Raichur																
Name of the Block: Manvi																
Season	Crop Sown (ha)						Rainfed				Irrigated			Total		
	Cereals	Coarse Cereals	Pulses	Oil Seeds	Fibre Crops	Any Other Crops	Area (ha)	Production (qt/yr)	Productivity or Yield (Kgs/ha)	Cost of Cultivation (Rs./ha)	Production (qtn/yr)	Productivity (Kgs/ha)	Cost of Cultivation (Rs./ha)	Production (qtniYr)	Productivity (Kgs/ha)	Cost of Cultivation (Rs./ha)
A. Kharif	33966	0	7045	2125	18340	0	61476	391745	1337.50	6000 to 12000	2246525	2825	10000 to 15000	2638270	4162.50	6000 to 15000
B. Rabi	20570	0	23400	6340	0	0	50310	556655	1133.3	5000 to 10000	14750	3125	6000 to 12000	571405	4258.30	5000 to 12000
C. Summer	13800	0	0	868	0	0	14668	0	0	0	975588	4150.00	8000	975588	4150.00	8000
TOTAL	68336	0	30445	9333	18340	0	126454	948400	2470.80		3236863	10100.00		4185263	12570.80	

Table 2.2 c) Production and Productivity of major Crops

Source: DAP, Agriculture Statistic

Name of the State: Karnataka																
Name of the District: Raichur																
Name of the Block: Devadurga																
Season	Crop Sown (ha)						Rainfed				Irrigated			Total		
	Cereals	Coarse Cereals	Pulses	Oil Seeds	Fibre Crops	Any Other Crops	Area (ha)	Production (qtn/yr)	Productivity or Yield (Kgs/ha)	Cost of Cultivation (Rs./ha)	Production (qtn/yr)	Productivity (Kgs/ha)	Cost of Cultivation (Rs./ha)	Production (qtn/yr)	Productivity (Kgs/ha)	Cost of Cultivation (Rs./ha)
A. Kharif	25310	0	4010	5377	25210	54	59961	1170285	1110.00	6000 to 12000	39250	1900	10000 to 15000	1209535	3010	6000 to 15000
B. Rabi	24500	0	18600	1250	0	0	44350	509400	1050	5000 to 10000	0	0	6000 to 12000	509400	1050	5000 to 12000
C. Summer	15000	0	0	13500	0	0	28500	0	0	0	1421250	3250.00	8000	1421250	3250	8000
TOTAL	64810	0	22610	20127	25210	54	132811	1679685	2160.00		1460500	5150.00		3140185	7310.00	

Table 2.2 d) Production and Productivity of major Crops

Source: DAP, Agriculture Statistic

Name of the State: Karnataka																
Name of the District: Raichur																
Name of the Block: Lingasugur																
Season	Crop Sown (ha)						Rainfed				Irrigated			Total		
	Cereals	Coarse Cereals	Pulses	Oil Seeds	Fibre Crops	Any Other Crops	Area (ha)	Production (qtn/yr)	Productivity or Yield (Kgs/ha)	Cost of Cultivation (Rs./ha)	Production (qtn/yr)	Productivity (Kgs/ha)	Cost of Cultivation (Rs./ha)	Production (qtniYr)	Productivity (Kgs/ha)	Cost of Cultivation (Rs./ha)
A. Kharif	30788	0	13097	6776	14997	0	65658	768277	1333.30	6000 to 12000	324037	2637.5	10000 to 15000	1092314	3970.80	6000 to 15000
B. Rabi	29232	0	26157	8871	0	0	64260	712186	1055.56	5000 to 10000	27857.5	2527.78	6000 to 12000	740044	3583.34	5000 to 12000
C. Summer	857	0	0	11994	0	0	12851	0	0	0	3598840	4750.00	8000	3598840	4750.00	8000
TOTAL	60877	0	39254	27641	14997	0	142769	1480463	2388.86		3950735	9915.28		5431198	12304.14	

Table 2.2 e) Production and Productivity of major Crops

Source: DAP, Agriculture Statistic

Name of the State: Karnataka																
Name of the District: Raichur																
Name of the Block: Sindanur																
Season	Crop Sown (ha)						Rainfed				Irrigated			Total		
	Cereals	Coarse Cereals	Pulses	Oil Seeds	Fibre Crops	Any Other Crops	Area (ha)	Production (qtn/yr)	Productivity or Yield (Kgs/ha)	Cost of Cultivation (Rs./ha)	Production (qtn/yr)	Productivity (Kgs/ha)	Cost of Cultivation (Rs./ha)	Production (qtn/yr)	Productivity (Kgs/ha)	Cost of Cultivation (Rs./ha)
A. Kharif	38606	0	986	1319	13173	235	54319	205407	166.87	6000 to 12000	496736	114856	10000 to 15000	702143	115022.87	6000 to 15000
B. Rabi	6100	0	14000	1400	0	0	21500	214190	1116.6	5000 to 10000	31675	2083	6000 to 12000	245865	3199.6	5000 to 12000
C. Summer	41265	0	20	100	0	0	41385	0	0	0	2890680	2688.89	8000	2890680	2688.89	8000
TOTAL	85971	0	15006	2819	13173	235	117204	419597	1283.47		3419091	119627.89		3838688	120911.36	

Table 2.2 f) Production and Productivity of major Crops

Source: DAP, Agriculture Statistic

Name of the State: Karnataka			
Name of the District: Raichur			
Horticulture department			
Season	Total		
	Production (qtn/Yr)	Productivity (Kgs/ha)	Cost of Cultivation (Rs./ha)
A) Fruits	49808	23180	78800-255000
B) Vegetables	116181	15220	92382-125775
C) Spice	9337	4460	85000-206280
D) Plantation	246	0.00	37500-82515
TOTAL	175572	42860.00	

2.3 Irrigation Based classification

Table 2.3 : Irrigation based Classification

Name of the State: Karnataka				
Name of the District: Raichur				
Irrigated (Area in ha)			Rainfed (Area in ha)	
Name of the Block:	Gross Irrigated Area	Net Irrigated Area	Partially Irrigated/Protective Irrigation	Un-Irrigated or Totally Rainfed
Devadurga	55332	51102	0	68787
Lingasugur	34932	30883	0	127831
Manvi	64713	55993	0	71259
Raichur	36267	33111	0	96681
Sindhanur	101786	55209	0	21634
TOTAL	293030	226298	0	386192

CHAPTER 3 WATER AVAILABILITY

Related to the district water profile such as area wise, crop wise irrigation status, production & productivity of major crops, irrigation based classification, such as status of availability of water, ground water availability, command area and existing type of irrigation.

