GOVERNMENT OF KARNATAKA

DEPARTMENT OF AGRICULTURE

Pradhan Mantri Krishi Sinchayee Yojana (PMKSY)

DISTRICT IRRIGATION PLAN

RAMANAGARA DISTRICT

2016

GOVERNMENT OF KARNATAKA

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Deputy Commissioner
Ramanagar

Foreword

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

There are no major irrigation sources in the district. Most of the irrigation is only through tube wells. The district has scope for dryland horticulture and sericulture, which are the major source of income and employment to the farmers.

The average rainfall of the Ramanagar district during 1990-1995 was 892.22mm and in last five years it has come down to only 796 mm spread over 54 rainy days. Uneven and erratic rainfall with frequent long dry spells has hampered agriculture activities.

Since, Ramanagara is located adjacent to capital city (Bengaluru) all plans should focus on utilizing water for establishment of new industries,

expansion of irrigated area and creation of special economic zone, this provides additional job opportunities leading to economic growth of the district and the district can be model to the entire State at the outset. I appreciate the efforts of Agriculture Department particularly Joint Director and their team in collection of information from various departments and organizing District Level meetings which has led to finalize this report. I thank all department officials for providing timely information on their concerned templates. I also express my deep sense of gratitude to Sri D.K.Shivakumar, Hon'ble District Minister for his valuable guidance and Sri. D.K.Suresh, Hon'ble Member of Parliament for chairing the final meeting and providing valuable suggestions. I also thank all other elected representatives of the District for their inputs to District Irrigation Plan.

I also thank the President and members of Plus Trust, Bangalore for compilation, analysis and printing of the District Irrigation Plan in an exhaustive and excellent manner.

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

Date: 27/09/2016

Deputy Commissioner
Ramanagar

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PRADHAN MANTRI KRISHI SINCHAYEE YOJANA (PMKSY)

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). The scheme will be implemented by Ministry of Agriculture, Water Resources and Rural Development. Ministry of Rural Development is to mainly undertake rain water conservation, construction of farm pond, water harvesting structures, small check dams and contour bunding etc., MoWR, RD & GR, is to undertake various measures for creation of assured irrigation source, construction of diversion canals, field channels, water diversion/lift irrigation, including development of water distribution systems. Ministry of Agriculture will promote efficient water conveyance and precision water application devices like drips, sprinklers, pivots, rain-guns in the farm "(Jal Sinchan)", construction of micro-irrigation structures to supplement source creation activities, extension

activities for promotion of scientific moisture conservation and agronomic measures

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

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

Components and responsible Ministries/ Departments are:

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

2. PMKSY (Har Khet ko Pani) by MoWR,RD& GR: Creation of new water sources through Minor Irrigation (both surface and ground water).Repair, restoration and renovation of water bodies; strengthening carrying capacity of traditional water sources, construction of rain water harvesting structures (Jal Sanchan); Command area development, strengthening and creation of

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

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

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

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

Secondary storage structures at tail end of canal system to store water when available in abundance (rainy season) or from perennial sources like streams for use during dry periods through effective on-farm water management Water lifting devices like diesel/ electric/ solar pumpsets including water carrying pipes. Improved/innovative distribution system like pipe and box outlet system with controlled outlet and other activities of enhancing water use efficiency.

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

Capacity building, training for encouraging potential use water source through technological, agronomic and management practices including community irrigation awareness campaign on water saving technologies, practices, programmes etc., organisation of workshops, conferences, publication of booklets, pamphlets, success stories, documentary, advertisements etc.,

District Irrigation Plans (DIPs)

District Irrigation Plan (DIP) shall be the cornerstone for planning and implementation of PMKSY. DIP will identify the gaps in irrigation infrastructure after taking into consideration the District Agriculture Plans (DAPs) already prepared for Rashtriya Krishi Vikas Yojana (RKVY) vis-à-vis irrigation infrastructure currently available and resources that would be added during XII Plan from other ongoing schemes (both State and Central), like Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), Rashtriya Krishi Vikash Yojana (RKVY), Rural Infrastructure Development

Fund (RIDF), Member of Parliament Local Area Development (MPLAD) Scheme, Member of Legislative Assembly Local Area Development (MLALAD) Scheme, Local body funds etc. The gaps identified under Strategic Research & Extension Plan (SREP) be used in preparation of DIP. DIPs will present holistic irrigation development perspective of the district outlining medium to long term development plans integrating three components viz., water sources, distribution network and water use applications incorporating all usage of water like drinking & domestic use, irrigation and industry. Preparation of DIP will be taken up as joint exercise of all participating departments. DIP will form the compendium of all existing and proposed water resource network system in the district.

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

i. Background

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

There is a need for seriously considering all options including linking of rivers, where feasible; for ensuring optimal use of our water resources to prevent the recurrence of floods and drought. By harnessing rain water through 'Jal Sanchay' and 'Jal Sinchan', we will nurture water conservation and ground water recharge. Micro irrigation will be to ensure 'Per drop-More crop'. Out of about 141 ml ha of net area sown in the country, about 65 million hectare (or 45%) is presently covered under irrigation. Substantial dependency on rainfall makes cultivation in unirrigated areas a high risk, less productive profession. Empirical evidences suggest that assured or protective irrigation encourages farmers to invest more in farming technology and inputs leading to productivity enhancement and increased farm income. The overreaching vision of Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) will be to ensure access to some means of protective irrigation to all agricultural farms in the country, to produce 'per drop more crop', thus bringing much desired rural prosperity.

ii. Vision

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

iii. Objective

Following are the objectives:

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

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

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

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

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

iii. Strategy /approach

- ❑ Creation of new water sources; repair, restoration and renovation of defunct water sources; construction of water harvesting structures, secondary & micro storage, ground water development
- ❑ Developing/augmenting distribution network where irrigation sources (both assured and protective) are available or created;

- Promotion of scientific moisture conservation, recharge and run off control measures to improve ground water recharge so as to create opportunities for farmer to access recharged water through shallow tube/dug wells;
- Promoting efficient water conveyance and field application devices within the farm *viz.,* underground piping system, Drip & Sprinklers
- Encouraging community irrigation through registered user groups.

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

CHAPTER I

GENERAL INFORMATION OF THE DISTRICT

1.1 District Profile:

The Ramanagara Town was ruled by the British Officer "Sir Barry Close", (1756–1813) in pre-Independence times, hence, Ramanagara was earlier called as CLOSEPET. It was renamed as RAMANAGARA by the former Chief Minister of Karnataka State Sri Kengal Hanumanthaiah. The architect, builder and mentor of the present Bengaluru City Sri Kempegowda is from Magadi Taluk of Ramanagara District. The Ramanagara district which was part of the Bangalore Rural district was bifurcated and reconstituted in the year 2007 with the District Head Quarters at Ramanagara. Ramanagara Town is situated along Bangalore - Mysore State Highway No.17.

Ramanagara has good potential for agriculture, horticulture, animal husbandry, sericulture and industries. A diverse investment portfolio in urban infrastructure, textiles and apparels, food processing, media, tourism development and export promotions is the highlight attraction here. It is well known for the availability of medicinal plants at Savanadurga, Magadi Taluk.

The district lies between 12^{o} 39' and 12^{o} 57' N latitude and 77^{o} 12' and 77^{o} 25' E latitude. The district is surrounded by Bangalore Rural district in the North, Chamarajanagar district in the South, Bangalore Urban district and Dharmapuri district of Tamil Nadu in the East and Mandya district in the West.

The District has four taluks viz., Ramanagara, Channapatna, Kanakapura and Magadi. It has 18 hoblies, 127 Grama Panchayats and 823 villages.

The Geographical area of the district is 3,55,912 hectares. The net sown

area is 153661 hectares with a cropping intensity of 104.5 percent. About 23.6% of the net sown area is irrigated and the remaining 76.40% is rainfed.

Fig 1.1. Map of Ramanagara district

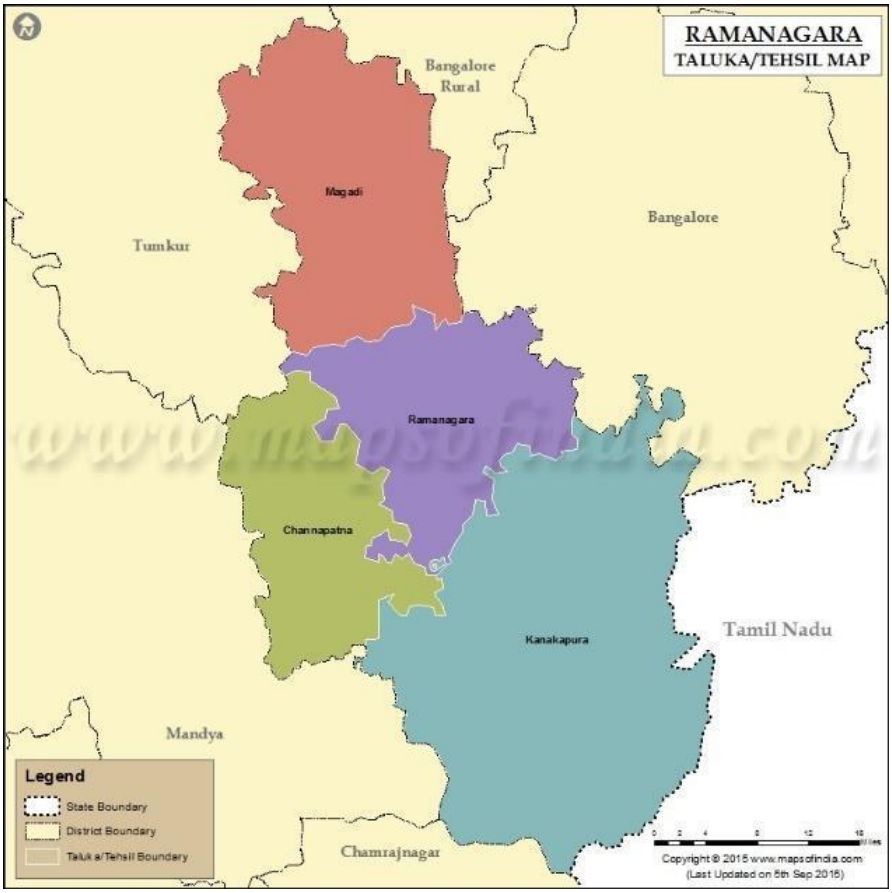


Table 1.1 : Latitude, Longitude and Altitude of the Taluks of Ramanagara district

Sl. No.	Taluks	Latitude	Longitude
1.	Channapatna	12^0 39’	77^0 12’
2.	Kanakapura	12^0 33’	77^0 25’
3.	Magadi	12^0 57’	77^0 13’
4.	Ramanagara	12^0 43’	77^0 16’

According to the Census statistics 2011, the total population of the district is 10,82,636, comprising 5,48,008 male and 5,34,628 female. The Rural population is 8,14,877 (75%) while the urban population is 2,67,759 (25%). About 75% of the population in the district live in rural areas. Their main occupation is agriculture.

The major agricultural crops grown in the district are finger-millet, paddy, maize, redgram, field bean and groundnut. The important horticultural crops of the district are coconut, arecanut, mango, banana, citrus, beetle vine and vegetable crops like tomato, brinjal etc. Mulberry cultivation, silk worm rearing and reeling activities are also predominant in the district. Further, rural population are also engaged in live-stock activities such as dairying, sheep, goat, and pig rearing which gives them additional income along with judicious utilization of family labour.

Ramanagara district falls under single agro-climatic zone i.e., Eastern Dry Zone- Zone-5. The maximum and minimum temperature in the district ranges from 29^{o}C to 36^{0}C and 19^{o}C to 20^{0}C, respectively. The district has a dry weather with humidity ranging from 63 to 77 %.

The district has deep red clay soils on an area of 1.69 lakh ha (31.6%), moderately deep clay soils in 0.94 lakh ha (25.6%) the remaining area is shallow red soils, moderately deep loamy soils and deep red sandy loam soils. A major part of the district is occupied by red sandy soil (60%), and the remaining by red loamy soil. Red sandy soil mainly occurs in Channapatna, Kanakapura and Ramanagara taluks in undulating land slopes.

The entire area of Ramanagara district is part of the Cauvery basin. The major tributaries of the Cauvery river flowing in the district are Arkavathi and Shimsha rivers. The rivers and streams originate from small watersheds and

empty into number of tanks scattered in the district. The drainage pattern in the area can be described as semi dendritic to dendritic

Table 1.2 : District Profile

1.	District Code	
2.	Latitude and Longitude	12^{o} 39' to 12^{o} 57' N latitude and 77^{o} 12' to77^{o} 25' E latitude.
3.	Total Number of block	4
4.	Total Number of Grama Panchayat	127
5.	Total No. of Hoblies	18
6.	Total Number of Villages	823
7.	Total Population	1082636
8.	Total Male Population	548008
9.	Total Female Population	534628
10.	Total Child population	107841
11.	Total SC Population	203819
12.	Total ST Population	22946
13.	Geographical Area	355912 ha
14.	Net Sown Area	153661 ha
15.	Gross Cropped Area	160500 ha
16.	Gross irrigated area	41302 ha
17.	Net Irrigated	36322 ha
18.	Area under Forest	69946 ha
19.	Total livestock	565857
20.	Total poultry	1284545

1.2. Demography:

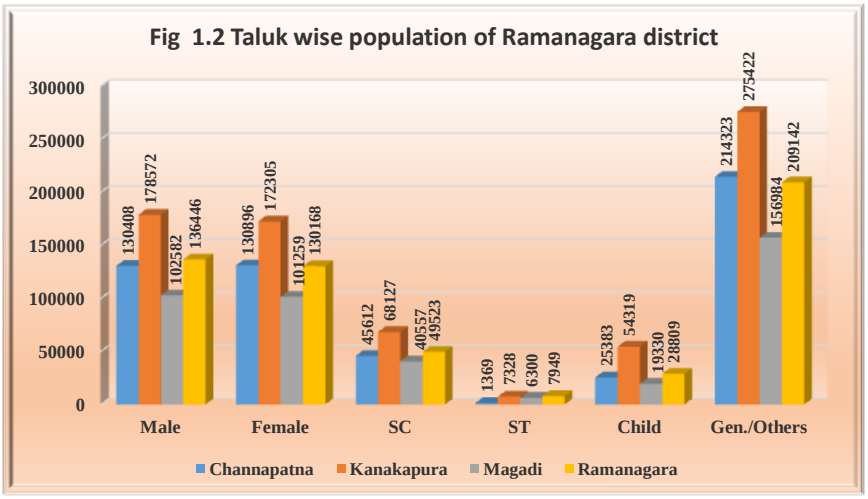
1.2: Population:

According to census statistics of 2011, the total population of the district is 10,82,636, comprising 5,48,008 males (50.6%) and 5,34,628 females (49.4%). Among the taluks, Kanakapura has the highest population of 3,50,877 (32.4%), followed by Ramanagara with 2,66,614 (24.7%) and Channapatna with 2,61,304 (24.1%), while the lowest population is in Magadi 2,03,841 (18.8%). Further, the total SC population in the district is 2,03,819 and ST population is 22,946, which works out to 18.93% and 2.12%,respectively, of the total district population. The percentage of SC population is highest in Magadi taluk (19.9%) and lowest in Channapatna taluk(17.4%), where as the percentage of ST population is also highest in Magadi taluk (3.1%) and lowest in Channapatna taluk (0.5%) . The total percentage of SC & ST population in the district is 20.95% of the total population.

Table 1.3: Taluk wise population of Ramanagara district

Sl. No	Name of the Block	Population			SC	ST	Child	General/ Others	Total
		Male	Female	Total					
1	Channapatna	130408	130896	261304	45612	1369	25383	214323	261304
2	Kanakapura	178572	172305	350877	68127	7328	54319	275422	350877
3	Magadi	102582	101259	203841	40557	6300	19330	156984	203841
4	Ramanagara	136446	130168	266614	49523	7949	28809	209142	266614
Total		**548008**	**534628**	**1082636**	**203819**	**22946**	**12784**	**855871**	**1082636**

Source: Census report 2011



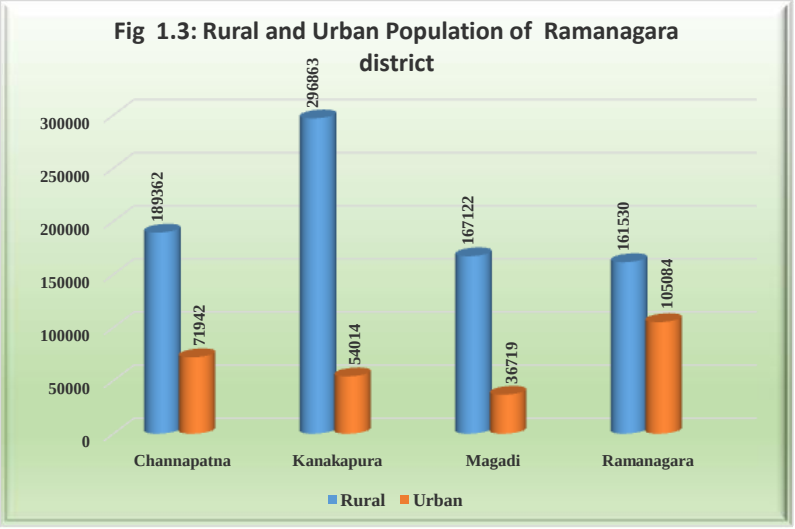
Rural and Urban Population:

The rural population of the district is 8,14,877 (75.3%) while the urban population is 2,67,759 (24.7%). Kanakapura taluk has the highest percentage (84.6%) of rural population in the district, followed by Magadi taluk (82.0%) and Channapatna (72.5%). Lowest percentage of rural population is in Ramanagara taluk (60.6%). Higher percentage of population in the rural areas is an indication of dependence of the population on agriculture and allied sectors. Taluka wise rural and urban population in the district is furnished in Table 1.4

Table 1.4: Rural and Urban Population of Ramanagara district

Sl. No.	Block/Taluk	Rural	Urban	Total
1	Channapatna	189362	71942	261304
2	Kanakapura	296863	54014	350877
3	Magadi	167122	36719	203841
4	Ramanagara	161530	105084	266614
Total		**814877**	**267759**	**1082636**

Source: Census report 2011



House holds:

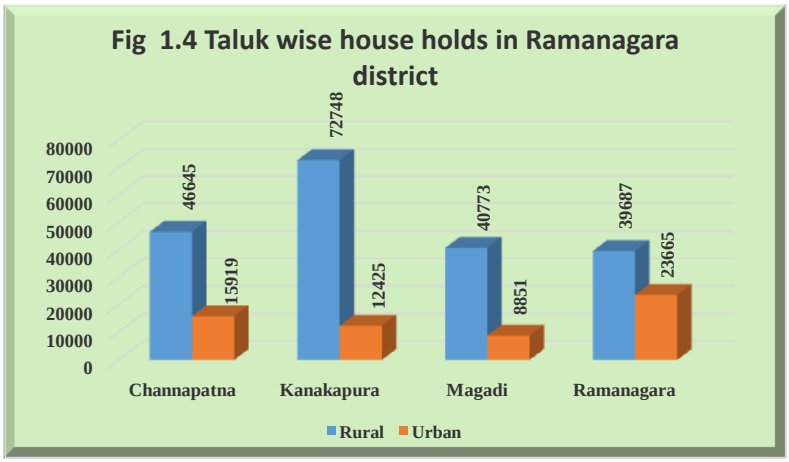
The total number of house holds in Ramanagara district is 260173. Rural house hold is 199853 (76.7%) and the Urban house hold is 60860 (23.3%). Kanakapura taluk has the highest percentage of Rural house holds (85.4%), followed by Magadi (82.2) and Channapatna (74.6%). Ramanagara taluk has

the lowest No. of rural house holds (62.6%) Whereas, Urban house hold percentage is highest in Ramanagara taluk (37.4%), followed by Channapatna (25.4 %) and Magadi (17.8%). Lowest Urban percentage of house holds are in Kanakapura taluk (14.6%). Details are furnished at Table 1.5 and Fig 1.4.