Table 3.1 : Status of Water Availability BCM per Ha

Sl.No.	Sources	Kharif	Rabi	Summer	Total	
1	Surface Irrigation					
(i)	Canal(Major & Medium Irrigation) MCM	BCM	0.85	0.68	0.00	1.524
(ii)	Minor Irrigation tanks	BCM	97.14	84.52	0.00	181.661
	Percolation Tanks (MI)	BCM	3.04	2.61	0.00	5.654
	Anicut Pickup Bandhara (MI)	IN Cusecs	13.36	11.59	0.00	24.947
(iii)	Lift Irrigation/Diversion		13.763251	26.996466	0	0.000
(iv)	Various Water Bodies including Rain Water Harvesting		0	0	0	0.000
(v)	Treated Effluent Received from STP		0	0	0	0.000
(vi)	Untreated Effluent		0	0	0	0.000
(vii)	Perennial sources of water					
2	Ground Water (depth in mts)					
(i)	Open Well				0.83207	
(ii)	Deep Tube Well					
(iii)	Medium Tube Well					
(iv)	Shallow Tube Wells					

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

Table:3.2 Status of Ground Water Availability

Name of the Block	Status of Block as per Central Ground Water Board Notification			Ground Water (BCM)		
	Critical	Semi-Critical	Safe	Net water Available	draft	future Development
Devadurga	0	1.9779	63.9521	0.06923	0.027	0.04106
Lingasagur	0	36.9284	34.352	0.06729	0.05737	0.01362
Manvi	0.8588	0	234.53	0.34579	0.06229	0.28055
Raichur	0	0	80.8356	0.07556	0.05312	0.02675
Sindhanur	0	0	184.95	0.2742	0.05459	0.21428
Total	0.8588	38.9063	598.62	0.83207	0.25437	0.57626

Source: CGWB

3.3 : Status of Command area :

River or streams and other sand sources of Raichur District:

Raichur district is very fortunate in the sense that it is drained by Krishna and Tungabhadra perennial rivers. The rivers Krishna and the Tungabhadra which form the entire northern and southern boundaries of the district, respectively. They have been associated from time immemorial with religious and cultural activities and have several famous shrines on their banks. Picturesque spots on their banks have been also abodes of spiritual sadhana. In the historical and cultural development of the country, the great rivers have played a vital role. Legend and tradition have sanctified these perennial sources of water, which have given an immense impetus to civilization and prosperity of the land. These beneficent river have exercised a strong influence on the life and imagination of the people. River Bhima is an important tributary of the river Krishna. The drainage pattern is highly dendritic in nature (Fig.2). The drainage pattern in the area has been altered due to the irrigation practices in the area.

IV(2) Krishna River

The Krishna seems to have been serving as an artery of commerce since ancient times. The river must have been navigable a long way inland during the early centuries. Dr. Pandurangarao Desai is of the opinion that Ptolemy referred to this river, at least in its lower course, as Maisolos, which name has survived in the modern Masulipatam. He also says that the river Krishna is typical of the Deccan rivers; its maximum flood discharge is said to be almost double that of the Nile river, while in summer it dwindles down to a mere 100 cusecs. But all the same, it is a perennial river and has been the source of livelihood for a number of villages and towns on its banks. The bed of the river is rough and stony. It has low banks and is about half-a-mile wide. It has a few islands in it and when the river is in flood, it is difficult for the inhabitants of the island villages to communicate with the people of the mainland. In the rainy season, when the river generally overflows its banks, its waters enrich the soil with a rich deposit of natural manure and there is luxuriance of crops on these lands.

The Krishna is also called Hire-hole (big or great river) in the region, and old Kannada inscriptions mention it as Perddore with the same meaning. The river has its source in the Western Ghats north of the Mahabaleshwar hill station. In its upper course, it rushes through deep and narrow gorges. While flowing through the broken ridges of the Dharwars in the Deccan proper, it receives many streams. It enters Raichur district to the north of Uppinhal village in Lingsugur taluk and flows for a distance of about 104 miles in the district. There is a steep drop in the level of the river in its course through this district, as much as 300 feet, in a distance of about three miles. The river Bhima joins this river to the north of Kadlur in Raichur taluk. About 15 major and 21 minor streams and nalas also flow into the river along its course, important among them being the Hutti nala (30 miles), Chiksugur nala (22 miles), Ramdurg nala (20 miles), Mandargi nala (19 miles), Kodihal nala (17 miles), Ramanhal nala (16 miles), Hirebudur nala (15 miles) and Timmapur and Budadipad nalas (14 miles each). The river leaves the district north of Budadipad village in Raichur taluk and enters Andhra Pradesh.

IV(3) Tungabhadra River

The Tungabhadra is formed by the union of two rivers, viz., the Tunga and the Bhadra, both of which rise at Gangamula in Varaha Parvata of the Western Ghats. This is also a perennial river, very deep in certain places and almost unaffordable even in the dry season. This river enters the district near Kesalapur village at the south-western tip of Koppal taluk. The general slope of the land in the district being north-west to south-east, the Tungabhadra has a large number of rivulets and streams serving as

tributaries, as compared to the Krishna. But none of these streams is of any great importance by itself and they generally go dry during the summer.

Old Kannada inscriptions have hailed the river as the Ganga of South India. In the past, notably during the days of Vijayanagar kings, it had been dammed at several places for purposes of irrigation and, in this district also, anicuts of large blocks of stones were constructed in several places in Koppal and Gangavati taluks. Canals were laid along both sides of the river. Most of these canals had been silted up and the water courses were in a dilapidated state. If kept in constant repair, these canals can serve as effective means of irrigation for the cultivation of rice and surgarcane, in places not benefited by the recent Tungabhadra Dam at Munirabad. The Tungabhadra river also is reputed as one of the important rivers of South India.

The river which forms the southern boundary of the district flows for a distance of about 130 miles along the district touching Koppal, Gangavathi, Sindhanur, Manvi and Raichur regions and leaves the district to the south-east of Talamari village in Raichur taluk. As stated above, a number of streams and nalas flow into the river along its course in the district, the more important among them being the Maski nala (70 miles), Hirehalla (50 miles), Alawandi nala (20 miles), sindhanur nala (50 miles), Siddapur stream (32 miles), Marli stream (26 miles), Inchnal nala (50 miles), Kanakgiri nala (32 miles), Nandihal nala (26 miles) and Kapgol nala (24 miles)

Table 3.3 a): Taluk wise Length of the River bed in Raichur District

Sl.No.	Taluk	River	Length Of the River (in KM's)
1	Raichur	Krishna	43.415
2		Tungabhadra	28.53
3	Manvi	Tungabhadra	30.338
4	Devdurga	Krishna	86.852
5	Lingsugur	Krishna	53.501
6	Sindhur	Tungabhadra	41.529

Table 3.3 b): Length of the River bed in Raichur District

Sl. No	Name of the River	Total length in the District in KM's	Place of origin	Altitude at origin (in mts)
1	Krishna	183.768	Mahabaleshwar(Maharashtra)	1300
2	Tungabhadra	100.66	Gangamoola (Varahaparvatha of Chikkamagalur District)	1198

The project wise status of Command area is given in Annexure - III (Page No.....)