Table.1.5. Taluk wise house holds in Ramanagara district

Sl.No.	Taluk	Rural	Urban	Total
1	Channapatna	46645	15919	62564
2	Kanakapura	72748	12425	85173
3	Magadi	40773	8851	49624
4	Ramanagara	39687	23665	63352
	Total	**199853**	**60860**	**260713**

Source: Census report 2011



1.3. Biomass and livestock

Large animals:

Animal Husbandry is an important subsidiary occupation in the district. Due to proximity to Bengaluru, development of this sector is considered important in

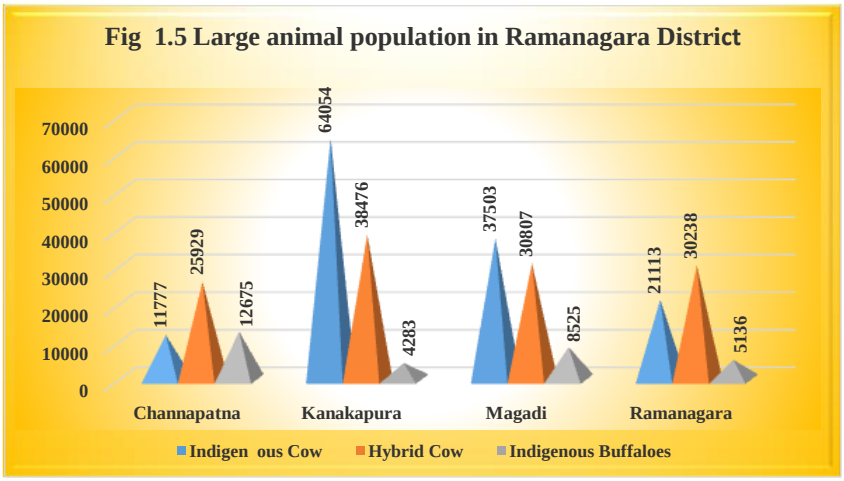
the interest of farming community as it provides additional employment opportunity and also additional income to the farming community. The District is having totally 290516 large animals comprising, 259897 Cows(Table 1.6 and Fig 1.5) and 30619 (89.5%) buffaloes(10.5%). Of the Cow population 134447 (51.7%) is indigenous breed and 125450 (48.3%) is crossbreeds. Whereas Buffaloes are indigenous breed. Kanakapura has the maximum number of large animal population 1,06,853 (36.8%), followed by Magadi taluk with 76835 (26.4%) and Ramanagara with 56487 (19.4%). Channapatna has the lowest large animal population, 50381 (17.3%).. The total milk production in the district is 27.27 lakh litres.

Table 1.6 Large animal population in Ramanagar District.

In Numbers

Sl. No	Taluk	Large Animals				Any Other Milch or Meat Animal	Draft Animal (Buffalo/ Yak/ Bulls/ Any Other)	Total Large animals
		Indigenous Cow	Hybrid Cow	Total Cow	Indigenous Buffaloes			
1	Channapatna	11777	25929	37706	12675	-	-	50381
2	Kanakapura	64054	38476	102530	4283	-	-	106813
3	Magadi	37503	30807	68310	8525	-	-	76835
4	Ramanagara	21113	30238	51351	5136	-	-	56487
Total		**134447**	**125450**	**259897**	**30619**		-	**290516**

Source: District at a glance 2014



Small animals:

Sheep and goat rearing are popular allied activities in the district. Besides supplementing the resources of the farmers, they also contribute to the fertility of the soil through organic manure. Poultry, egg and meat are important sources of quality proteins, minerals and vitamins to balance the human diet. The total Small animals in the district are 2785341. Among small animals, Sheep population is highest 152938 (55.5%), followed by Goats 120238 (43.7%). Pigs and Ducks population is negligible. Kanakapura taluk has the highest Small animal population 108688 (39.5%), followed by Magadi with 61989 (22.5%)and Channapatna with 55891 (20.3%). Ramanagara has the lowest 48773 (17.7%) small animal population (Table 1.7 and Fig 1.6)

The total poultry population in the district is 1284545. Magadi taluk has the highest poultry population of 583669 (45.4%)followed by Kanakapura 355051 (27.6%) and Channapatna 242213 (18.9%). Lowest poultry is in Ramanagara 103612 (8.1%).

Total egg production in the district is 131.72 lakh, with maximum production of 68.64 lakhs in Channapatna taluk followed by Magadi with 37.96 lakhs. Ramanagara has the lowest egg production of 4.12 lakhs. The total meat production in the district is 1520 tonnes. Meat production is highest in Magadi taluk, 540 tonnes and lowest in Ramnagara taluk 200 tonnes. Taluk wise details are furnished in Table 1.7.

Table :1.7 Small animals

Numbers

Sl. No.	Taluk	Poultry	Small Animals				
			Ducks	Pigs	Goats	Sheep	Total
1	Channapatna	242213	49	586	20390	34866	**55891**
2	Kanakapura	355051	49	528	53797	54314	**108688**
3	Magadi	583669	2	63	27782	34142	**61989**
4	Ramanagara	103612	15	873	18269	29616	**48773**
Total		**1284545**	**115**	**2050**	**120238**	**152938**	**275341**

Source: District at a glance 2014

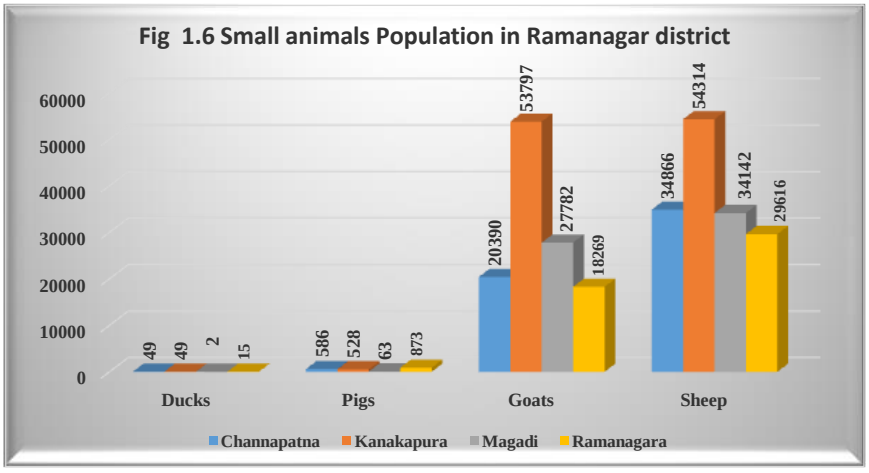
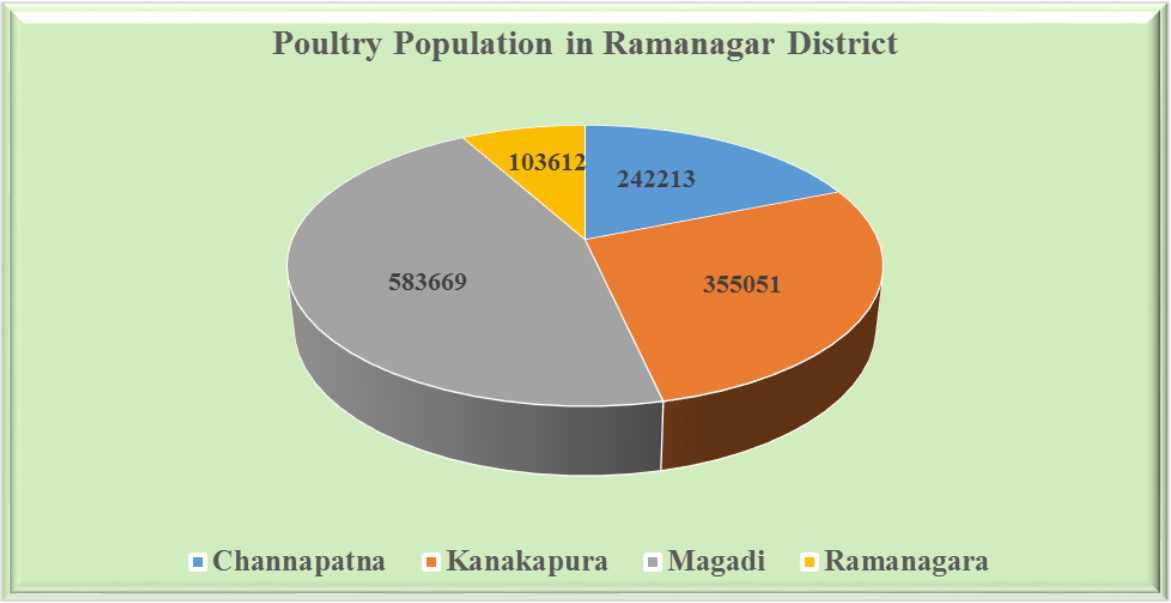


Fig. 1.7 Poultry population in Ramanagara district



*1.4.*Agro-ecology, Climate, Hydrology and Topography:

Agro-ecology:

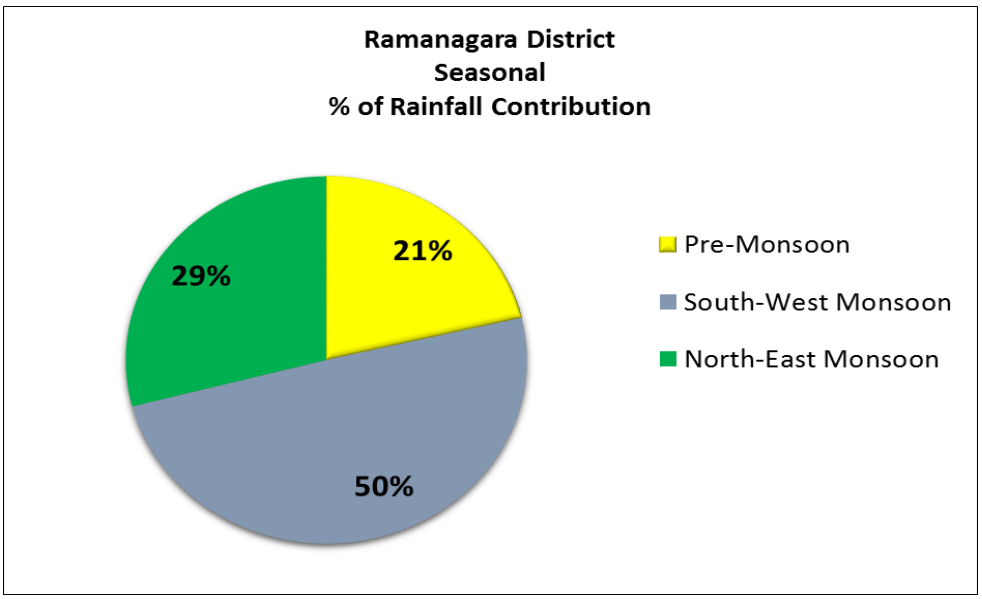
Ramanagara district falls under single Agro-Climatic Zone i.e., Eastern Dry Zone,- Zone-5. The maximum and minimum temperature ranges from 29.0 to 36.0 ^{0}C and 19.0^0 C to 20.0^{0}C, respectively(Table 1.9). The district has a dry weather with humidity ranging from 63 to 77 %.

Climate

The year may broadly be classified into four seasons. The dry season is from January to February, followed by hot weather from March to May. The SW monsoon season is from June to September and the NE monsoon period from October to December.

The average (1990 - 2014 average) rainfall of the district is 868.7 mm (Table 1.8 and Fig 1.8). The pre-monsoon rainfall accounts for 21.9% (190.5 mm) of the annual rainfall, South West Monsoon accounts for 49.4% (428.8 mm) and North East Monsoon 28.7% (249.3 mm) . Month wise rainfall in the district is presented in Fig 1.9

Fig 1.8 Percent distribution of rainfall in Ramnagara district



Rainfall occurs in nearly 54 rainy days. The average rainfall of the district from 1990-1999 is 905.7 mm, average rainfall from 2000 to 2009 is 904.7 mm and the average rainfall from 2010-2014 is 795.7mm. There is reduction of 12.1 % (100mm) and 12 % (109 mm) during the period 2010-14 compared to 1990-99 and 2000-09 respectively in the district. Reduction during the period 2010-14 compared to average rainfall from1999-2014 is 8.4% (73 mm). This clearly indicates that the rainfall received in the district during the recent years is much less compared to the average rainfall received from 1990 to 1999 and this calls for judicious use of available water through improved techniques for increased crop production. Reduction in average rainfall during the period 2010-14 compared to average rainfall of 1990-1999 is highest in Channapatna taluk 14.4% (123.6 mm), followed by Ramanagara 7.9% (73.1 mm) and Magadi 6.3% (55.3 mm). Reduction in average rainfall is minimum in Kanakapura Taluk,4.9 % (40.1 mm). Among the taluks, highest average rainfall (Average of 1990 2014) is recorded in Ramanagara taluk (920.9 mm), followed Magadi taluk (883.3 mm.) and Channapatna (857.0 mm). Lowest average rainfall is recorded in Kanakapura taluk (813.5 mm.).

Table 1.8 : Taluka wise Average rainfall (In mm)

Sl. No.	Taluk	1990-1999	2000-2009	2010-2014	Average of 1990 to 2014
1	Channapatna	903.3	934.2	733.4	857.0
2	Kanakapura	827.4	839.7	773.4	813.5
3	Magadi	892.4	929.3	828	883.3
4	Ramanagara	999.5	915.4	847.8	920.9
	Average	**905.7**	**904.7**	**795.7**	**868.7**

Source: KSNDMC

Fig 1.9 Monthly contribution of rainfall (%) in Ramnagar district

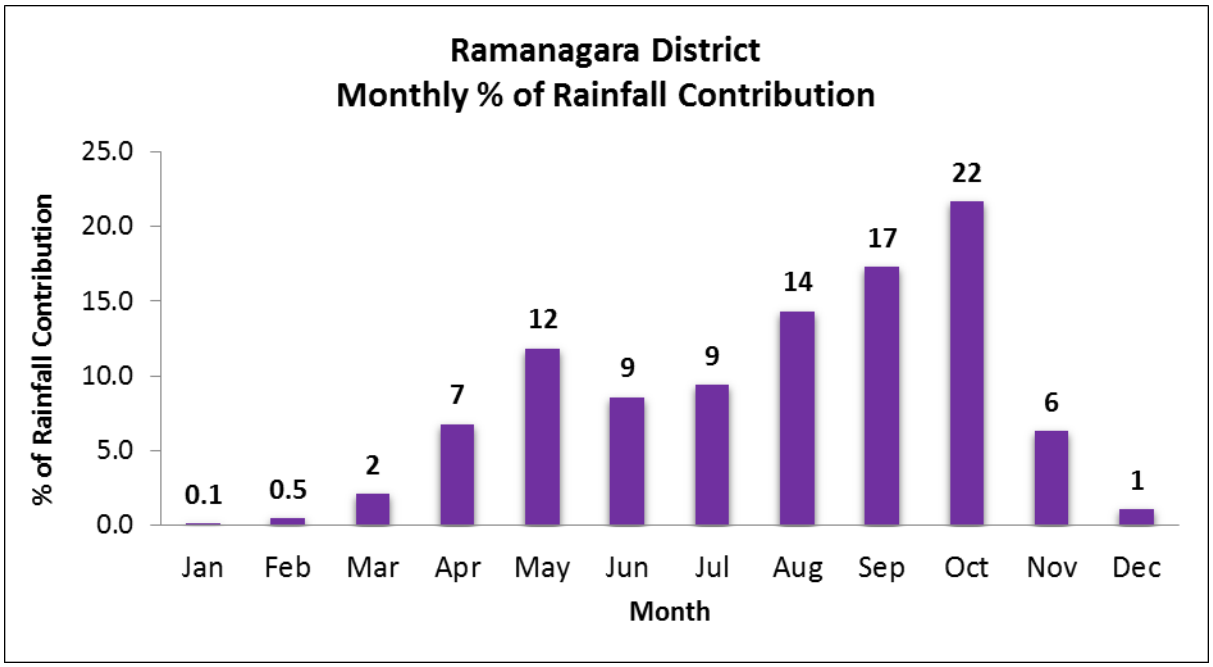


Table 1.9 : Data on Weather (Normal)

Sl. No.	Taluk	No. of Rainy days	Temperature		Humidity (%)	
			Min. ^{0}C	Max. ^{0}C	Min	Max
1	Channapatna	53	20	30	76	63
2	Kanakapura	53	19	36	74	65
3	Magadi	59	20	29	76	63
4	Ramanagara	51	20	31	77	70
District mean		**54**	**19.75**	**31.5**	**76**	**65**

Source: KSNDMC

Taluka wise analysis is as follows:

Channapatna: The average (1990- 2014 average) rainfall of the taluk is 857.0 mm. The pre-monsoon rainfall accounts for 22.3% (191.0 mm) of the annual rainfall, South West Monsoon accounts for 47.5% (406.9 mm) and North East Monsoon 30.2 % (259.0 mm) . Rainfall occurs in about 53 rainy days. The average rainfall of the taluk from 1990-1999 is 903.3 mm, average rainfall from 2000 to 2009 is 934.2 mm and the average rainfall from 2010-2014 is 733.4 mm. There is reduction of 18.8 % (169.9 mm) and 21.5 % (200.8 mm) rainfall during the period 2010-14 compared to 1990-99 and 2000-09 respectively in the taluk. Reduction during the period 2010-14 compared to average rainfall from 1999-2014 is 14.4 % (123.6 mm).

Kanakapura: The average (1990 2014 average) rainfall of the taluk is 813.5 mm. The pre-monsoon rainfall accounts for 21.9 % (178.2 mm) of the annual rainfall, South West Monsoon accounts for 47.0 % (382.1 mm) and North East Monsoon 31.1 % (253.2 mm). Rainfall occurs in about 53 rainy days. The average rainfall of the district from 1990-1999 is 827.4 mm, average rainfall

from 2000 to 2009 is 839.7 mm and the average rainfall from 2010-2014 is 773.4 mm. There is reduction of 6.5 % (54.0 mm) and 7.9 % (66.3 mm) rainfall during the period 2010-14 compared to 1990-99 and 2000-09, respectively in the taluk. Reduction during the period 2010-14 compared to average rainfall from 1999-2014 is 4.9 % (40.1 mm).

Magadi: The Average (1990 2014 average) rainfall of the taluk is 883.3 mm. The pre-monsoon rainfall accounts for 21.2 % (186.9 mm) of the annual rainfall, South West Monsoon accounts for 51.1 % (451.4 mm) and North East Monsoon 27.7 % (245.0 mm). Rainfall occurs in about 59 rainy days. The average rainfall of the district from 1990-1999 is 892.4 mm, average rainfall from 2000 to 2009 is 929.3 mm and the average rainfall from 2010-2014 is 828.0 mm. There is reduction of 7.2 % (64.4 mm) and 10.9 % (101.3 mm) rainfall during the period 2010-14 compared to 1990-99 and 2000-09 respectively in the taluk. Reduction during the period 2010-14 compared to average rainfall from 1999-2014 is 6.3 % (55.3 mm).

Ramanagara : The average (1990 2014 average) rainfall of the taluk is 920.9 mm. The pre-monsoon rainfall accounts for 22.4 % (205.9 mm) of the annual rainfall, South West Monsoon accounts for 51.6 % (474.9 mm) and North East Monsoon 26.1 % (240.1 mm). Rainfall occurs in about 51 rainy days. The average rainfall of the district from 1990-1999 is 999.5 mm, average rainfall from 2000 to 2009 is 915.4 mm and the average rainfall from 2010-2014 is 847.8 mm. There is reduction of 15.2 % (151.7 mm) and 7.4 % (67.6 mm) rainfall during the period 2010-14 compared to 1990-99 and 2000-09 respectively in the taluk. Reduction during the period 2010-14 compared to average rainfall from 1999-2014 is 7.9 % (73.1 mm).

Hydrology:

Geomorphologically, Ramanagara district can be divided into rocky upland, plateau and flat topped hills at an elevation of about 900 MSL. The major part of the district is sloping towards south and south east forming pedi plain interspersed with hills all along the western part with the elevation in the range of 996 m and 1467 MSL mostly in the granitic terrain. The pediplain form major part of the district underlain by gneisses and granites with the highest pediplain in the range of 850 m to 950 m amsl. Rocky upland pediplain and plateau constitute erosional topography. Major part of pediplain constitutes low relief area having matured dissected rolling topography with erosional landscape covered by layers of red soil of varied thickness. Major parts of the pediplain are dissected by streamlets flowing in southerly direction. An alluvial valley with low relief of 600-650 m is located in Kanva plain.

The district comprise rocks belong to Charnokite group, Sargur group, Peninsular gneissic complex (PGC), Closepet granite, and basic and younger intrusives. Charnokite group is represented by Charnokite. Sargur group comprises ultra mafic rocks, amphibolite, banded magnetite quartzite, occurring as small bands, and lenses within the migmatite and gneisses. The PGC includes granites, gneisses and migmatite and occur to the east and west of Closepet granite. Transformation of PGC into Charnokite is reported locally in the district. The Closepet granite occurs as intrusive bodies trending nearly N-S within the gneisses over a distance of 50km and with a width of 15-20km. The Closepet granite contains enclaves of migmatite, gneisses, quartzite and amphibolites and is reported to be of variable composition. The basic intrusives are represented by dolerite, gabbro, occasionally Norite and pyroxenite. The dolerite is dominant among the basic dykes. There are three major lineaments in the district trending NNW-SSE direction. These lineaments range in length

from 45 km to 70 km. Interpretation of this data revealed the presence of deep seated fault tending NNW-SSE, which cuts across the Closepet granites.

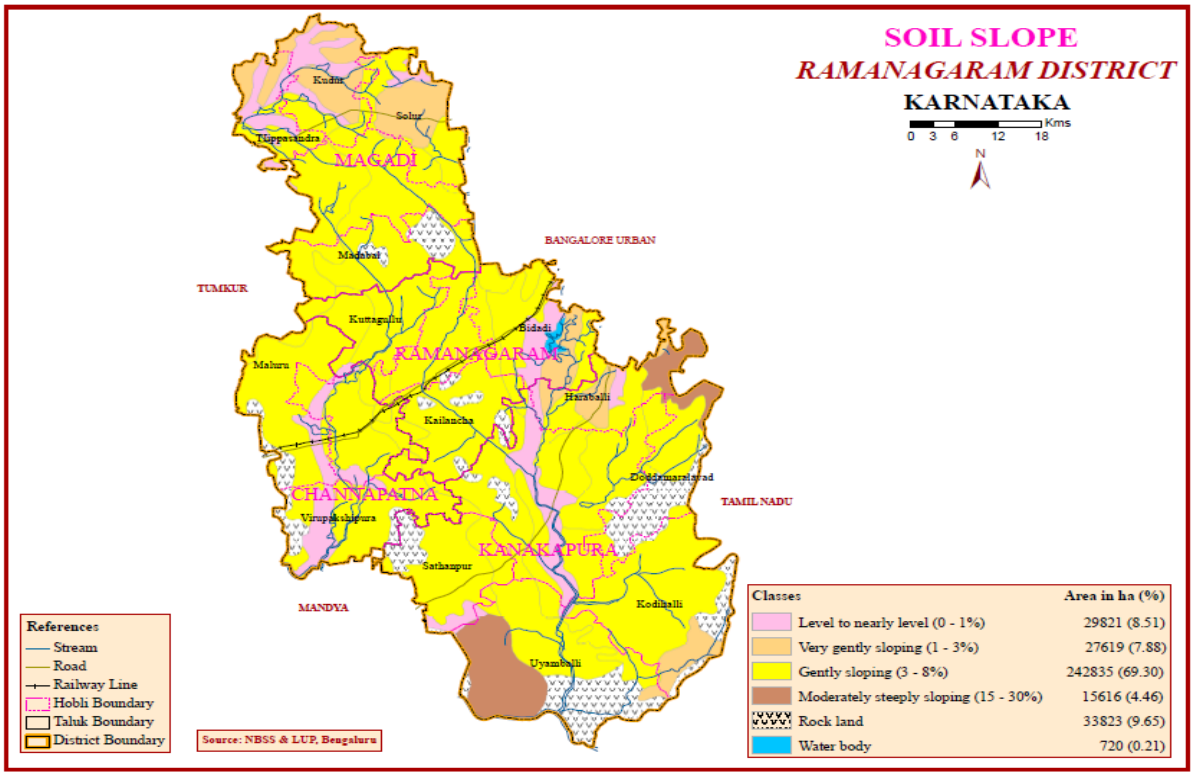
Ground water occurs in weathered and jointed zones of gneisses, granites, Charnokite, Closepet granite and alluvium along river courses in unconfined or water table conditions where as it occurs in semi confined to confined conditions in fractured formations at deeper depths. The thickness of weathering in major part of the district ranges from 5-10m and more than 10m in rest of the district. Unconfined aquifer system is tapped by dug wells and shallow bore wells. This zone extends down to 25 mbgl. The dug wells generally sustain discharge in the range of 10 to 20 m3 /day. The yield range in bore wells is mostly less than one lps and occasionally up to 5 lps. The depth to ground water level during May 2011 varies from 0.67 to 9.35 mbgl. Major part of the district is having depth to water levels in the range of 2 to 5m. In general, major part of the district is having depth to water levels in the range of 2 to 5 mbgl. Very small isolated pockets in Kanakapura and Magadi taluks fall in 5-10 mbgl categories. More than 10 mbgl is observed at a small isolated patch in northern side of the district in Magadi taluk. Water levels 0-2m were observed in very small part in SW side of Channapatna taluk.

Topography:

The lands of the district can be broadly divided into three soil slope classes i) level to nearly level lands (0-1% slope), ii) very gently sloping lands (1-3% slope), iii) gently sloping lands (3-8% slopes) and moderately steeply sloping lands (15 – 30 %). Lands of the district are mainly gently sloping in all the taluks, lands that are level to nearly level lands occur in a small area in valleys of all the taluks, lands that are very gently sloping are mainly found in Magadi and Ramanagara taluks and in a small patch in

Kanakapura taluk were as lands with moderately steep slopes occur in Ramanagaraa and Kanakapura taluks. The lands of the district that are gently sloping (Fig 1.10) cover an area of 242835 ha (69.30 %) followed by level to nearly level lands in the valleys which are spread over an area of 29821 ha (8.51 %), very gently sloping lands occur in an area of 27619 ha (7.88 %), while the area under moderately steeply sloping lands is 15616 ha (4.46 %) .

Fig. 1.10 soil slope in Ramnagar district



1.5 Soil Profile

The Soils of Ramanagara district are mainly Alfisols, Inceptisols and Entisols (Fig 1.11Table 1.10and Fig1.12)). Alfisols occur in an area of 218505 ha (62.36 %) spread in all the taluks. The soils of the soil order Inceptisols are found mainly in Kanakapura and Magadi taluks and in patches in Ramanagara and Channapatna taluk over an area of 93150 ha (26.58 %), while Entisols occur in valleys and ridges of all the taluks in an area of 11217 ha (3.21 %).

Alfisols are moderately deep to deep and at place very deep, well drained to somewhat excessively drained, gravelly clay to clayey, on gently sloping to undulating interfluves, and at places rolling lands with low to medium AWC, with slight to moderate erosion. Inceptisols are moderately deep to deep and at places very deep, well drained to somewhat excessively drained, gravelly clay to clay, occurring in valleys and on undulating interfluves to rolling lands, with moderate to severe erosion. At some places, problems of drainage and slight alkalinity is found. While Entisols are moderately deep to deep, well drained, at places imperfectly drained, clayey soils in valleys and at some places on side slopes, experience moderate to severe erosion.

Table 1.10. Soils of Ramanagara district

Sl. No.	Soil	Area (Ha)	% area	Characteristics
1	Alfisols	218505	62.36	Moderately deep to deep and at place very deep, well drained to somewhat excessively drained, gravelly clay to clayey, on gently sloping to undulating interfluves, and at places rolling lands with low to medium AWC, with slight to moderate erosion.
2	Inceptisols	93150	26.58	moderately deep to deep and at places very deep, well drained to somewhat excessively drained, gravelly clay to clay. Occurring in valleys and on undulating interfluves to rolling lands, with moderate to severe erosion. At places problems of drainage and slight alkalinity
3	Entisols	11217	3.21	Moderately deep to deep, well drained, at places imperfectly drained, clayey soils in valleys and at places on side slopes, with moderate to severe erosion
Water bodies		**720**	**0.19**	
Rockland		**26842**	**7.66**	
Total		**350434**	**100.00**	

Fig. 1.11 Soils of Ramnagar district

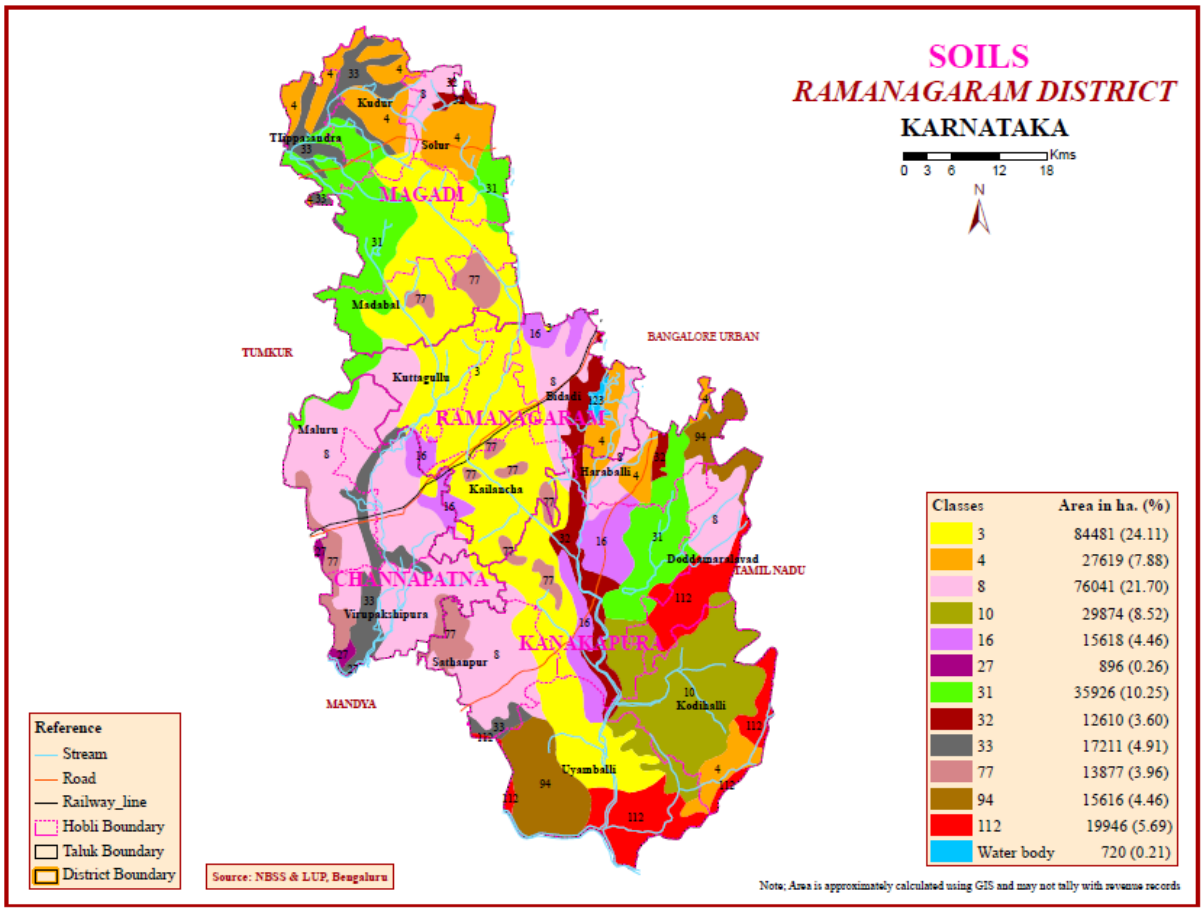
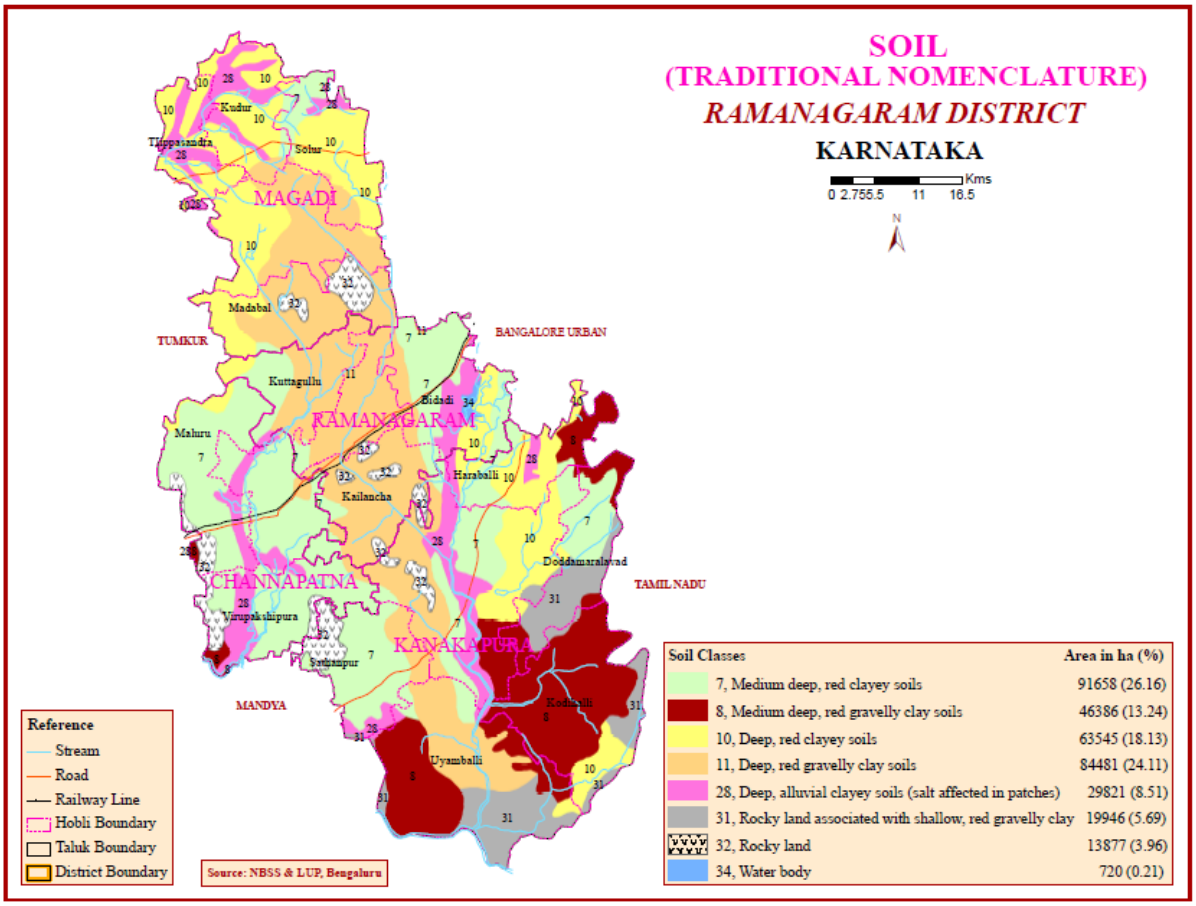
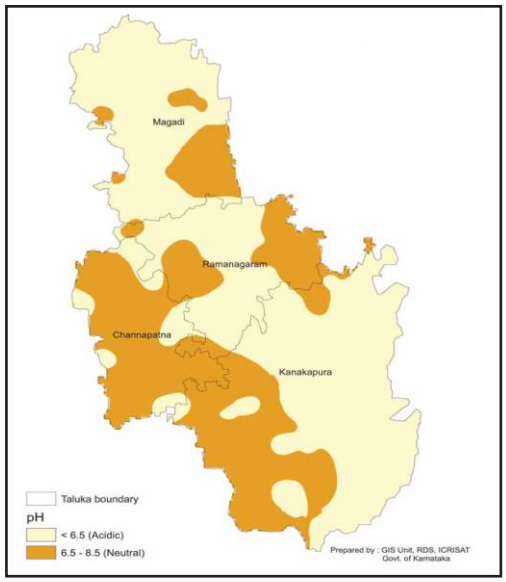


Fig. 1.12. Traditional classification of soils in Ramnagar district

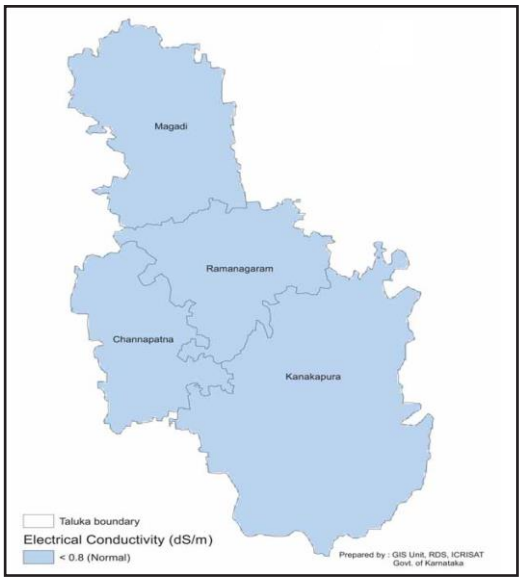


Nearly half of the district has acidic soils (>6.5 pH), while remaining area have neutral soils. The entire district has soils with normal EC values indicating that total soluble soilds are not posing any problem.The major area of the Ramnagar,Magadi and Kanakpura taluks are found to be deficient (<0.5%) in organic carbon (Fig 1.13), while soils in Channapatna taluks have sufficient organic carbon (>0.5%).The status of phosphorus, potassium and sulphur is satisfactory in the entire district.Major part of the district has soils deficient in zinc, except in some pockets, while the whole district is deficient in Boron.