FIGURE : 13 Drainage and Waterbody Map of Raichur District

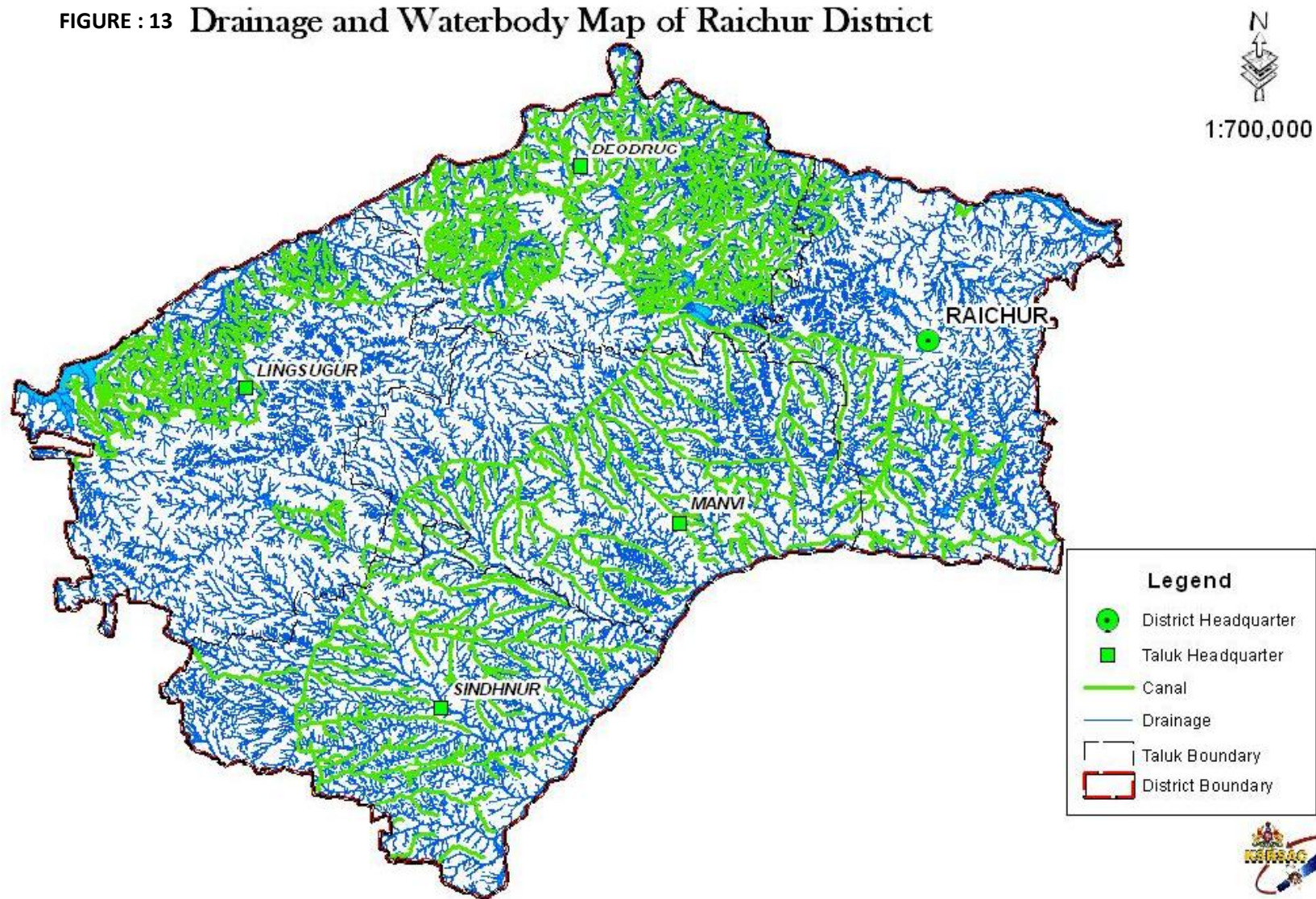
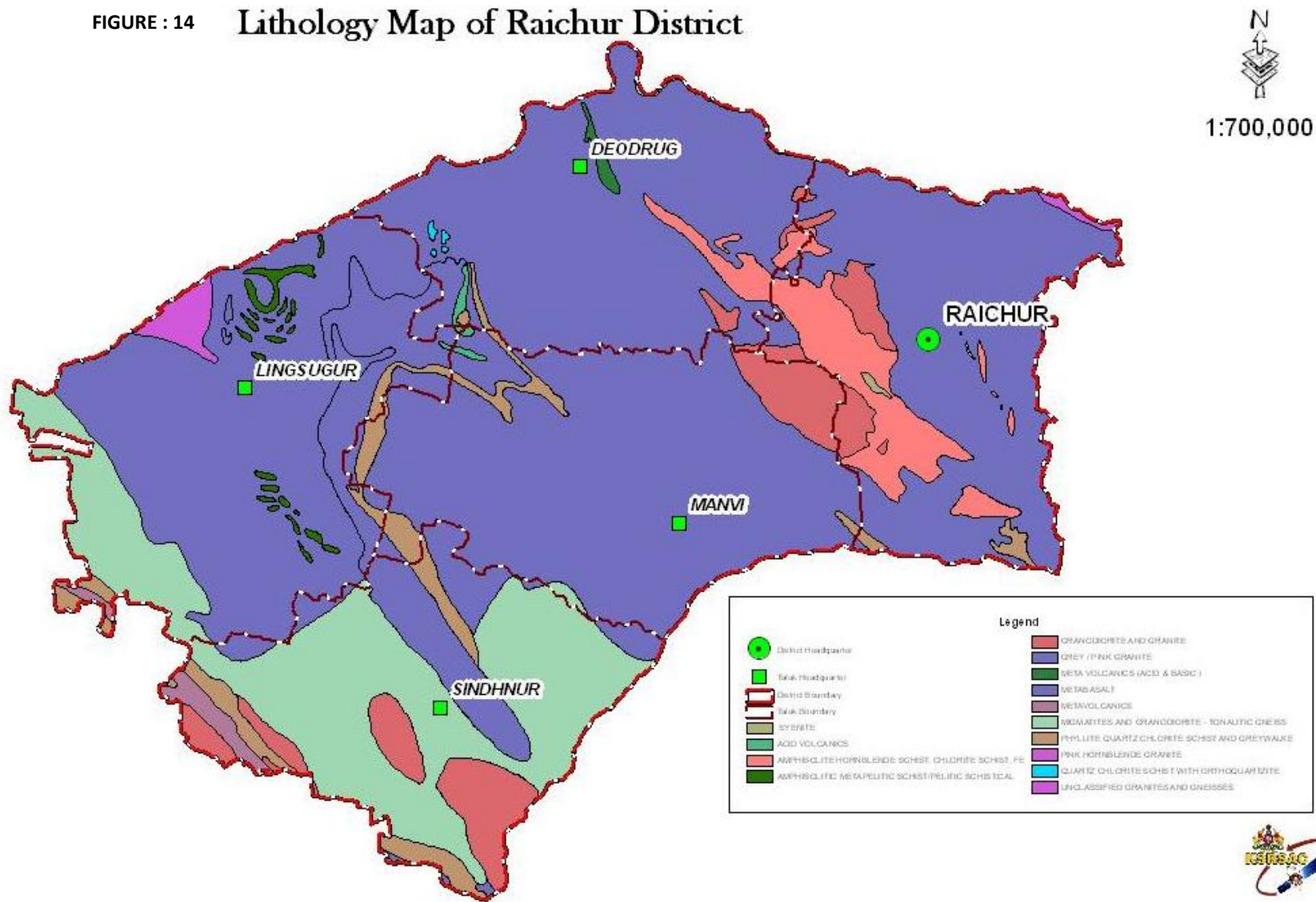