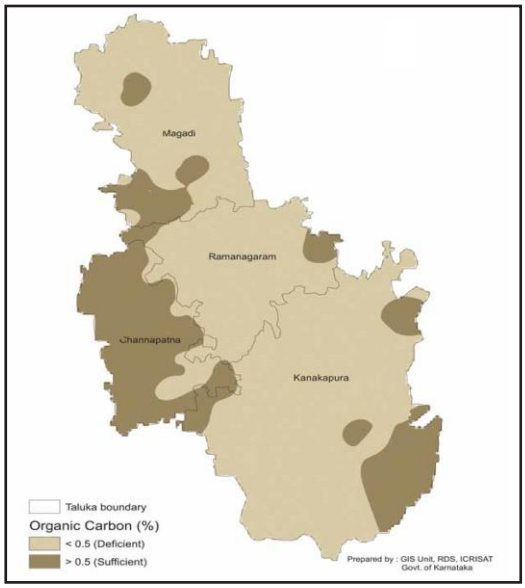
Fig 1.13. Soil Fertility Maps



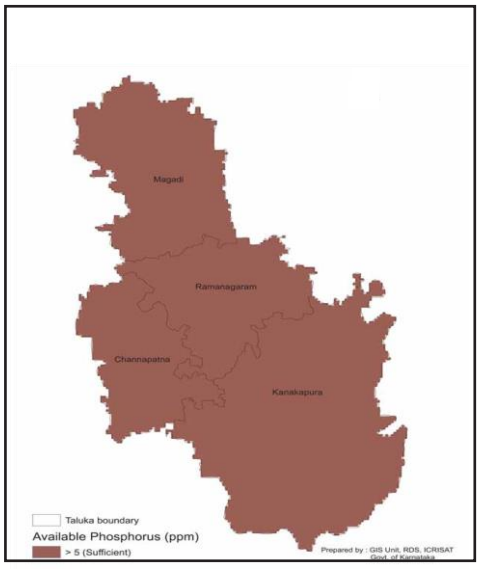
pH status in Ramanagara district



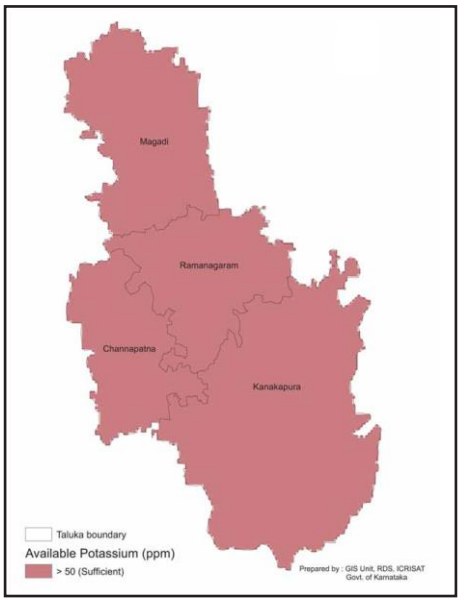
EC status in Ramanagara district



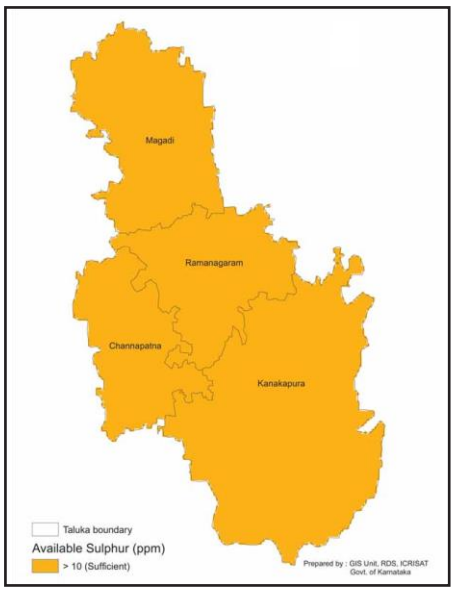
Organic carbon status in Ramanagara dist.



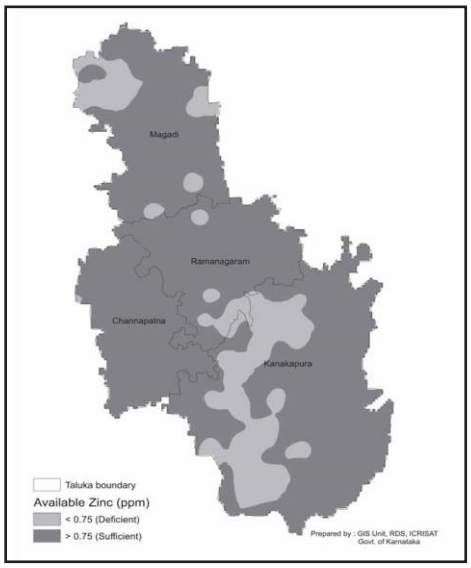
Available phosphorus status



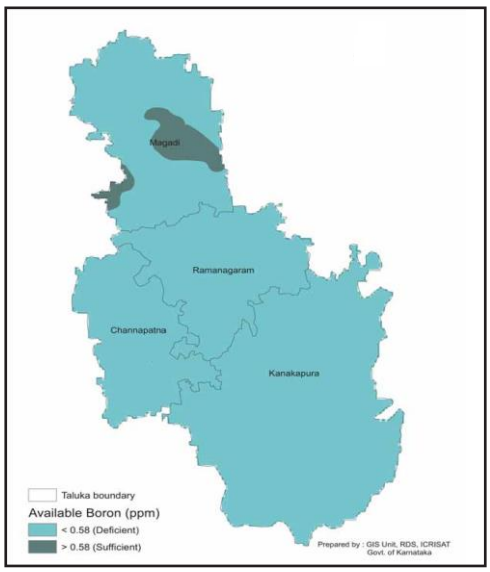
Available potassium status



Available sulphur status



Available zinc status in Ramanagara dist.



Available boron status

1.6. Soil Erosion

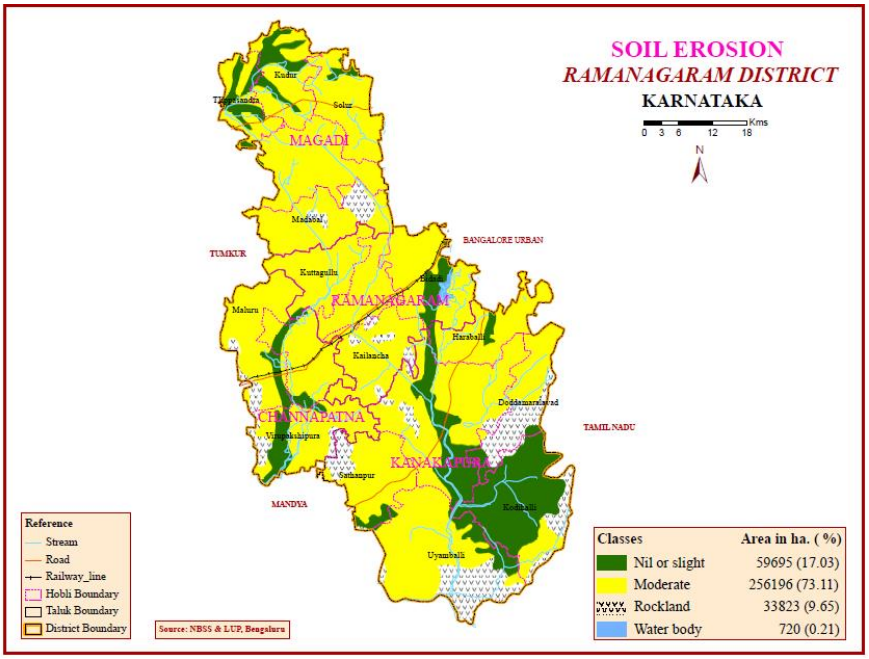
Soil erosion of varying rates is a widespread threat to sustainable resource management. Major causes of soil erosion were cultivation without proper soil and water conservation measures in area not suitable for crops, denuded areas without vegetation, cultivated fallow on moderate slopes, degraded

forests/pastures on steep slopes and poorly managed forest cover. Appropriate soil conservation and land management techniques for the different soil erosion classes were suggested. It is generally associated with agricultural practices, leading to decline in soil fertility, bringing in a series of negative environmental impacts and has become a threat to sustainable agricultural production and water quality.

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

The soils of Ramanagara are classified mainly under Nil or slight erosion and moderately eroded soils. The soils of the district are mainly moderate in erosion occurring over an area of 256196 ha (73.11 %) spread in all the taluks (Fig 1.14). The soils that are having nil or slight erosion are in an area of 59695 ha (17.03 %) mainly occurring in Kanakapura and in a small area in the valleys regions of Channapatna, Magadi and Ramanagara taluks Surface runoff is high in 73.11 % area of the district that is moderately eroded, resulting in loss of water, soil fertility and top soil. Necessary water conservation measures are needed to be taken up to conserve water and soil in the district.

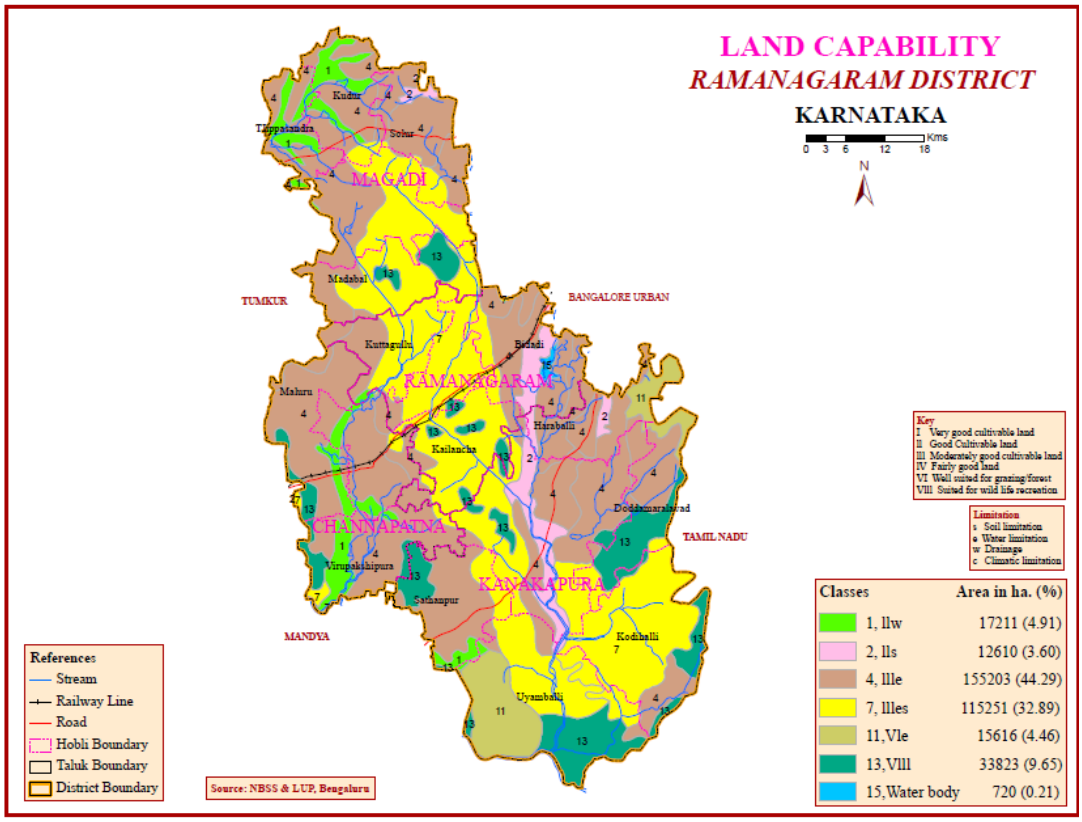
Fig.1.14 Soil erosion in Ramnagara district



Land Capability classes:

The lands of the district are classified under the land capability classes II, III, VI, and VIII. Lands over an area of 270454 ha (77.18 %) of the district are moderately good cultivable lands (class III) with moderate limitations of erosion (Fig 1.15)and soil occurring in all taluks While good cultivable lands (class II) are mainly in the valleys of all the four taluks of the district over an area of 29821 ha (8.51 %) with limitation of drainage and soil. Land that are well suited for grazing and forestry (class VI) with limitations of erosion are found on an area of 15616 ha (4.46 %) in Kanakapura taluk . Whereas, lands that are suitable of wild-life and recreation (class VIII) occur over an area of 33823 ha (9.65 %) mainly in Kanakapura and in small patches in the remaining three taluks.

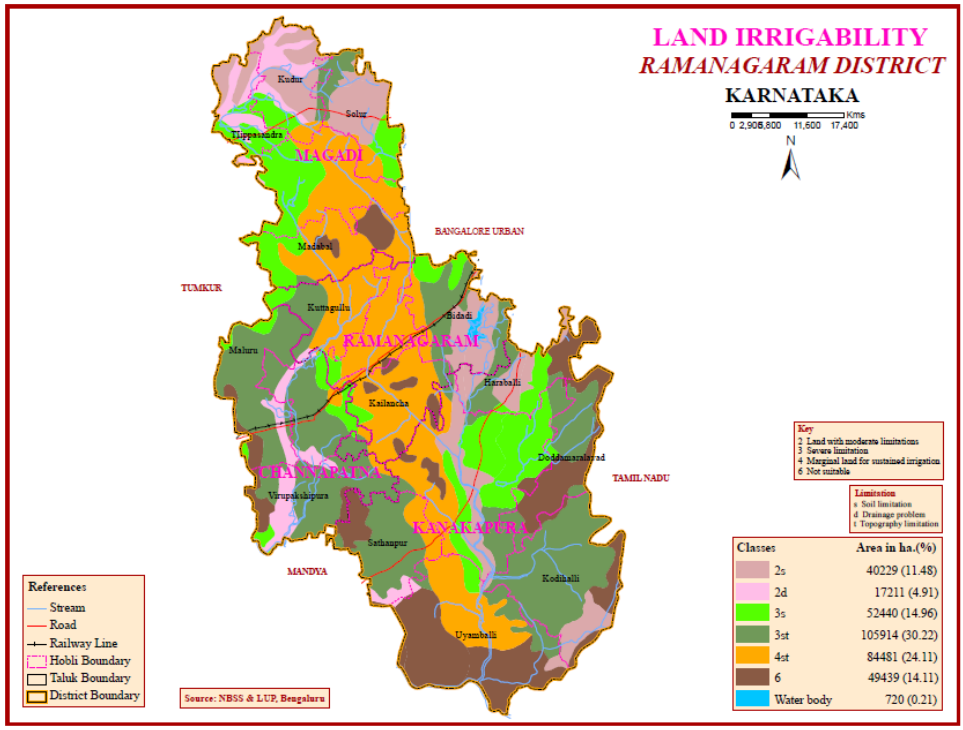
Fig 1.15 Land capability classes in Ramnagara district



Land Irrigability classes:

The Land Irrigability classes in Ramanagara district are mainly Class 2, 3, 4 and 6. Lands that have severe limitations for sustained use under irrigation (class 3) cover an area of 158354 ha (45.18 %) occurring mainly in Kanakapura, Channapatna and parts of Magadi and Ramanagara taluks(Fig .16). Lands that are marginal for sustained use under irrigation with limitations of soil and topography (class 4) occur in an area of 84481 ha (24.11 %) in Magadi, Ramanagara and Kanakapura taluks. Lands that have moderate limitations for sustained under irrigation with limitations of soil and drainage (class 2) are in an area of 57440 ha (16.39 %) occurring in valleys of all the taluks.

Fig 1.16



1.7. Land Use Pattern:

Ramanagara district has a geographical area of 3,55,912 ha. The Net area sown is 153661 ha (43.2%). The gross cropped area is 160500 ha, an area of 6839 ha is sown more than once, and the cropping intensity is 104.5 %. The district has a forest area of 69946 ha,19.7% of the total geographical area of the district. Kanakapura taluk is the biggest taluk with 1,59,426 ha (44.8%) geographical area, followed by Magadi with 79,969ha (22.5%) and Ramanagara with 62,930 ha (17.7%.). The smallest taluk in the district is Channapatna with geographical area of 53,587 ha (15.1%). The net cropped percentage area is highest in Magadi taluk (51.0%), followed by Ramanagara (49.9%) and Channapatna (47.7%). Kanakapura has the lowest percentage of net sown area. Further, percentage of area under forest is highest in Kanakapura taluk (28.4%) followed by Ramanagara (19.0%)and Channapatna (11.4%). The percentage of forest area is lowest in Magadi taluk (8.3%).Taluk wise details are furnished in Table 1.11 and Fig 1.17.

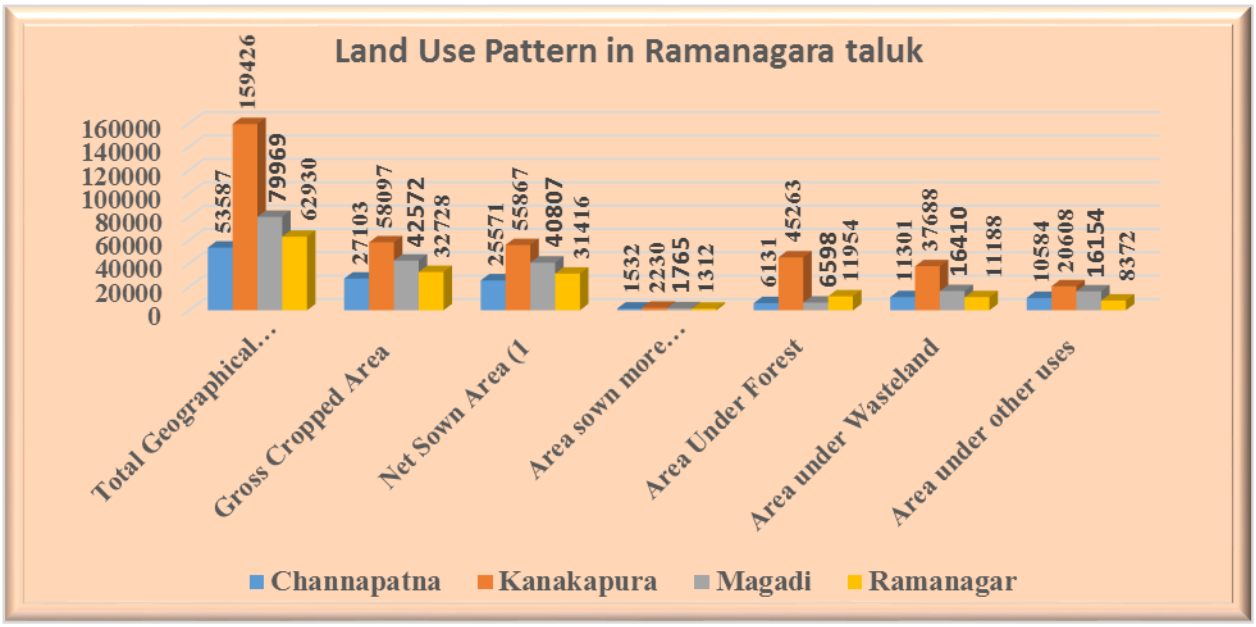
Table 1.11. Land Use Pattern in Ramanagara district.

Area in ha

Sl. No	Name of the Block	Total Geographical Area	Area under cultivation				Area Under Forest	Area under Wasteland	Area under other uses
			Gross Cropped Area	Net Sown Area	Area sown more than once	Cropping Intensity (%)			
1	Channapatna	53587	27103	25571	1532	106.0	6131	11301	10584
2	Kanakapura	159426	58097	55867	2230	104.0	45263	37688	20608
3	Magadi	79969	42572	40807	1765	104.3	6598	16410	16154
4	Ramanagaraa	62930	32728	31416	1312	104.2	11954	11188	8372
Total		**355912**	**160500**	**153661**	**6839**	**104.5**	**69946**	**76587**	**55718**

Source: District at a glance 2014 & KSDA

Fig.1.17.Land use pattern in Ramnagar district



Of the gross cropped area of 160500 ha, Agriculture crops are cultivated in an area of 102078 ha (63.6%), Horticulture crops in an area of 42886 ha (26.7%) and Mulberry in an area of 15536 ha (9.7%).

CHAPTER II

DISTRICT WATER PROFILE

Nearly 76.4 % of the cultivated area is rainfed and about 23.6% of the net sown area is irrigated. The net area under irrigation from various sources in the district is 36322 ha. Area irrigated through bore wells account for 71.2%, followed by canals 22.4%, tanks 5.2% and lift irrigation 1.2%. Even though there are 12,323 open wells, area irrigated by them is negligible due to drying up of most of the dug wells.

2.1 Area-wise, Crop-wise Irrigation Status

Taluk wise**,** season wise, category wise Irrigated and rainfed area details in Ramanagara district is furnished at Table 2.1. Totally Agriculture, Horticulture and Mulberry crops are cultivated in an area of 160500 ha. Under irrigated conditions, crops are cultivated in an area of 41302 ha (25.7%) and 119198 ha (74.3 %) area under rainfed condition. Agriculture crops are cultivated in an area of 102078 ha (63.6%), Horticulture crops in an area of 42886 ha (26.7%) and Mulberry in an area of 15536 ha (9.7%).

During kharif season, agriculture crops are cultivated in an area of 97893 ha (95.9 %), during rabi season in an area of 3319 ha (3.3 %) and during Summer season in an area of 866 ha (0.8%). Lion's share of the area 78393 ha (76.8 %) under agricultural crops is covered with Cereal crops, Pulse crops are sown in an area of 17474 ha (17.1%) and Oilseeds in an area of 5178 ha (5.1%). Other crops are cultivated in an area of 1033 ha (1.0%). Agriculture crops are cultivated under irrigation in an area of 8200 ha (8.0%) and under rainfed condition in an area of 93878 ha (92.0%).

During Kharif season agricultural crops are cultivated under irrigation in an area of 7083 ha (7.2 %) and under rainfed condition in an area of 90810

ha (92.8%), during Rabi season agricultural crops are cultivated under irrigated condition in an area of 251 ha (7.6%) and under rainfed condition in an area of 3068 ha (92.4%) and during summer season all the crops are grown only under irrigated condition in an area of 866 ha (Table 2.1).

Under irrigated condition, Horticulture crops are cultivated in an area of 18908 ha (44.1%) and under rainfed condition, horticulture crops are cultivated in an area of 23978 ha (55.9 %).

Table 2.1. Irrigation status

Area in hectares

Crop Type	Kharif			Rabi			Summer crop			Total		
	Irrigated	Rainfed	Total	Irrigated	Rainfed	Total	Irrigated	Rainfed	Total	Irrigated	Rainfed	Total
A) Cereals	3008	1338	**4346**	23	3068	**3091**	243	0	**243**	3274	4406	7680
B) Coarse Cereals	2682	67262	**69944**	150	0	**150**	619	0	**619**	3451	67262	70713
C) Pulses	301	17154	**17455**	15	0	**15**	4	0	**4**	320	17154	17474
D) Oil seeds	59	5056	**5115**	63	0	**63**	0	0	**0**	122	5056	5178
E) Fibre	0	0	**0**	0	0	**0**	0	0	**0**	0	0	0
F)Any other crops	1033	0	**1033**	0	0	**0**	0	0	**0**	1033	0	1033
Total	**7083**	**90810**	**97893**	**251**	**3068**	**3319**	**866**	**0**	**866**	**8200**	**93878**	**102078**
Mulberry										**14194**	**1342**	**15536**
Horticultural crops										**18908**	**23978**	**42886**

2.2.Production and Productivity of major crops:

Production and productivity of major crops is furnished in Table 2.2. Productivity of Cereals is highest (2526 Kg/ha) followed by Pulses (1042 Kg/ha). Productivity is lowest in case of Oilseeds (951Kg/ha.).

Among Cereals, Maize crop has recorded highest yields (3656 Kg/ha), followed by Rice (2771 kg/ha) and Ragi (2464Kg/ha). Among pulses, highest

yield (1507 Kg/ha) followed by Cowpea (1357Kg/ha), Redgram (830 Kg/ha) and Horsegram (829Kg/ha). In case of Oilseeds, highest yield is recorded in Castor (2485 Kg/ha) and in case of groundnut, productivity is 985Kg/ha. Lowest yield is recorded in Niger (275Kg/ha).

Total production of various agricultural crops in the district is 296417 Tonnes. Highest production is in Cereals (194737 Tonnes) and Pulses (16679 Tonnes). Lowest production is in Oilseeds (10935 Tonnes).

Table 2.2. Production and Productivity of major crops

Area in hectares,Production in Tonnes and Yield,Kg/ha

Sl. No.	Crops	Area	Production	Yield
1	Rice	5224	20263	2771
2	Ragi	69613	166115	2464
3	Maize	2730	8298	3656
4	Other Cereals	10	61	606
Cereals Total		**77577**	**194737**	**2526**
5	Tur	2468	2531	830
6	Horsegram	7452	6133	829
7	Cowpea	1159	2589	1357
8	Field bean	5702	5399	1507
	Other Pulses	44	27	327
Pulses Total		**16825**	**16679**	**1042**
9	Groudnut	3689	4421	985
10	Sesamum	1372	2852	656
11	Sunflower	2	11	852
12	Castor	1001	3402	2485
13	Niger	579	249	275
	Oilseeds Total	**6643**	**10935**	**951**
14	Sugarcane (Yield T/ha)	1033	74066	89
Grand Total		**102078**	**296417**	

Source: Joint Director of Agriculture, Ramnagara

2.3. Irrigation Based Classification :

The entire area of Ramanagara district is part of the Cauvery basin. The major tributaries of the Cauvery river flowing in the district are Arkavathi and Shimsha rivers. The rivers and streams originate from small watersheds and empty into number of tanks scattered in the district. The drainage pattern in the area can be described as semi dendritic to dendritic.

There are no major irrigation projects in the district. Four medium irrigation projects namely Manchanbele Reservoir Project, Igloor Reservoir Project, Arkavati Reservoir Project and Kanva reservoir Project are located here. The total net irrigated area by canals is to the tune of 1888 ha only. Bore wells are the major source of irrigation contributing to 25857 ha (Table 2.3) of net irrigated area. Lift irrigation contributes very small irrigated area (448 ha). The gross irrigated area of the district is 41302 ha and the net irrigated area is 36322 ha. An area of 4980 ha is sown more than once under irrigated condition. The irrigation intensity of the district is 113.7 %. Highest area of 25857 ha (71.2%) of the area is irrigated through bore wells (Fig 2.1), followed by Canals 8129 ha (22.38%) and the area irrigated through tanks is 1888 ha (5.2%).

Kanakapura taluk has the highest area under irrigation 15781 ha, followed by Channapatna with 9043 ha and Ramanagara with 6528 ha. Magadi taluk has the lowest area under irrigation, 4970 ha.

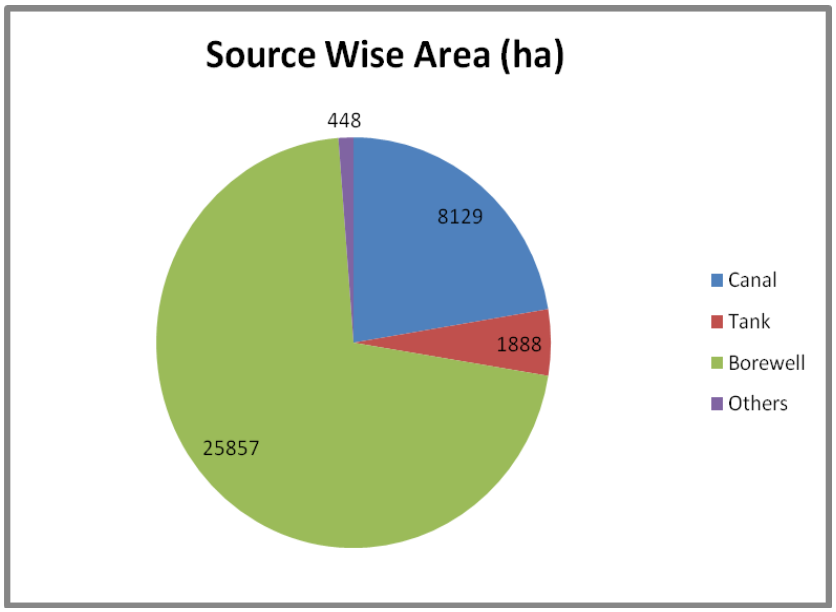
Table 2.3. Source wise area under irrigation in Ramanagara district.

(Area in hectares)

Sl. No	Taluk	Canals	Tanks		Open Wells		Tube/Bore Wells		Lift irrigation		Total	
		Net area	Nos	Net area	Nos.	Net area	Nos.	Net Area	Nos	Net Area	Area	
											Gross	Net
1	Channapatna	1490	115	165	2086	**0**	11420	7226	1	162	**10099**	**9043**
2	Kanakapura	5062	239	875	3456	**0**	12374	9625	1	219	**18092**	**15781**
3	Magadi	835	348	582	4221	**0**	7486	3486	1	67	**5812**	**4970**
4	Ramanagara	742	106	266	2560	**0**	6779	5520	1	0	**7299**	**6528**
Total		**8129**	**808**	**1888**	**12323**	**0**	**38059**	**25857**	**4**	**448**	**41302**	**36322**

Source: Dept. of Economics & Statistics

Fig: 2.1 Source wise irrigated area in Ramnagar district



CHAPTER III

WATER AVAILABILITY

3.1. Status of Water availability:

Ramanagara district was part Bengaluru rural district and attained independent district status in 2007. It comprises of 4 taluks i.e., Channapatna, Kanakapura, Magadi and Ramanagara. Ramanagara district falls under single Agro-Climatic Zone-Eastern Dry Zone, i.e., Zone-5. The normal rainfall (Average from 1990 to 2014) in the district is 868.7 mm, with Ramanagara taluk receiving highest rainfall of 920.9 mm and Kanakapura taluk receiving lowest normal rainfall of 813.5 mm received in 54 (average) rainy days.

Average rainfall of the district during 1990-1999 and 2000-2009 is 905.6 mm and 904.6 mm respectively. During 2010-2014, the average rainfall is only 795.7 mm. Thus from 1990-1999 to 2010-2014, there is a decrease in average rainfall from 905.6 mm to 795.7mm, an average decrease of 109.9 mm (12 %) in the district.

Nearly 76.4 % of the cultivated area is rain fed and about 23.6% of the net sown area is irrigated. The total irrigated area under various sources in the district is 36,322 ha. The SW monsoon season is from June to September and the NE monsoon period from October to December. It is noticed that the amount of rainfall is relatively uniform through-out the district. December to March represents very low rainfall months. It is observed that there is not much variation in the distribution of rainfall during pre-monsoon, SW monsoon and NE monsoon periods.

There are 4 medium irrigation projects in the district viz., Manchanbele Reservoir Project, Igloor Reservoir Project, Arkavati Reservoir Project and Kanva reservoir Project supplying water to the tune of 0.107 BCM, under

minor irrigation tanks (0.042 BCM) and ground water explored through tube wells to the tune of 0.24043 BCM (Table 3.1)

Table- 3.1 : Status of Water Availability(in BCM)

Sl.No	Sources	Kharif	Rabi	Summer	Total
1	**Surface Irrigation**				
(i)	Canal (Major & Medium Irrigation)	0.107			0.107
(ii)	Minor Irrigation tanks	0.042			0.042
(iii)	Lift Irrigation/ Diversion				
(iv)	Various Water Bodies including Rain Water Harvesting				
(v)	Treated Effluent Received from STP				
(vi)	Untreated Effluent				
(vii)	Perennial sources of Water				
	Total surface water				**0.149**
2	**Ground Water**	0.24043			0.24043
(i)	Open Well				
(ii)	Deep Tube Well				
(iii)	Medium Tube Well				
(iv)	Shallow Tube Wells				
	TOTAL	**0.38943**			**0.38943**

3.2 Status of Ground Water Availability:

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

Ground water occurs in weathered and jointed zones of gneisses, granites, Charnokite, Closepet granite and alluvium along river courses in unconfined or water table conditions where as it occurs in semi confined to confined conditions in fractured formations at deeper depths. The thickness of weathering in major part of the district ranges from 5-10m and more than 10m in rest of the district. Unconfined aquifer system is taped by dug wells and shallow bore wells.

The taluks of Kanakapura and Magadi have more than 70% of their respective area with over exploitation of ground water, while Ramanagar taluk has 35% of its area as over exploted and nearly 35%of its area as safe for further ground water exploration.Channapatna taluk has most of its area under ‘ semi critical’ category, while in all other taluks, 20-30 of their respective area are treated as ‘ semi critical’ as far as their ground water availability is concerned (Table 3.2)

Table: 3.2 Status of Ground Water Availability

Name of the state :Karnataka **Name of the District :Ramanagara**

Taluk	Status of Block as per Central Ground Water Board Notification				Ground Water (BCM)		
	Safe	Semi-Critical	Critical	Over Exploited	Annual#	Recharge	Gap
Channapatna	10	90			0.02738	0.0277234	0.0003434
Kanakapura		30		70	0.07958	0.0902042	0.0106242
Magadi	5	20		75	0.06569	0.0643932	-0.0012968
Ramanagaraa	35	30		35	0.03937	0.0406606	0.0012906
Total					**0.21202**	**0.2229814**	**0.0109614**

#- Underground Water Board Brochure- Ramanagara district, 2013

3.3 Status of Command Area:

There are no major irrigation projects in the district. Four medium irrigation projects namely Manchanbele Reservoir Project, Igloor Reservoir Project, Arkavati Reservoir Project and Kanva reservoir Project are located

here. Thus, a total irrigation potential of 13758 hectares has been created (Table 3.3) from the existing medium/minor irrigation projects. However, actual irrigated area by canals is restricted to 8129 ha, as in most of these reservoirs, the water storage is below the potential for most of the years.