FIGURE : 14 Lithology Map of Raichur District



CHAPTER 4

WATER REQUIREMENT /DEMAND

Related to & water requirement and demand such as domestic demand, crop demand, live stock demand, industrial water demand, water demand for power generation, total water demand of the district for various sectors, water budget which includes water availability and water demand

4.1 Domestic Water Demand

According to Froukh the term 'domestic water demand' is the amount of water required for domestic uses. Water demand forecasting is essential to water utilities, both for day-to-day operations and for long-term planning. 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. As per the Bureau of Indian Standards, a minimum water supply of 200 litres per capita per day (lpcd) should be provided for domestic consumption in cities with full flushing systems. It 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. All the calculation in this DIP is done by assuming the water demand 135 lpcd.

Table 4.1 Domestic Water Requirement/Demand

Name of the taluk	Population 2011	Present water demand	Projected Population 2020	Projected water demand
Devadurga	280606	0.01382	319005	0.01572
Lingasugur	385699	0.01900	437685	0.02157
Manvi	370670	0.01826	420292	0.02071
Raichur	498637	0.02457	564188	0.02780
Sindhnanur	393200	0.01937	446316	0.02199
Total	1928812	0.09504	2187486	0.10778

Table 4.1 a) .Average Domestic Water consumption Calculated

Sr. No	Use	Consumption in Liter per person per day
1	Drinking	5
2	Cooking	5
3	Bathing (including ablution)	55
4	Washing Cloths	20
5	Washing of Utentials	10
6	Cleaning of Houses	10
7	Flushing of Latrines	30
	Total	135

Source: Central Public Health and Environmental engineering organization (CPHEEO India Water Portal)

Total Population for Raichur District in 2011 was 1928812 growth rate for district is 15.5 % per decade, projected population in 2020 is 2187486. Average Per capita Domestic water requirement is 135 liters per day, Based on this information Gross water Demand for Whole District in current year is 0.09504 BCM per annum. The projected gross water demand in 2020 will be 0.10778 BCM for per annum. Thus water gap is 0.01275 BCM for Raichur district per annum.

4.2: Crop Water Demand:

The taluka wise crop water demand is given as below

4.2 a) Crop Water Requirement							
Block	Crops	Area Sown (ha)	Irrigated area (ha)	Crop water demand (mm)	Water potential required (BCM)	Existing water potential (BCM)	Water potential to be created (BCM)
Raichur	Paddy	16544	16544	1700	0.281248	0.67079	0.24087
	jawar	7298	0	550	0.040139		
	Bajra	510	0	375	0.001913		
	Maize	195	150	650	0.001268		
	navane	7430	150	550	0.040865		
	Cereal Total	31977	16844		0.365432		
	Red gram	14105	0	650	0.091683		
	Green Gram	18	0	575	0.000104		
	Bengal Gram	12240	0	575	0.070380		
	Others	0	0	575	0.000000		
	Pulses Total	26363	0		0.162166		
	Ground Nut	5938	526	850	0.050473		
	Sunflower	142	61	425	0.000604		
	Saflawer	0	0	600	0.000000		
	Others	1327	0	600	0.007962		
	Oil seeds Total	7407	587		0.059039		
	Cotton	32494	7858	1000	0.324940		
	Sugar cane	4	4	2000	0.000080		
	Total Commercial	32498	7862		0.325020		
	TOTAL	98245	25293		0.9116565		

4.2 b) Crop Water Requirement

Block	Crops	Area Sown (ha)	Irrigated area (ha)	Crop water demand (mm)	Water potential required (BCM)	Existing water potential (BCM)	Water potential to be created (BCM)
Manvi	Paddy	42000	42000	1700	0.714000	0.89656	0.35961
	jawar	20570	320	550	0.113135		
	Bajra	5766	175	375	0.021623		
	Maize			650	0.000000		
	Wheat			550	0.000000		
	Cereal Total	68336	42495		0.848758		
	Red gram	6980	110	650	0.045370		
	Green Gram	65	0	575	0.000374		
	Bengal Gram	23400		575	0.134550		
	Others	0		575	0.000000		
	Pulses Total	30445	110		0.180294		
	Ground Nut	938	908	850	0.007973		
	Sunflower	8355	55	425	0.035509		
	Safflower			600	0.000000		
	Others	40	0	600	0.000240		
	Oil seeds Total	9333	963		0.043722		
	Cotton	18340	2940	1000	0.183400		
	Sugar cane	0	0	2000	0.000000		
	Total Commercial	18340	2940		0.183400		
	TOTAL	126454	46508	0	1.256173		

4.2 c) Crop Water Requirement

Block	Crops	Area Sown (ha)	Irrigated area (ha)	Crop water demand (mm)	Water potential required (BCM)	Existing water potential (BCM)	Water potential to be created (BCM)
Devadurga	Paddy	29880	29880	1700	0.507960	0.76729	0.45045
	jawar	24500	0	550	0.134750		
	Bajra	10430	510	375	0.039113		
	Maize			650	0.000000		
	Wheat			550	0.000000		
	Cereal Total	64810	30390		0.681823		
	Red gram	4010	0	650	0.026065		
	Green Gram	0		575	0.000000		
	Bengal Gram	18600	0	575	0.106950		
	Others			575	0.000000		
	Pulses Total	22610	0		0.133015		
	Ground Nut	15102	13950	850	0.128367		
	Sunflower	5025	925	425	0.021356		
	Safflower			600	0.000000		
	Others			600	0.000000		
	Oil seeds Total	20127	14875		0.14972325		
	Cotton	25210	22330	1000	0.252100		
	Sugar cane	54	54	2000	0.001080		
	Total Commercial	25264	22384		0.253180		
TOTAL	132811	67649	0	1.21774075	0.76729	0.45045	