Table 3.3. Status of Command Area:

Sl. No	Name of the project	FRL in Mtrs	Gross Storage in TMC	Cropping Pattern	Total command area in ha	Remarks
1	Manchanabele Reservoir Project	737.15	1.22	Semidry	2433	At present water is let only for drinking purpose for Magadi Town. Water may let for irrigation purpose only after the decision in the ICC Meeting
2	Kanva Reservoir Project	698.91	0.809	Paddy, semidry	2076	Water is not let for irrigation due to non availability of water since last decade, but the reservoir is partially filled for drinking water purpose.
3	Arkavathy Reservoir Project	605.028	1.587	Perineal Mulberry	6232	Water is being allowed for irrigation for the total atchkat
4	Iggalur Barrage Project	608.076	0.182	Paddy, semidry, Mulberry.	3017	Water is being allowed for irrigation for the total atchkat

3.4 Existing Type of Irrigation:

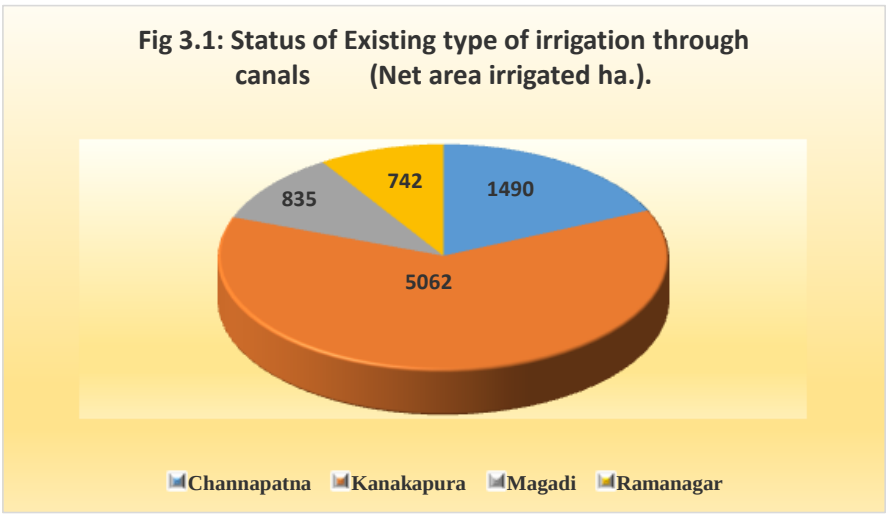
The total net irrigated area in the district is 36322 ha (Table 3.4 and Fig 3.1). The net irrigated area in Kanakapura is 15781 ha, Channapatna – 9043 ha, Ramanagara- 6528 and Magadi -4970 ha. The major source of irrigation in the district is through tube wells with an area of 25857 ha. The area irrigated through tube wells in Kanakapura taluk is 9625 ha, Channapatna (7226 ha), Ramanagara (5520 ha) and Magadi (3486 ha). Canal irrigated area in Kanakapura taluk is 5062 ha, Channapatna taluk – 1490 ha, Magadi – 835 ha and Ramanagara– 742 ha. There are 808 tanks in the district irrigating 1888 ha mainly in Kanakapura (875 ha) and Magadi (582 ha).

3.4. Status of Existing type of irrigation (Net area irrigated).

Area in hectares

Sl. No	Taluk	Canal	Tanks	Open wells	Tube wells	Lift irrigation	Others	Total
1	Channapatna	1490	165	0	7226	162	0	9043
2	Kanakapura	5062	875	0	9625	219	0	15781
3	Magadi	835	582	0	3486	67	0	4970
4	Ramanagaraa	742	266	0	5520	0	0	6528
Total		**8129**	**1888**	**0**	**25857**	**448**	**0**	**36322**

Source: Irrigation Department, Ramanagaraa



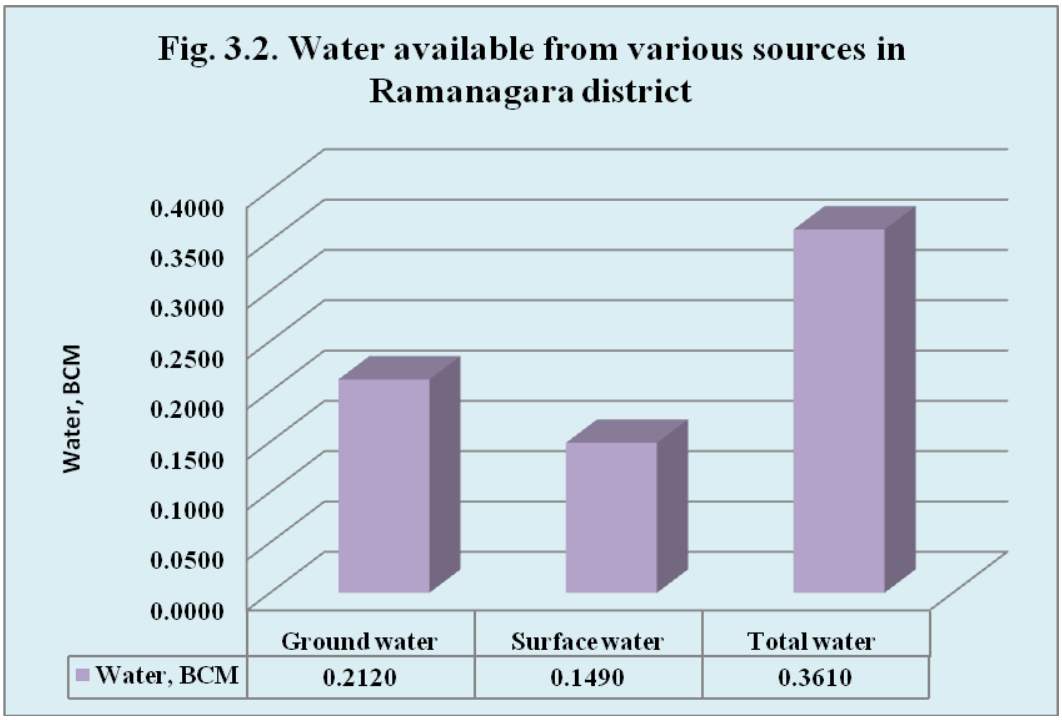
3.5 Water available from various sources: Net underground water available for Ramanagara district is 0.21202 BCM (58.7% of total water available). Water resources from these sources are relatively more in Kanakapura and Magadi taluks, while it is lower in Channapatna. Water available from other sources - medium and major irrigation (0.107 BCM) and minor irrigation tanks (0.042

BCM) amounted to 0.149 BCM (41.3% of total). Thus, total water available from sources – underground water and surface water through tanks and canals is 0.36102 BCM (Table 3.5, Fig. 3.2).

Table 3.5. Water available from various sources in Ramanagara district

Taluks	Net ground water available, BCM#	Water available from various sources##	Total water available
Channapatna	0.02738	0.149	0.36102
Kanakapura	0.07958		
Magadi	0.06569		
Ramanagara	0.03937		
Total	**0.21202**	**0.149**	**0.36102**

- Central Underground Water Board Booklet, Ramanagara district, 2013; ## - Canal (Major and Medium) – 0.107 BCM and minor irrigation tanks – 0.042 BCM – For details, refer Table 3.1.



CHAPTER IV

WATER REQUIREMENT/ DEMAND - RAMANAGARA DISTRICT

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

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

This amounts to availability of 400 Mha-m (million hectare meter) of water to India. Out of this, 17.5% goes as immediate evaporation (70 Mha-m), 53.8% as precipitation into soil (215 Mha-m) and 28.7% as surface runoff (115 Mha-m, which includes 10 Mha-m as snowfall). Further total precipitation received on the soil is further divided into 41.3% (165 Mha-m) as soil moisture available for crops and 12.5% as ground water (50 Mha-m). Water is lost through evaporation to an extent of 20% in medium and major reservoirs and 40% in tanks. This assumption is followed for Karnataka (Bhaskar *et al*., 2016).

Karnataka has total geographical area of 19.20 million ha receiving an annual precipitation of 1133.3 mm (average of 55 years from 1960 to 2014). About 71% of rainfall is received during south west monsoon (June to September), while north monsoon contributes 17% (October to December) and early showers by 12%. The south west monsoon sustains agricultural activity in most parts of the state, as large proportion of agriculture is rainfed farming. Taking geographical area and rainfall into consideration, available water due to precipitation is 21.76 Mha-m to Karnataka (215.2864 BCM or 7688.8 TMC). Following NCA 1976 recommendation, out of 215.2864 BCM (7688.8 TMC) of water, 53.8% percolates into soil (115.822 BCM or 4136.57 TMC), 17.5% as immediate evaporation loss (37.674 BCM or 1345.54 TMC), and 28.7% as surface water runoff (61.7876 BCM or 2206.69 TMC).

The average annual rainfall in Karnataka is 1248 mm. The state is divided into three meteorological zones viz. North Interior Karnataka, South Interior Karnataka and Coastal Karnataka. Coastal Karnataka with an average annual rainfall of 3456 mm is one of the most rainy regions in the country. Contrasting this, the region of South Interior Karnataka and North Interior Karnataka receive only 1286 and 731 mm of average annual rainfall. (https://en.wikipedia.org/wiki/Rainfall_in_Karnataka).

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

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

Ramanagara district has a total geographical area of 355912 ha receiving an annual precipitation of 86.8 cm. Ramanagara taluk (92.9 cm) receives highest rainfall, followed by Magadi taluk (88.3cm) and Channapatna (85.7 cm), while it is lower in Kanakapura (81.3cm). Most of the rain (49.4 %) is received during south west monsoon (June to September), while north-east monsoon provides 28.7 % rainfall to the district. The south west monsoon sustains agricultural activity in most parts of the state, as large proportion of agriculture is rainfed farming. Taking geographical area and rainfall into consideration, available water due to precipitation is 3.0537947 BCM to Ramanagara. Following NCA 1976 recommendation, out of 3.0537947 BCM of water, 53.8% percolates into soil (1.642941527 BCM), 17.5% as immediate evaporation loss (0.534414066 BCM), 28.7% as surface water runoff (0.876439067 BCM) and 12.5% as underground water (0.3817243 BCM) (Table 4.1). Water availability is relatively more in Kanakapura taluk, followed by Magadi and Ramanagara, while it is relatively lower in Channapatna.

4.1. Water Demand for domestic need:

A number of factors like climate, culture, food habits, work and working conditions, level and type of development, and physiology determine the requirement of water. The per capita water requirement in urban areas is more than that in the rural areas. As per the Bureau of Indian Standards, IS:1172-1993, a minimum water supply of 200 liters per capita per day (lpcd) should be provided for domestic consumption in cities with full flushing systems. IS:1172-1993 also mentions that the amount of water supply may be reduced to 135 lpcd for the LIG and the economically weaker sections (EWS) of the society and in small towns [Modi, 1998]. However, in the Tenth Plan (2002-07), the cities with planned sewerage systems are classified into two groups based on population, i e, metropolitan or megacities (minimum water supply level is 150 lpcd) and non-metropolitan cities (135 lpcd) [Government of India 1997, 2002]. Over and above the aforesaid demand, 15% losses may be allowed for determining the quantity of raw water required.

During 2015, water requirements for domestic use in Kanakapura, followed by Ramanagara and Channapatna taluks are relatively higher (0.013198506 to 0.01752899 BCM), while it is lower in taluk of Magadi (0.010207957 BCM). The water requirements in these taluks corresponded to the prevalent population. For district as whole, water demand is 0.054544912 BCM in 2015 (Table 4.3). With projected growth of population of 5.3% during 2011 to 2020, the domestic water requirements in the taluks of Ramanagara district followed the same trend (Table 4.1, Fig. 4.1).

Thus, domestic water requirement is projected at 0.0562007 BCM in 2020 from the present consumption level of 0.054544912 BCM during 2015 (Table 4.1, Fig. 4.1).

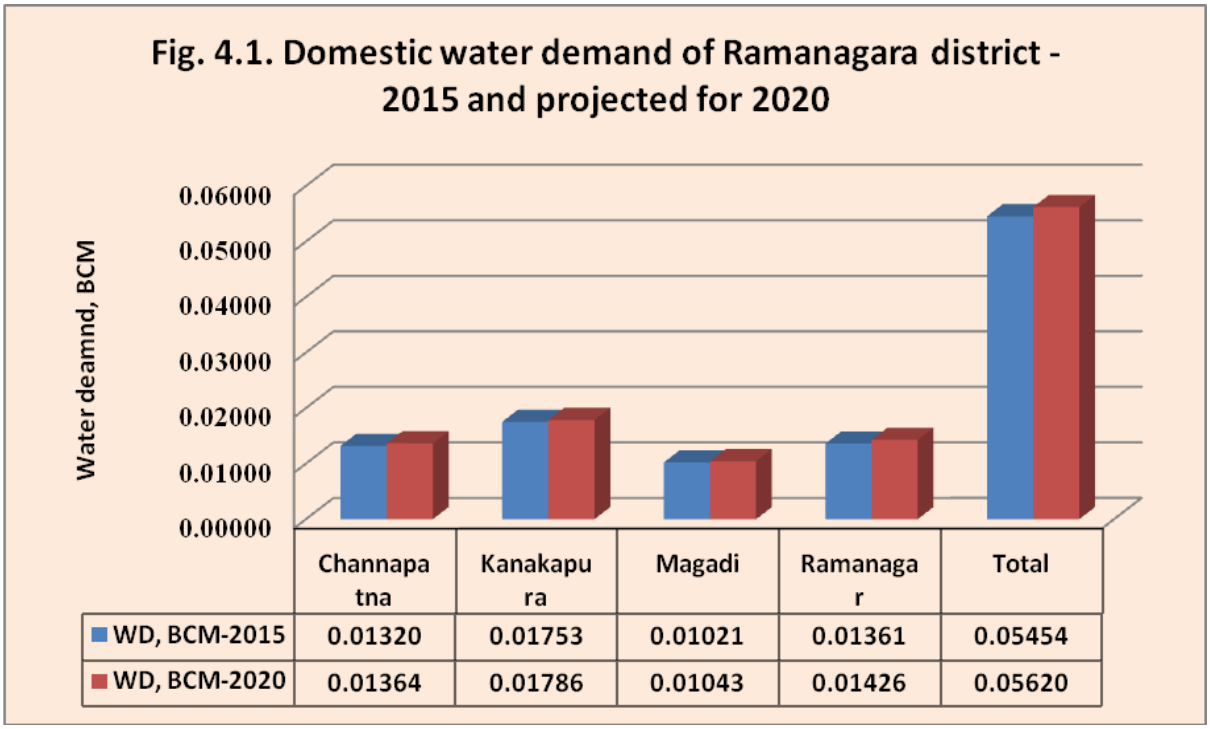


Table 4.1. Domestic water demand (BCM) of Ramanagara district - present and projected 2020

Blocks/ Taluks	Population in 2011	Water demand in 2011, BCM	Population in 2015	Water demand in 2015, BCM	Projected population, 2020	Projected water demand by 2020, BCM
Channapatna	261,304	0.0128758	267854	0.0131985	276905	0.0136445
Kanakapura	350,877	0.0172895	355738	0.017529	362462	0.0178603
Magadi	203,841	0.0100443	207163	0.0102080	211757	0.0104343
Ramanagara	266,614	0.0131374	276194	0.0136095	289428	0.0142616
Total	**1082,636**	**0.0533469**	**1106949**	**0.0545449**	**1140552**	**0.0562007**

Water requirement for human being - 135 liters/head/day, lphd;
Domestic Water requirement/Demand in Billion cubic meter, BCM
= (Population X Water requirement, 135 lphd X 365 days)/ (1000 liters X 1,000,000,000)
{Source: Ramanagara district at a glance 2014-15, Zilla Panchayat, Ramanagara}

4.2. Water requirement for crops: Field/horticultural/plantation crops grown in Ramanagara district are paddy, maize, groundnut, ragi, Tur, cowpea, avare, horse gram, castor, niger, Bengal gram (under agriculture), fruit crops, and vegetable crops. For calculation of water requirement of irrigated crops,

following methodology and some assumptions have been used based on the recommendations of the NCA, 1976 and methodology suggested by Bhaskar et al. (2016).

Irrigation water requirement considered for calculation purpose for various crops are paddy (150 cm in rabi/summer, 100 cm in Kharif), maize - 60 cm, bajra/jowar - 45 cm, red gram - 70 cm, groundnut - 45 cm, other oilseeds - 40 cm, cowpea/green gram/other pulses - 40 cm, vegetable crops - 50 cm, and fruit crops - 60 cm. From this water requirement of various crops and the area of the crops grown under irrigation, irrigation water requirement for crops has been worked out.

Assumption - Rain water accounted for crop use is 30% of total rainfall occurring during the cropping season in Bangalore rural district, considering the soil type (sandy soil, sandy loam soils) and the intensity of rain. Rain water used for crops is deducted from the irrigation water requirement to get net water requirement for various crops.

Total water requirement of crops is relatively higher in Magadi and Kanakapura (0.19333 to 0.16247 BCM), followed by Channapatna (0.13870 BCM), while it is lower in Ramanagara (0.12261 BCM). All these water demand corresponded to large area of irrigated crops (paddy, sugarcane), rainfed crops (ragi, maize, tur, horse gram, groundnut), vegetables, fruit crops). The total water requirement of irrigated field crops of the district is 0.07288 BCM, whereas total water requirement of rainfed crops is 0.13571 BCM in view of large under crops (ragi, maize, pulses - tur, horse gram, oilseeds - groundnut, sesamum). Water demand for total horticultural crops is 0.40792 BCM for Ramanagara district, of which major share goes to vegetables (0.203069 BCM). Further, water demand of total horticulture crops is more in

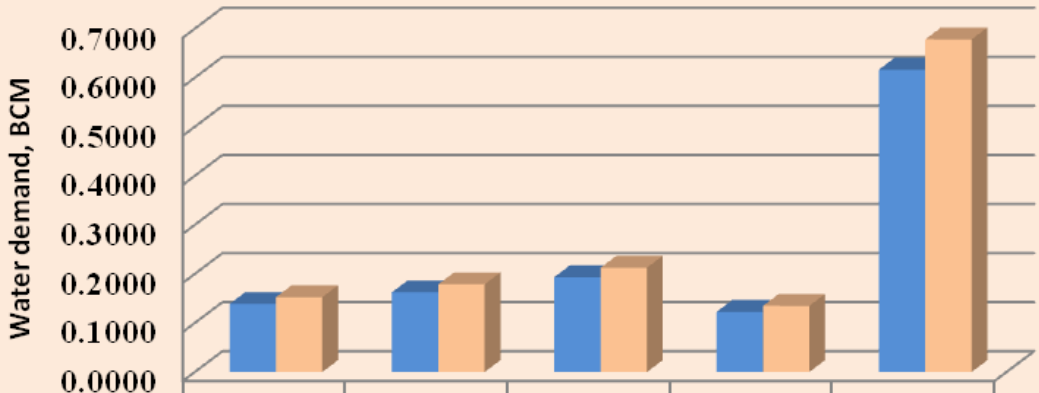
Magadi taluk as compared to other taluks. The projected water demand for total crops is also worked out for 2020, keeping 10% increase in irrigated area due to efficient rain water use, more under area and other means. For Ramanagara district, the projected total water demand for crops is 0.67816 BCM by 2020 as compared to the present demand of 0.61651 BCM), which amounts to 10% increase (Table 4.2, Fig. 4.2, 4.2a).