4.2d) Crop Water Requirement

Block	Crops	Area Sown (ha)	Irrigated area (ha)	Crop water demand (mm)	Water potential required (BCM)	Existing water potential (BCM)	Water potential to be created (BCM)
Sindhaur	Paddy	77460	77460	1700	1.316820	1.7352	0.1397
	jawar	6110	710	550	0.033605		
	Bajra	2345	10	375	0.008794		
	Maize	56	49	650	0.000364		
	Wheat			550	0.000000		
	Cereal Total	85971	78229		1.35958275		
	Red gram	957	10	650	0.006221		
	Green Gram	29	0	575	0.000167		
	Bengal Gram	14000	0	575	0.080500		
	Others	20	20	575	0.000115		
	Pulses Total	15006	30		0.08700225		
	Ground Nut	110	100	850	0.000935		
	Sunflower	2709	140	425	0.011513		
	Safflower			600	0.000000		
	Others			600	0.000000		
	Oil seeds Total	2819	240		0.01244825		
	Cotton	13173	2338	1000	0.131730		
	Sugar cane	235	235	2000	0.004700		
	Total Commercial	13408	2573		0.13643		
TOTAL	117204	81072	0	1.5955	1.7352	0.1397	

4.2 e) Crop Water Requirement

Block	Crops	Area Sown (ha)	Irrigated area (ha)	Crop water demand (mm)	Water potential required (BCM)	Existing water potential (BCM)	Water potential to be created (BCM)
Lingsugur	Paddy	3252	3252	1700	0.055284	0.28923	0.59212
	Jawar	28230	79	550	0.155265		
	Bajra	28291	2543	375	0.106091		
	Maize	220	220	650	0.001430		
	Wheat	884	162	550	0.004862		
	Cereal Total	60877	6256		0.322932		
	Red gram	12771	95	650	0.083012		
	Green Gram	154	0	575	0.000886		
	Bengal Gram	25655	406	575	0.147516		
	Others	674	0	575	0.003876		
	Pulses Total	39254	501		0.235289		
	Ground Nut	12011	11994	850	0.102094		
	Sunflower	12979	823	425	0.055161		
	Safflower	1163	0	600	0.006978		
	Others	1488	0	600	0.008928		
	Oil seeds Total	27641	12817		0.173160		
	Cotton	14997	2165	1000	0.149970		
	Sugar cane			2000	0.000000		
	Total Commercial	14997	2165		0.149970		
	TOTAL	142769	21739	0	0.88135		

Table 4.3 : Livestock Water Demand

Taluk	Total Number of Live stock	Present Water Demand (BCM)	Water demand in 2020 (BCM)	Existing Water Potential (BCM)	Water potential To be created (BCM)
LINGAUSUGUR	501009	0.003615	0.005061	0.002892	0.002169
DEODURGA	338397	0.00309	0.004326	0.002472	0.001854
RAICHUR	370011	0.00276	0.003864	0.002208	0.001656
MANVI	296459	0.0037	0.00518	0.00296	0.00222
SINDHANUR	328492	0.00402	0.00562	0.003216	0.002404
Total	1834368	0.017185	0.024051	0.013748	0.010303

Table 4.4 : Industrial Water Demand

Taluk	Name of the industry	Water demand (BCM/Year)	Water demand in 2020 (BCM)	Existing Water potential (BCM)	Water potential to be created (BCM)
Raichur	Raichur Growth Centre	0.0015	0.0019	0.0015	0.0004
	Devsugur Industrial Area	0.0004	0.0006	0.0004	0.0002
	Raichur Industrial Area	0.0008	0.00012	0.0008	0.0004
	Raichur Industrial Housing Area	0.0012	0.0018	0.0012	0.0006
	RTPS & YTPS	0.06	0.077	0.06	0.017
Manvi	Manvi Industrial Area	0.0004	0.0006	0.0004	0.0002
TOTAL		0.06430	0.08202	0.06430	0.01880

Table 4.5 : Water Demand for Power Generation

Block	Power requirement, MW	Water demand (BCM)	Water demand in 2020 (BCM)	Existing Water potential (BCM)	Water potential to be created (BCM)
Devadurga	28	0.072	0.093	0.072	0.021
Raichur (RTPS & YTPS)	3070	0.06	0.077	0.06	0.017
TOTAL	3098	0.132	0.17	0.132	0.038

Table 4.6 Total Water Demand of the district for Various sectors

Sl. No.	Taluk	Components					Total (BCM)
		Domestic	Crop	Livestock	Industrial	Power generation	
1	Raichur	0.0278	0.9117	0.001656	0.0016	0.021	0.96371
2	Devadurga	0.0157	1.2177	0.001854	0.000	0.017	1.25231
3	Manvi	0.0207	1.2562	0.00222	0.000	0	1.27930
4	Lingasugur	0.0216	0.8814	0.002169	0.000	0	0.90509
5	Sindhhanur	0.0220	1.5955	0.002404	0.000	0	1.61986
	TOTAL	0.1078	5.86238	0.01030	0.002	0.038	6.02028

Table 4.7 Water Budget

Name of Blocks	Existing water availability (BCM)		Total (BCM)	Water Demand (BCM)	
	Surface water	Ground water		Present	Projected (2020)
LINGAUSUGUR	0.22	0.06923	0.28923	0.904015	1.688
DEODURGA	0.7	0.06729	0.76729	1.30661	1.3307
RAICHUR	0.325	0.34579	0.67079	1.06259	2.8178
MANVI	0.821	0.07556	0.89656	1.27856	2.0527
SINDHANUR	1.461	0.2742	1.7352	1.61922	3.0771
TOTAL	3.527	0.83207	4.35907	6.170995	10.9663

CHAPTER 5

STRATEGIC ACTION PLAN FOR IRRIGATION

Related to Strategic District Action under sub schemes like **Accelerated Irrigation Benefit Program (AIBP)**, with objective, scope, current status of the projects and its output/outcome, such as De Silting and Deepening the existing water bodies, Construction of new water harvesting Structure and Construction of new canal in the command area. **Har Khet Ko Pani**, with the objective of Enhancing the physical access of water on the farm and expand cultivable area under assured irrigation and scope to ensure & access the irrigation facility to every farm land. The main activities covered under this scheme is creation of new water sources through Minor Irrigation (both surface & ground water), repair, restoration & renovation of water bodies, Diversion of water from source of different location where it is plenty to nearby water scarce areas, lift irrigation from water bodies/ rivers at lower elevation to supplement requirements beyond IWMP and MGNREGS irrespective of irrigation command.

'PER DROP MORE CROP' where the Micro Irrigation is objective of enhancing the crop productivity by improving the water use efficiency through micro irrigation systems. The main objective under this scheme is to increase the production, productivity & quality, conservation & sustainable use of water, higher efficiency in the agriculture sector, improve water use efficiency, higher fertilizer use efficiency & saving in expenses of the labour. The activities covering under this programme are capacity building, training and awareness campaign including low cost publications, use of pico projectors and low cost films for encouraging potential use of water source through technological, agronomic and management practices including community irrigation.

PMKSY Watershed Development, with focus on effective management of runoff water and improved soil & moisture conservation activities such as ridge area treatment, drainage line treatment, rain water harvesting, newly created water harvesting structure such as Farm ponds, check dams, nallah bunds, Percolation tanks, other ground water recharge structure, fishery ponds/cattle ponds and water harvesting structures. In terms of convergence with MGNREGA, newly created water conservation, water harvesting, creation of irrigation canals & drains, providing infrastructure for irrigation, land development, renovation of water bodies including desilting, renovation & maintenance of irrigation canals & drains. The main activities to be taken up are Institution & Capacity Building, Natural Resource Management, Livelihood activities, Productive Enhancement.

Table No 5: Cost Of District irrigation Plan which works about.

Sl. No.	Concerned Ministry/Department	Component	Estimated Cost (in Lakhs)
1	MoWR	AIBP	12512.72
2		Harkhet ko Pani	318347.37
3	MOA & FW-DAC&FW	Per drop more crop (Micro irrigation)	39396.01
4	DoLR - MoRD	PMKSY Watershed(Newly created)	4800.30
		PMKSY Watershed(Renovation)	2239.10
5		Convergence with MGNREGA (Newly created)	2635.00
		Convergence with MGNREGA (Renovation)	5000.00
6	State Irrigation Department	State planned scheme of Irrigation	13735.00
	TOTAL		398665.50

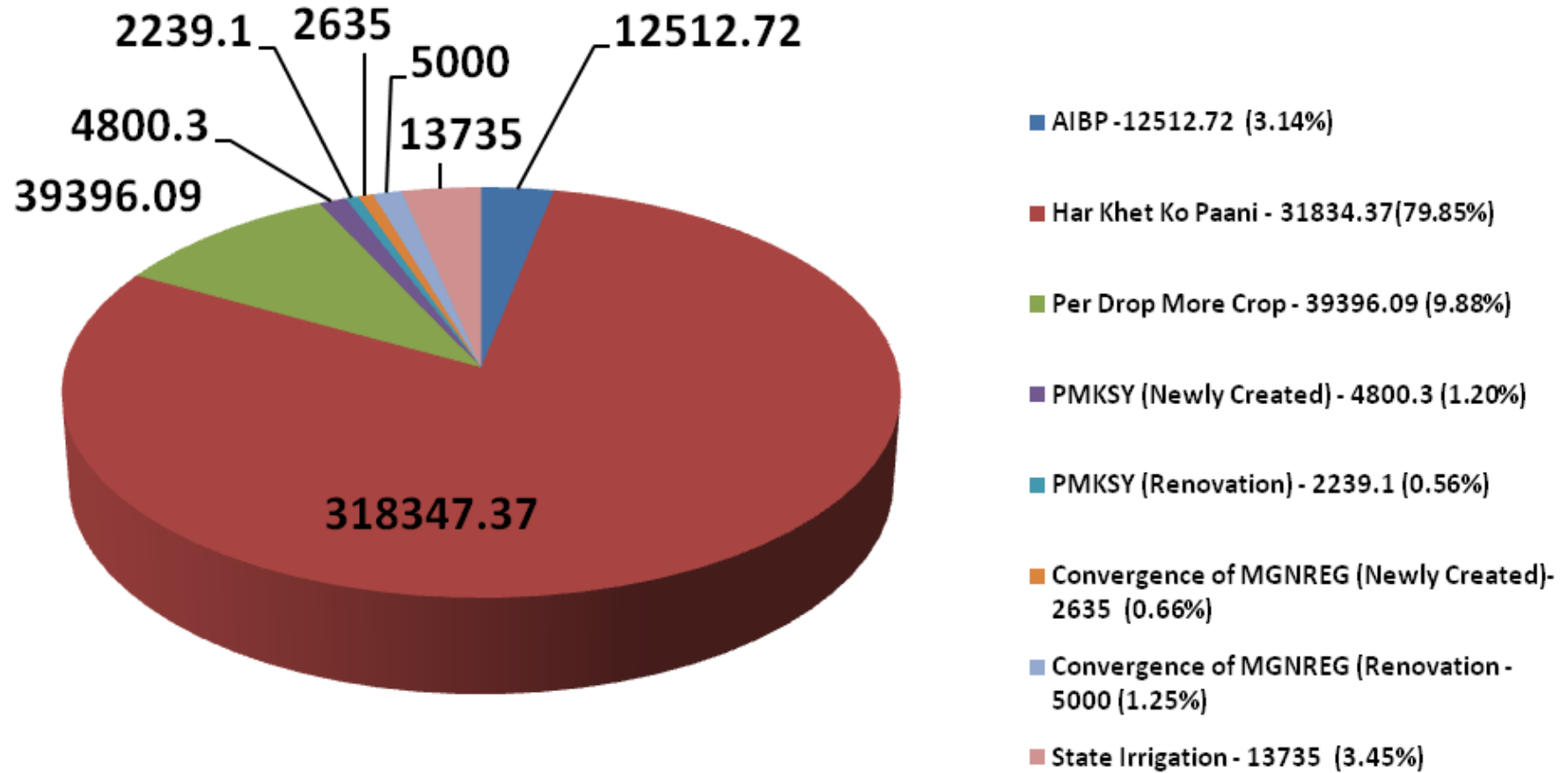


FIGURE – 15: Strategic action plan of Raichur District under District Irrigation Plan

5 Strategic Action plan for Irrigation in Raichur District under PMKSY

Sl.No	Name of the Blocks/ Su b Districts	Concerned Ministry/ Department	Component	Activity	Total Number/ Capacity(BCM)	Command Area/ Irrigation Potential (Ha)	Period of Imple mentation 5/7 yrs)	Estimated cost (in Lakhs Rs.)
1	Raichur	MoWR	AIBP	Major Irrigation (KBJNL RODALBANDA (NRBC-82 KM))	0.220BCM	29706.74	5 Yrs	10000.00
2	Lingasgur	MoWR	AIBP	Minor Irrigation				
3	Lingasgur	MoWR	AIBP	Construction of New Pick up at Desai Bogapur Village of Lingasugur Taluk	0	121	5 Yrs	55.00
4	Lingasgur	MoWR	AIBP	Construction of New Pick up at Golapalli Village of Lingasugur Taluk	0	440	5 Yrs	200.00
5	Lingasgur	MoWR	AIBP	Construction of New Pick up at Gurugunta Village of Lingasugur Taluk	0	264	5 Yrs	120.00
6	Lingasgur	MoWR	AIBP	Construction of New Pick up atSajjalagudda Village of Lingasugur Taluk	0	121	5 Yrs	55.00
7	Lingasgur	MoWR	AIBP	Construction of New Pick up at gonawat Village of Lingasugur Taluk	0	121	5 Yrs	55.00
8	Lingasgur	MoWR	AIBP	Construction of New Pick up at Pulabhavi tanda Village of Lingasugur Taluk	0	132	5 Yrs	60.00
9	Lingasgur	MoWR	AIBP	Construction of New Pick up at Idanal Village of Lingasugur Taluk	0	110	5 Yrs	50.00
10	Lingasgur	MoWR	AIBP	Construction of New Pick up at mudaladinni Village of Lingasugur Taluk	0	440	5 Yrs	200.00
11	Lingasgur	MoWR	AIBP	Construction of New Pick up at kumarkhed Village of Lingasugur Taluk	0	220	5 Yrs	100.00
12	Lingasgur	MoWR	AIBP	Construction of New Pick up at Jantapur Village of Lingasugur Taluk	0	165	5 Yrs	75.00
13	Maski	MoWR	AIBP	Construction of New Pick up at kanekellur Village of Lingasugur Taluk	0	154	5 Yrs	70.00
14	Maski	MoWR	AIBP	Construction of New Pick up at teredabhavi Village of Lingasugur Taluk	0	172	5 Yrs	78.00
15	Maski	MoWR	AIBP	Construction of New Pick up at Ranabilla Village of Lingasugur Taluk	0	176	5 Yrs	80.00
16	Maski	MoWR	AIBP	Construction of New Pick up at sultanpur Village of Lingasugur Taluk	0	158	5 Yrs	72.00
17	Raichur	MoWR	AIBP	Construction of Check dam to nala at gurjapur Village	0	163	5 Yrs	74.14
18	Raichur	MoWR	AIBP	Construction of Check dam to nala at Heggasanahalli Village	0	164	5 Yrs	74.73
19	Raichur	MoWR	AIBP	Construction of Check dam to nala at Ganjapalli Village	0	174	5 Yrs	79.20
20	Raichur	MoWR	AIBP	Construction of Check dam to nala at Ijapur Village	0	141	5 Yrs	63.94
21	Raichur	MoWR	AIBP	Construction of Check dam to nala at Gonvar Village	0	157	5 Yrs	71.22
22	Raichur	MoWR	AIBP	Construction of Check dam to nala at chickkasugur Village	0	142	5 Yrs	64.76
23	Raichur	MoWR	AIBP	Construction of Check dam to nala at Ibrahim doddi Village	0	130	5 Yrs	59.10