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

Taluks	Vegetables	Fruits	Plantation	Flowers	Total Horticultural crops
	Net Water requirement, BCM - 2015				
Channapatna	0.0316515	0.0180118	0.0496633	0.0000364	**0.0993629**
Kanakapura	0.0138520	0.029419	0.0432710	0.0004858	**0.0870278**
Magadi	0.0071100	0.0593537	0.0664637	0.0002844	**0.1332118**
Ramanagara	0.0090487	0.0346226	0.0436713	0.0009752	**0.0883177**
Total	**0.0616622**	**0.1414072**	**0.2030694**	**0.0017817**	**0.4079204**
	Irrigated field crops	Rainfed field crops	Total field crops	**Total crops - 2015**	**Total crops - 2020**
Channapatna	0.022290	0.016440	0.039340	**0.1387029**	**0.1525732**
Kanakapura	0.032800	0.042642	0.075442	**0.1624698**	**0.1787168**
Magadi	0.009120	0.051001	0.060121	**0.1933328**	**0.2126661**
Ramanagara	0.008670	0.025623	0.034293	**0.1226107**	**0.1348718**
Total	**0.072880**	**0.135706**	**0.208586**	**0.6165064**	**0.6781571**

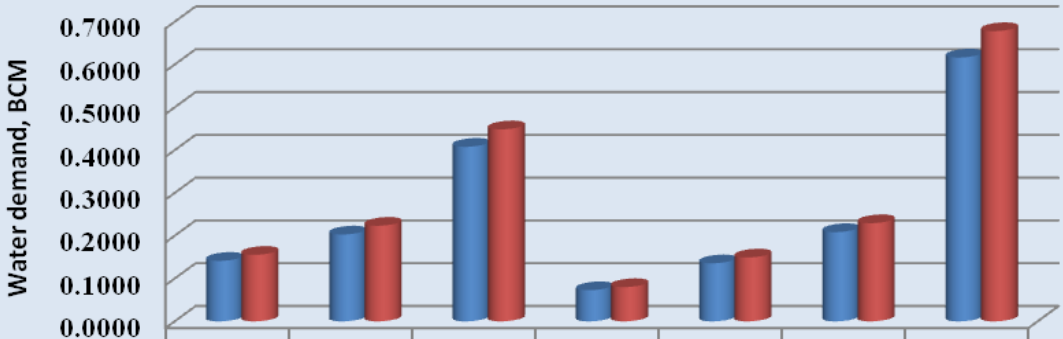
Water requirement for crops: Fruit crops - 60 cm, Vegetable crops - 50 cm, Maize - 60 cm, Pulses - 40 cm, Oilseeds - 40 cm, Groundnut - 45 cm, Tur - 70 cm, Jowar - 55 cm, Ragi - 45 cm; Rice - 150 cm during rabi/summer, 100 cm in Kharif, Sugarcane - 200 cm, Banana - 120 cm, Flowers - 40 cm, Tomato/Onion - 60 cm
Rainfall, mm - 35% goes as runoff; 40% is used by crops in clayey soils; 30% is used by loamy soils; 25% is used by sandy soils; Here 30% of rainfall is accounted as water available for crop use on cultivable land, considering the intensity of rain and soil type- sandy loam, sandy and sandy clay loam soils. This amount of rain water has been deduced from Irrigation requirement to calculate net water requirement for crops; Net water requirement, cm = Irrigation water requirement, cm - Rainfall water available for crop use (30% of rainfall during Kharif/Rabi/Summer season for seasonal crops or 30% of rainfall during the year for perennial crops/plantation/fruit crops, cm);
Irrigation water requirement, ha - cm = Area of the crop, ha X Water requirement of the crop, cm; One ha-cm = 1,00,000 liters or 100 cubic meters;
Source: Ramanagara district at a glance 2013-14, 2014-15;
Irrigation water requirement in BCM = {(Irrigation water requirement, ha-cm X 100)/100,000}
The crops include both irrigated and rainfed crops

Fig. 4.2. Water deamnd of various crops taluk wise in Ramanagara district - 2015 & 2020



	Channa patna	Kanaka pura	Magadi	Ramana gara	Total
WD-2015	0.1387	0.1625	0.1933	0.1226	0.6165
WD-2020	0.1526	0.1787	0.2127	0.1349	0.6782

Fig. 4.2a. Water demand crops wise in Ramanagara district -2015 and 2020



	Fruits	Vegeta bles	Tot Hort	Irrg Fld crops	Rf Fld crops	Tot Fld crops	Total crops
WD-2015	0.1414	0.2031	0.4079	0.0729	0.1357	0.2086	0.6165
WD-2020	0.1555	0.2234	0.4487	0.0802	0.1493	0.2294	0.6782

4.3. Water requirement of Livestock:

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

Besides, contributing food and inputs (draught energy and manure) for crop production, livestock are important as savings or investments for the poor household and provide food security or insurance through various ways in different production systems. Rainfed regions support the highest number of livestock units. Except buffalo and pigs, more than half of all livestock species (52.3 to 60.1%) are concentrated in the rainfed region. Even 43.1% of the total buffalo and 44.7% of pigs are reared in rainfed region. Irrigated region accounts for higher proportion of buffalo (43.1%) and except sheep it accounts for second highest population of all major livestock species. although the resource degradation in rainfed areas has been observed, various support programmes of the government are encouraging mixed farming to stabilize the income of the resource poor farmers of arid and semi-arid regions of the state. Considering these facts, increase in total population of the livestock has been maintained at 5% in 2020 as compared to earlier census of 2012 (Anjani Kumar and Singh, 2008).

Water requirement for livestock and other animals namely - indigenous cattle, cross bred cattle, draft animals/bulls/others, sheep, goats, pigs, duck, and

poultry, have been calculated separately with the corresponding population for 2012. The projected water requirement for livestock population at 2020 has also been calculated separately for all live stocks. The total water requirement for live stocks for 2012 and projected for 2020 is provided taluk wise in Table 4.3.

Total population of livestock and other animals in Ramanagara district is 1814,190 during 2007 and their water requirement is 0.004475714 BCM. Considering the increase in the population of livestock at 5% from 2012 to 2020, their water demand would be 0.005396551 BCM with corresponding population of 1904,900 (Table 4.3, Fig. 4.3). Water demand of livestock is more in Kanakapura, followed by Magadi, while it is lower in Channapatna and Ramanagara taluks, as reflection of corresponding livestock population in these taluks.

Table 4.3. Water requirement of livestock and other animals in Ramanagara district in 2012 and projected for 2020

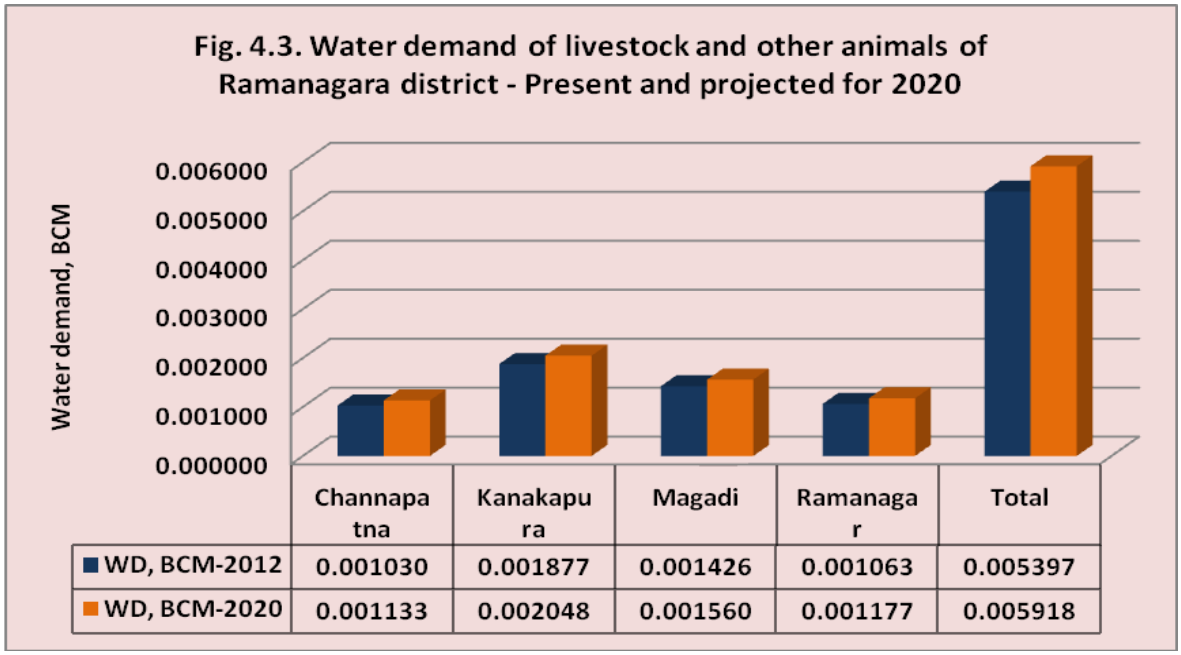
Taluks	Water requirement of livestock, Billion cubic meters (BCM)			
	Population, 2007	Present Water requirement for 2012, BCM	Projected Population, 2020	Water requirement for 2020, BCM
Channapatna	351,184	0.001029503	368,743	0.001133036
Kanakapura	524,108	0.001877058	550,313	0.002048141
Magadi	726,921	0.001426492	763,267	0.001559674
Ramanagara	211,977	0.001063499	222,576	0.001177386
Total	**1814,190**	**0.005396551**	**1904,900**	**0.005918238**

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

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

Livestock population is projected to be increased by 5% between 2012 to 2020 census, due to encouragement in the government policies and more support for integrated farming systems. Though cattle population has decreased particularly in favour of indigenous cattle, this

reduction is compensated with increase in the density of cross bred animals and other animals due to economic considerations.
(Anjani Kumar and Singh, D.K. 2008. Livestock production systems in India: An appraisal across agro-ecological regions. Indian Journal of Agricultural Economics, 63(4): 577-597)
Source: Deputy Director, Department of Animal Husbandry and Veterinary Services, Bangalore Rural, Ramanagara District at a glance



	Channapatna	Kanakapura	Magadi	Ramanagar	Total
WD, BCM-2012	0.001030	0.001877	0.001426	0.001063	0.005397
WD, BCM-2020	0.001133	0.002048	0.001560	0.001177	0.005918

4.4. Water demand for Industry

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

While inadequate availability of water is the major risk facing the industries (37%), others agree that poor water quality is another major risk in

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

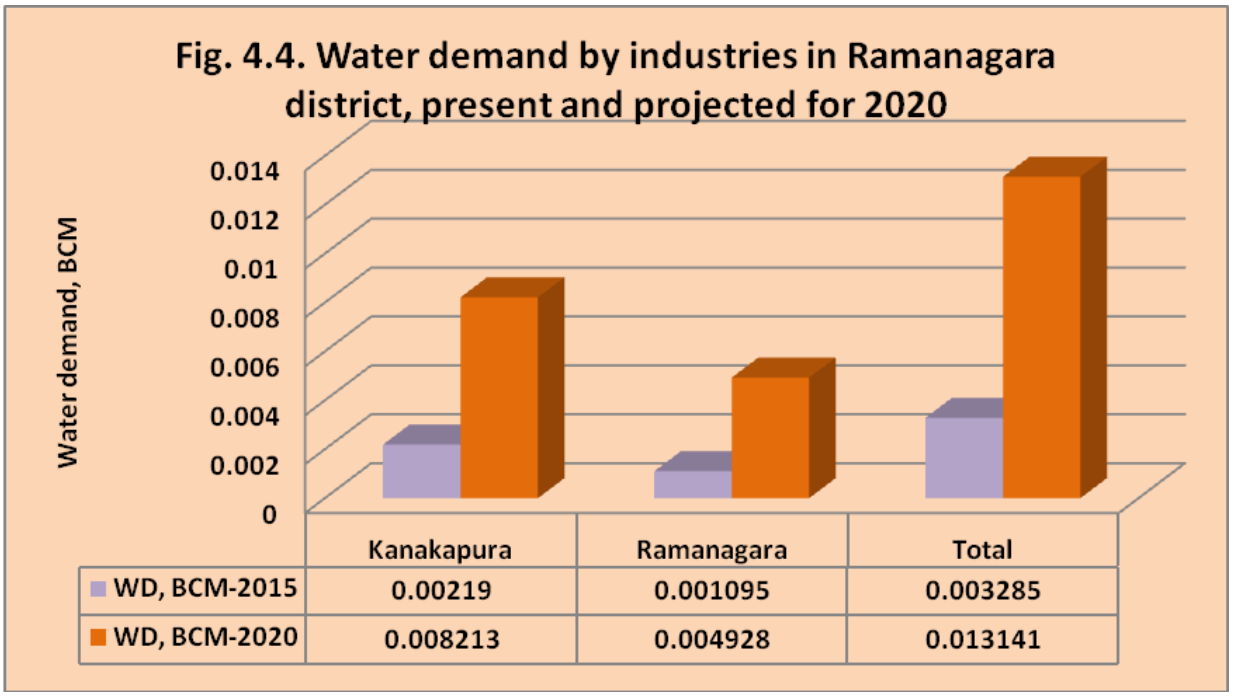
Indian industry is becoming responsive to the fact that it should be the role of every user to undertake measures for water conservation. It is desirable that the shared responsibility of companies across sectors is to join hands with communities and governments to work on programmes for water conservation,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

In Ramanagara district, total water demand of industries at present (2015) is put at 0.003285 BCM, whereas the projected water demand for 2020 is 0.0013141BCM. The water requirement of industries is more in Kanakapura and Ramanagara taluks (Table 4.4, Fig. 4.4).

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

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

	Taluk	Water demand, BCM	
		2015	2020
1	Kanakapura	0.00219	0.008213
2	Ramanagara	0.001095	0.004928
	Total	**0.003285**	**0.01314**



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

4.5. Water demand for power generation:. There is no new proposal for power generation (Table 4.5).

Table 4.5 Water demand for power generation in Ramanagara district

Block	Name of the power generating unit/ Power requirement	Present Water demand, BCM	Proposed for new power generating unit	Water demand at 2020, BCM
	None		No new proposal	

4.6. Water demand for other public purposes: Water is also required to be provided in public places like schools, colleges, offices, public toilets, bus station, railway stations, theaters, hostels, hotels, restaurants, hospitals, nurses homes and medical quarters, community hall and all other public places. Here, it is very difficult to work out the water demand for all these places, which require many parameters - number of person involved in each activity, type facility available etc., It is assumed that 10% of domestic requirement is considered as water demand for these public places. The water demand for these public places amounted to 0.0054545 BCM in 2015, where as the water demand would be 0.00562007 BCM by 2020 (Table 4.6, Fig. 4.6).

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

At present, total water demand for all purposes in Ramanagara district is 0.68519 BCM, of which major share goes to crops' use, amounting to 0.61651 BCM (90.0%). The next share of water demand is for use of domestic purpose (8.0%), while water demand for livestock, industries and other public purposes is 2.0% . The projected demand for 2020 followed the same trend and it would be to the tune of 0.75904 BCM (Fig. 4.5, 4.6, Table 4.6).

Water demand for various sectors put together for 2015 is more in Magadi taluk, followed by Kanakapura and Channapatna, while it is lower in Ramanagara taluk. The projected water demand of various sectors for 2020 followed the same trend of 2015 and would be to the tune of 0.75904 BCM (Fig. 4.5).