24	Raichur	MoWR	AIBP	Construction of Check dam to nala at Jegarkal village	0	196	5 Yrs	89.00
25	Raichur	MoWR	AIBP	Construction of Check dam to nala at Gadar Village	0	193	5 Yrs	87.50
26	Raichur	MoWR	AIBP	Construction of Check dam to nala at Kadlur Village	0	119	5 Yrs	54.01
27	Raichur	MoWR	AIBP	Construction of Check dam to nala at manjarla Village	0	119	5 Yrs	54.10
28	Raichur	MoWR	AIBP	Construction of Check dam to nala at yeragera Village	0	207	5 Yrs	94.00
29	Raichur	MoWR	AIBP	Construction of Check dam to nala at Dongarampur Village	0	130	5 Yrs	59.10
30	Raichur	MoWR	AIBP	Construction of Check dam to nala at vadlur Village	0	130	5 Yrs	59.10
31	Devadurga	MoWR	AIBP	Construction of Check dam to nala at ganekal Village	0	112	5 Yrs	51.07
32	Devadurga	MoWR	AIBP	Construction of Check dam to nala at Gabbur Village	0	120	5 Yrs	54.54
33	Devadurga	MoWR	AIBP	Construction of Check dam to nala at NavalaguddaVillage	0	112	5 Yrs	51.07
34	Devadurga	MoWR	AIBP	Construction of Check dam to nala at basapur Village	0	112	5 Yrs	51.07
35	Devadurga	MoWR	AIBP	Construction of Check dam to nala at Somanamardi Village	0	112	5 Yrs	51.07
	Total					5528		12512.72
				Major Irrigation				
36	Raichur	MoWR	HKKP	NRBC EXTENTION(KBJNL)	0	51422	5 Yrs	20000.00
37	Devadurga	MoWR	HKKP	NRBC D-9(A) (KBJNL)	0	4980.91	1 Yr	1000.00
		MoWR	HKKP	NRBC EXTENTION(KBJNL)	0	4677.34	5 Yrs	25000.00
38	Sindhanur/ Manvi/Devdurga /Raichur	MoWR	HKKP	Tungabhadra Project Left Bank Canal from Mile 47 to 141 (including Lining & Structure)	51.53	196896	1 Yr	14883.00
39	Sindhanur	MoWR	HKKP	Kanakanala Project across the Kanakanala Near Killarahatti village	0.27 TMC	2064	1 Yr	3000.00
40	Sindhanur	MoWR	HKKP	Sri Channabasaweshwar Lift Irrigation Scheme Near Walaballary village	0.50 TMC	0	2 Yrs	3000.00
41	Lingasgur	MoWR	HKKP	Maskinala Project Near Maraladinni village	0.50TMC	3001	1 Yr	2000.00
42	Manvi	MoWR	HKKP	Modernisation of Vijayangar Canal (Bichal Canal)	0.008	281.73	2Yrs	1211.00
43	Manvi	MoWR	HKKP	Boyal Marchad Lift Irrigation scheme	0.007	0.00	2 Yrs	10.00
44	Manvi	MoWR	HKKP	Katharki Lift Irrigation	0.0001	0.00	2 Yrs	10.00
45	Manvi	MoWR	HKKP	LIS Rajolli Yadalapur	0.0001	0	1 Yr	100.00
46	Raichur District	MoWR	HKKP	MI Tanks13 no. under TLBC	0.236	743.74	1 Yr	2400.00

47	Raichur	MoWR	HKKP	Raichur lift irrigation (Scheme-A)	0.159BCM	20235	5 Yrs	14521.60
48	Raichur	MoWR	HKKP	Raichur lift irrigation (Scheme-B)	0.094BCM	10800	5 Yrs	16800.00
49	Raichur	MoWR	HKKP	Modernisation of Rajolli Band Diversion Scheme.	1.15 TMC	2380	1 Yr	1118.00
50	Lingasgur	MoWR	HKKP	Nandawadagi lift irrigation Scheme	0.106BCM	36100	3 Yrs	194670.00
51	Raichur District	MoWR	HKKP	Ground Water Development	0.57626		5 Yrs	5500
52	Sindhanur, Manvi and Raichur	CAD W&M Works TBP	HKKP	Surface and Sub surface Draingae, Functional Grant	0	186409.69	5 Yrs	9143.17
53	Devdurga and Lingasgur	CAD W&M Works UKP	HKKP	Construction field canal , Surface and Sub surface Drainage	0	12023.1	5 Yrs	3980.60
	Total							318347.37
54	Raichur	MOA &FW-DAC&FW	PDMC	DPAP Drip	2500	2250	5 Yrs	2025.00
55	Devadurga	MOA &FW-DAC&FW	PDMC	DPAP Drip	2000	1800	5 Yrs	1620.00
56	Lingasugur	MOA &FW-DAC&FW	PDMC	DPAP Drip	2500	2250	5 Yrs	2025.00
57	Raichur District	Horticulture Dep.	PDMC	DPAP Drip	3128.25	3128.25	5 Yrs	2059.11
58	Raichur	MOA &FW-DAC&FW	PDMC	DPAP Sprinkler	6000	1058.4	5 Yrs	952.56
59	Devadurga	MOA &FW-DAC&FW	PDMC	DPAP Sprinkler	6000	1058.4	5 Yrs	952.56
60	Lingasugur	MOA &FW-DAC&FW	PDMC	DPAP Sprinkler	7500	1323	5 Yrs	1190.70
61	Manvi	MOA &FW-DAC&FW	PDMC	Non DPAP Drip	2500	2250	5 Yrs	2025.00
62	Sindhanur	MOA &FW-DAC&FW	PDMC	Non DPAP Drip	2500	2250	5 Yrs	2025.00
63	Raichur District	Horticulture Dep.	PDMC	Non DPAP Drip	1290	339	5 Yrs	744.12
64	Manvi	MOA &FW-DAC&FW	PDMC	Non DPAP Sprinkler	5000	882	5 Yrs	793.80

65	Sindhanur	MOA &FW-DAC&FW	PDMC	Non DPAP Sprinkler	4000	705.6	5 Yrs	635.04
66	Sindhanur, Manvi and Raichur	CAD W&M Works TBP	PDMC	Trainings(No of farmer)	82692	89692	5 Yrs	94.12
67	Devdurga and Lingasgur	CAD W&M Works UKP	PDMC	Others Aycut roads Identification, repair and construction	1712	1502.75	5 Yrs	22254.00
	Total				129322.25			39396.01
Newly Created								
68	Raichur	DoLR-MoRD	PMKSY Watershed	Farm Ponds	300	360	5 Yrs	210.00
69	Raichur	DoLR-MoRD		Check Dams	60	180	5 Yrs	294.00
70	Raichur	DoLR-MoRD		Nallah Bunds	5	10	5 Yrs	24.50
71	Raichur	DoLR-MoRD		Percolation Tanks	50	250	5 Yrs	75.00
72	Raichur	DoLR-MoRD		Other Ground Water Recharge	300	120	5 Yrs	150.00
73	Raichur	DoLR-MoRD		fishery ponds/cattle pond	20	0	5 Yrs	60.00
	Sub Total				735	920		813.50
74	Manvi	DoLR-MoRD	PMKSY Watershed	Farm Ponds	200	240	5 Yrs	140.00
75	Manvi	DoLR-MoRD		Check Dams	50	150	5 Yrs	245.00
76	Manvi	DoLR-MoRD		Nallah Bunds	2	10	5 Yrs	9.80
77	Manvi	DoLR-MoRD		Percolation Tanks	30	150	5 Yrs	45.00
78	Manvi	DoLR-MoRD		Other Ground Water Recharge	250	100	5 Yrs	125.00
79	Manvi	DoLR-MoRD		fishery ponds/cattle pond	10	0	5 Yrs	30.00
	Sub Total				542	650		594.80
80	Devadurga	DoLR-MoRD	PMKSY Watershed	Farm Ponds	400	480	5 Yrs	280.00
81	Devadurga	DoLR-MoRD		Check Dams	40	120	5 Yrs	196.00
82	Devadurga	DoLR-		Nallah Bunds	10	50	5 Yrs	49.00

		MoRD						
83	Devadurga	DoLR-MoRD		Perculation Tanks	50	250	5 Yrs	75.00
84	Devadurga	DoLR-MoRD		Other Ground Water Recharge	250	100	5 Yrs	125.00
85	Devadurga	DoLR-MoRD		fishery ponds/cattle pond	20	0	5 Yrs	60.00
	Sub Total				770	1000		785.00
86	Lingasugur	DoLR-MoRD	PMKSY Watershed	Farm Ponds	500	600	5 Yrs	350.00
87	Lingasugur	DoLR-MoRD		Check Dams	80	240	5 Yrs	392.00
88	Lingasugur	DoLR-MoRD		Nallah Bunds	20	100	5 Yrs	98.00
89	Lingasugur	DoLR-MoRD		Perculation Tanks	100	500	5 Yrs	150.00
90	Lingasugur	DoLR-MoRD		Other Ground Water Recharge	280	112	5 Yrs	140.00
91	Lingasugur	DoLR-MoRD		fishery ponds/cattle pond	30	0	5 Yrs	90.00
	Sub Total				1010	1552		1220.00
92	Sindhanur	DoLR-MoRD	PMKSY Watershed	Farm Ponds	250	300	5 Yrs	175.00
93	Sindhanur	DoLR-MoRD		Check Dams	150	450	5 Yrs	735.00
94	Sindhanur	DoLR-MoRD		Nallah Bunds	5	25	5 Yrs	24.50
95	Sindhanur	DoLR-MoRD		Perculation Tanks	200	1000	5 Yrs	300.00
96	Sindhanur	DoLR-MoRD		Other Ground Water Recharge	275	110	5 Yrs	137.50
97	Sindhanur	DoLR-MoRD		fishery ponds/cattle pond	5	0	5 Yrs	15.00
	Sub Total				885	1885		1387.00
	Total				3942	6007		4800.30
Renovation								
98	Raichur	DoLR-MoRD	PMKSY Watershed	Check Dams	120	360	5 Yrs	588.00

99	Manvi	DoLR-MoRD	PMKSY Watershed	Check Dams	100	300	5 Yrs	490.00
100	Devadurga	DoLR-MoRD	PMKSY Watershed	Check Dams	110	330	5 Yrs	539.00
101	Devadurga	DoLR-MoRD	PMKSY Watershed	Percolation Tanks	5	25	5 Yrs	7.50
102	Lingasugur	DoLR-MoRD	PMKSY Watershed	Check Dams	112	336	5 Yrs	548.80
103	Sindhanur	DoLR-MoRD	PMKSY Watershed	Farm Ponds	80	96	5 Yrs	56.00
104	Sindhanur	DoLR-MoRD	PMKSY Watershed	Nallah Bunds	2	10	5 Yrs	9.80
	Total				529	1457		2239.10
Newly Created								
105	Raichur	DoLR-MoRD	Convergence with MGNREGA	Water Conservation	3000	12000	5 Yrs	252.00
				Water Harvesting	110	600	5 Yrs	275.00
	Sub Total				3110	12600		527.00
106	Manvi	DoLR-MoRD	Convergence with MGNREGA	Water Conservation	3000	12000	5 Yrs	252.00
				Water Harvesting	110	600	5 Yrs	275.00
	Sub Total				3110	12600		527.00
107	Devadurga	DoLR-MoRD	Convergence with MGNREGA	Water Conservation	3000	12000	5 Yrs	252.00
				Water Harvesting	110	600	5 Yrs	275.00
	Sub Total				3110	12600		527.00
108	Lingasugur	DoLR-MoRD	Convergence with MGNREGA	Water Conservation	3000	12000	5 Yrs	252.00
				Water Harvesting	110	600	5 Yrs	275.00
	Sub Total				3110	12600		527.00
109	Sindhanur	DoLR-MoRD	Convergence with MGNREGA	Water Conservation	3000	12000	5 Yrs	252.00
				Water Harvesting	110	600	5 Yrs	275.00
	Sub Total				3110	12600		527.00