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

Taluk	Water demand at present (2015), BCM						
	Domestic	**Crops (Hort. + Field)**	**Livestock**	**Indus-tries**	**Power genera-tion**	**Other public places**	**Total water demand, BCM**
Channapatna	0.0131985	0.1387029	0.0010295	0	0	0.0013199	0.1542508
Kanakapura	0.0175290	0.1624698	0.0018771	0.00219	0	0.0017529	0.1858188
Magadi	0.0102080	0.1933328	0.0014265	0	0	0.001021	0.2059881
Ramanagara	0.0136095	0.1226107	0.0010635	0.001095	0	0.0013610	0.1397397
Total	0.05454491	0.6165064	0.0053966	0.003285	**0**	0.00545449	0.6851874

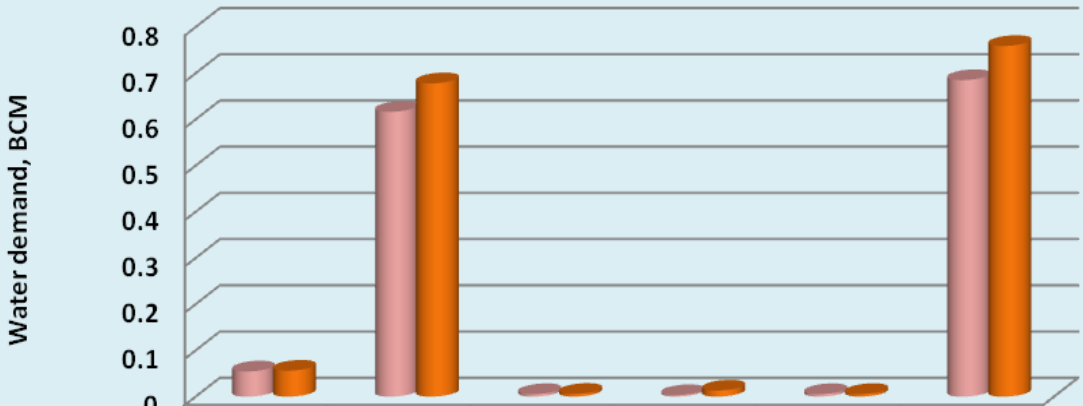
Taluk	Water demand for 2020, BCM						
Channapatna	0.0136445	0.1525732	0.0011331	0	0	0.00136445	0.1687153
Kanakapura	0.0178603	0.1787168	0.0020481	0.008213	0	0.00178603	0.2086242
Magadi	0.0104343	0.2126661	0.0015597	0	0	0.00104343	0.2257035
Ramanagara	0.0142616	0.1348718	0.0011774	0.004928	0	0.00142616	0.1566650
Total	0.056201	0.6781571	0.0059182	0.01314	**0**	0.0056200	0.7590363

Assumption - Increase in population is 16%, crops by 10% between 2011 to 2020, livestock by 5% between 2012 to 2020, Industrial use - 26% between 2015 to 2020, Power generation - Not proposed;

Fig. 4.5. Total water demand of various sectors - taluk wise in Ramanagara district - 2015 and 2020

	Channapatna	Kanakapura	Magadi	Ramanagara	Total
TWD-2015	0.15425	0.18582	0.20599	0.13974	0.68519
TWD-2020	0.16872	0.20862	0.2257	0.15667	0.75904

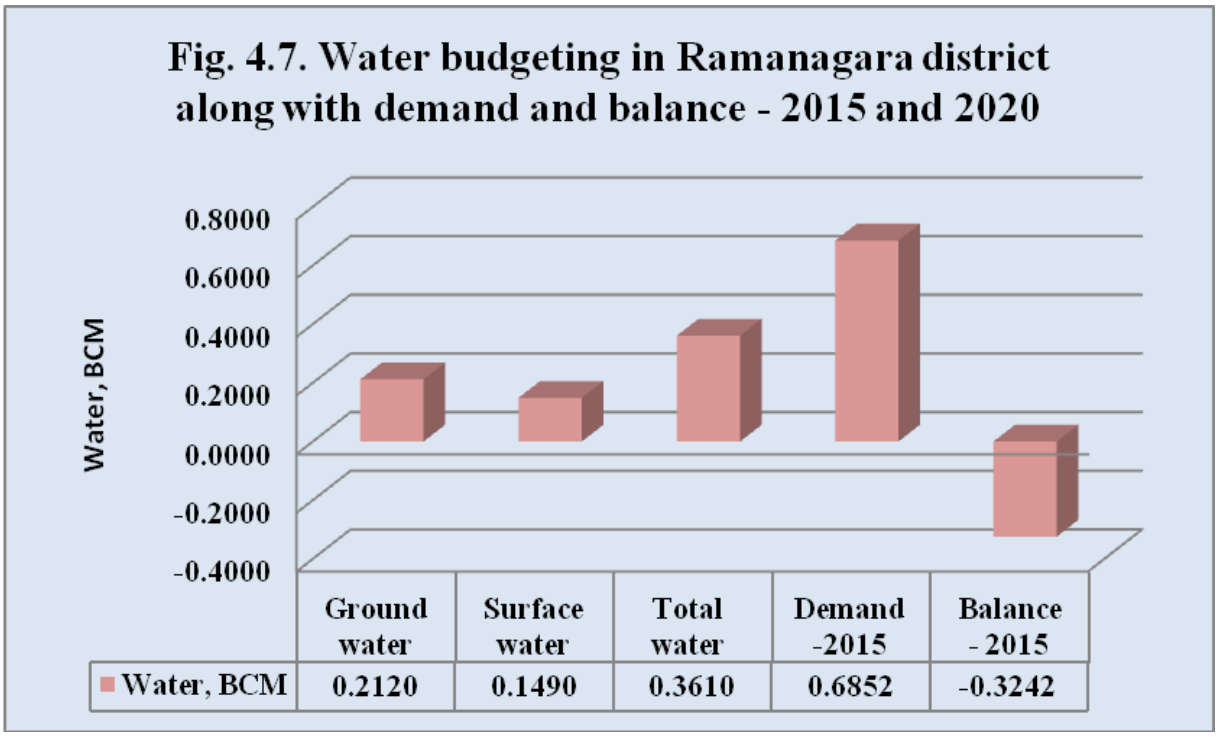
Fig. 4.6. Total water demand - sector wise in Ramanagara district - 2015 and 2020



	Domestic	Crops	Livestock	Industries	Others	Total
TWD-2015	0.05454	0.61651	0.0054	0.00329	0.00545	0.68519
TWD-2020	0.0562	0.67816	0.00592	0.01314	0.00562	0.75904

4.8. Water budgeting: Total water available from surface water and underground water over the territory of Ramanagara district is 0.36102 BCM. The surface water available through canal, minor irrigation and lift irrigation is 0.149 BCM (41.3% of the total water available) (Table 4.7), whereas ground water accounts for 58.7% of the total (0.21202 BCM). Thus, total water availability for the district from all sources at present is 0.36102 BCM, which is less than the present requirement (2015) of 0.68519 BCM (Table 4.7, Fig. 4.7). There is negative balance of available water, amounting to -0.32417 BCM during 2015 and -0.39802 BCM during 2020 (Fig. 4.8). This negative balance has been observed in all taluks and more from Kanakapura during 2015 as well as for 2020. This negative balance indicates that the rain water needs to be harvested properly by adopting all possible conservation measures. The effort should be made to encourage water conservation structures to enhance the underground recharge and rejuvenating tanks/lakes by desilting and other means to hold more in tanks/lakes etc.,

Fig. 4.7. Water budgeting in Ramanagara district along with demand and balance - 2015 and 2020



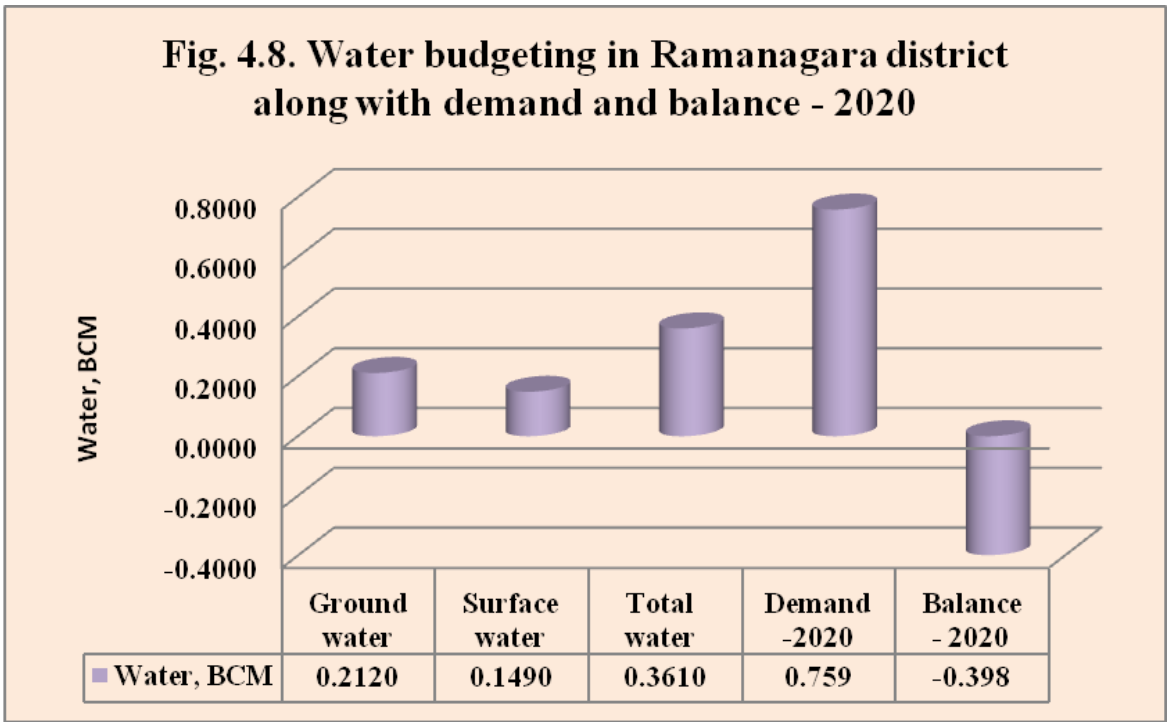


Table 4.7. Water budgeting for Ramanagara district - available, demand and water balance during 2015 and 2020

Taluks	Net underground water available, BCM (CGWB)	Surface water available from various sources	Total water available, BCM - 2015 (Col. 1+2+3)
	1	2	3
Channapatna	0.02738	0.149	0.36102
Kanakapura	0.07958		
Magadi	0.06569		
Ramanagara	0.03937		
Total	**0.21202**	**0.149**	**0.36102**

Taluks	Total water demand for various sectors, BCM - 2015	Water balance available after meeting all demands, 2015, BCM	Projected demand, BCM - 2020	Water balance after meeting all demands, 2020, BCM
	4	5	6	7
Channapatna	0.15425	-0.32417	0.16872	-0.39802
Kanakapura	0.18582		0.20862	
Magadi	0.20599		0.22570	
Ramanagara	0.13974		0.15667	
Total	**0.68519**	**-0.32417**	**0.75904**	**-0.39802**

CGWB - Central Ground Water Board, 2013 for Ramanagara district - Net underground water available; Surface water = water from canals (Major and medium), minor irrigation tanks

CHAPTER V

SRATEGIC ACTION PLAN FOR IRRIGATION IN RAMANAGARA DISTRICT UNDER PMKSY

The Ramanagara district which was part of the Bangalore Rural district was bifurcated and reconstituted in the year 2007 with the District Head Quarters at Ramanagara. Ramanagara Town is situated along Bangalore - Mysore State Highway No.17 at a distance of 50 Kms from Bangalore. The District has four taluks viz., Ramanagara, Channapatna, Kanakapura and Magadi. It has 18 hoblies, 127 Grama Panchayats and 823 villages.

Ramanagara district falls under single Agro-Climatic Zone i.e., Eastern Dry Zone- Zone-5. Ramanagara District has a geographical area of 3,55,912 ha. The net area sown is 153661 ha (43.2%). The gross cropped area is160500 ha, an area of 6839 ha is sown more than once, and the cropping intensity is 104.5 %. The district has a forest area of 69946 ha, 19.7% of the total geographical area of the district.

The district is having deep red clay soil in an area of 1.69 lakh ha(31.6%), Moderately deep clay soils in 0.94 lakh ha (25.6%) the remaining area is shallow red soils, Moderately deep loamy soils and deep red sandy loam soils. A major part of the district is occupied by red sandy soil (60%), and the remaining by red loamy soil. Red sandy soil mainly occurs in Channapatna, Kanakapura and Ramanagara taluks in undulating land slopes. The major area of the district is found to be deficient in organic carbon and availability of phosphorus, Potassium and Sulphur is satisfactory.

The SW monsoon season is from June to September and the NE monsoon period from October to December. The normal rainfall of the

district is 868.7 mm. December to March represents very low rainfall months. Rainfall occurs in nearly 54 rainy days. The pre monsoon period has a normal of 190.5 mm (21.9%), SW monsoon period has 428.8 mm (49.4%) and the NE monsoon period receives 249.3 mm (28.7%) rainfall.

The entire area of Ramanagara district is part of the Cauvery basin. The major tributaries of the Cauvery river flowing in the district are Arkavathi and Shimsha rivers. The rivers and streams originate from small watersheds and empty into number of tanks scattered in the district. The drainage pattern in the area can be described as semi dendritic to dendritic.

There are no major irrigation projects in the district. Two medium irrigation projects namely Byramangala Reservoir Project and Kanva reservoir Project are located in the district. The Byramangala Reservoir Project is located in Bidadi Hobli of Ramanagara taluk on the river Vrishabhavathi which is a tributary of Arkavathi river having a command area of 1949 hectares irrigating sugarcane and paddy as main crops. Kanva Reservoir Project is built on Kanva river in Channapatna taluk with a command area of 2076 ha. Thus a total irrigation potential of 4025 hectares has been created from the existing medium irrigation projects.

The net area under various sources of irrigation in the district is 36,322 ha. Area irrigated through bore wells account for 71.2%, followed by Canals 22.4%. The remaining 6.4 % area is irrigated through tanks and lift irrigation. Even through there are 12,323 open wells, area irrigated by them is nil. It is probably due to drying up of most of the dug wells. Kanakapura taluk has the highest net area under irrigation (15781 ha), followed by Channapatna (9043 ha) and Ramanagara (6528 ha). Magadi taluk has lowest area under irrigation (4970ha). Kanakapura taluk has the highest number of borewells (12374),

followed by Channapatna (11420). Ramanagara has the lowest number (6779) borewells.

Ground water is the major source of water supply for irrigation in the district. Bore wells (38059 Nos.) irrigate 25857 ha out of total 36322 ha. Thus, ground water irrigates 77.2% of the total net irrigated area. This shows the predominant role of bore wells in irrigation in the district. Each bore well on an average grossly irrigate 0.70 ha. In view of indiscriminate digging of bore/tube wells, the underground water level has depleted to a great extent. In the recent years the depth of water availability in the bore-well has gone down from 600 to 1000 feet. It is found that the ground water has presence of nitrate constituents more than the permissible limits which are carcinogenic nature.

The most common crops grown in the district are finger-millet, paddy, maize, redgram and groundnut. The important horticulture crops are coconut, arecanut, mango, banana, citrus and vegetable crops like tomato, brinjal etc. Mulberry is also an important crop of the district covering an area of 15536 ha. with a cocoon production 11929 tonnes.

The, total water availability for the district from all sources at present is 0.36102 BCM, which is less than the present requirement (2015) of 0.68519 BCM (Chapter 4). There is negative water balance amounting to -0.32417 BCM during 2015 and -0.39802 BCM during 2020. Efforts should be made to encourage water conservation structures to enhance the underground recharge and rejuvenating tanks/lakes by desilting and other means to hold more in tanks/lakes, etc.,

In this background, drawing up of district irrigation plan on holistic basis derives great importance for considering all water resources of the district. Since many decades, more importance was given to construct reservoirs and

provide canal irrigation to improve the performance of agriculture in the country. But, importance was not given to rationalise and regulate the use of ground water, even though ground water is more than 50% of national water resource. Similarly, desirable focus was not given in harvesting the surface flown rain water for its efficient. Adoption of micro irrigation is known to save substantial water, which can help increasing the irrigated area. Adoption of micro irrigation is still not very popular and needs encouragement in all respects.

The district level action plan is prepared as a part of Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) for Ramnagara district duly considering the available surface as well as ground water resources in the district for sustainable water management. PMKSY-DIP irrigation plan envisages a total of 198820 ha of area to be brought under irrigation through surface and ground water sources by creating new water harvesting structures and using water saving irrigation system like micro irrigation. The total estimated cost for DIP under PMKSY is Rs. 3240.07crores.

5.2:Taluk Plans

Taluk-wise strategic action plans suggested for district irrigation plans under PMKSY are presented in Tables 5.1 through 5.12.

Table 5.1 STRATEGIC ACTION PLAN FOR RAMANAGARA TALUK

Concerned Ministry/Department	Component	Activity	Total No. / Capacity (Cum)	Command area/Irrigation Potential (Ha)	Estimated cost/Year wise requirement of funds (in lakh Rs.)					
					I Year	II Year	III Year	IV Year	V Year	Total
MoWR-MI	AIBP	Construction of Check dams-MI	11	0	490	490	490	490	490	2450
MoWR – MI	AIBP	Construction of check dams- PRED	332	0	332	332	332	332	332	1660
MoWR - Maj	AIBP	Drinking water scheme (Tank filling Scheme)	2		2300	2300	2300	2300	2300	11500
MoWR - PRED	AIBP	Construction of ponds	176	0	71	71	70	70	70	352
MoWR - Maj	AIBP	Prevention of degradation of Arkavathy valley - Construction & improvements of pickups	2	0	40	40	40	40	40	200
MoWR-MI	Har Khet Ko Pani	Renovation of Reservoirs	15	3367	1830	1830	1830	1830	1830	9150
MoWR - Maj	Har Khet Ko Pani	Rejuvenation of existing LBC and RBC canal for	2	0	400	400	400	400	400	2000

		efficient watering to contemplated atchkat								
DoLR-MoRD-PRED-Ramanagara Division	Har khet ko pani	RR of Water Bodies (desilting of tanks, Renovation of existing Tank bunds, sluices, waste weir, canals, etc)	56	512	465	465	465	464	464	2323
DoLR-MoRD Agric Dept	MGNREGA	Farm pond (Polythene cover & diesel pump set)	1700	0	266.4	266.4	266.4	266.4	266.4	1332
DoLR-MoRD Agric Dept	MGNREGA	Check dams	25	0	22.6	22.6	22.6	22.6	22.6	113
DoLR-MoRD Agric Dept	MGNREGA	Field Bunds	0	21000	1163.4	1163.4	1163.4	1163.4	1163.4	5817
MOA &FW-DAC&FW Horticulture Dept	Per drop more crop (Micro Irrigation)	Non-DPAP Drip	0	4311	418	418	418	418	417	2089
MOA	Per drop	Non-DPAP Sprinkler	0	10248	417	416	416	416	416	2081

&FW-DAC&FW - Agriculture Dept	more crop (Micro Irrigation)									
MOA &FW-DAC&FW -Sericulture Dept	Per drop more crop (Micro Irrigation)	DPAP Drip	0	2285	466	466	466	466	466	2330
DoLR-MoRD - Agriculture Dept	PMKSY Watershed	Farm pond (polythene cover &Diesel pumpset)	7300	0	1136.6	1136.6	1136.6	1163.6	1163.6	5683
DoLR-MoRD - Agriculture Dept	PMKSY Watershed	Check Dam	62	0	55.8	55.8	55.8	55.8	55.8	279
DoLR-MoRD - Agriculture Dept	PMKSY Watershed	Nallah bunds	22		22	22	22	22	22	110
DoLR-MoRD – Agri Dept	PMKSY Watershed	Rubber / Boulder Check	100	0	4	3	3	3	3	16

DoLR-MoRD - Agriculture Dept	PMKSY Watershed	Recharge Pits	4700	0	302	301	301	301	301	1506
DoLR-MoRD - Agriculture Dept	PMKSY Watershed	Percolation Tanks	8	0	8	8	8	8	8	40
DoLR-MoRD - Agriculture Dept	PMKSY Watershed	Fishery Pond/ Gokatte	18	0	18	18	18	18	18	90
DoLR-MoRD - Agric Dept	PMKSY Watershed	RRS	100	0	50	50	50	50	50	250
TOTAL			**14631**	**41723**	**10277.0**	**10275.0**	**10274.0**	**10273.0**	**10272.0**	**51371.0**

Note: Number of water harvesting structures (farm ponds, check dams and Nallah bunds) and their costs proposed in the plan are according to the information provided by the JDA, Ramanagara district.

Fig 5.1 Additional area proposed tobe created in Ramanagara taluk

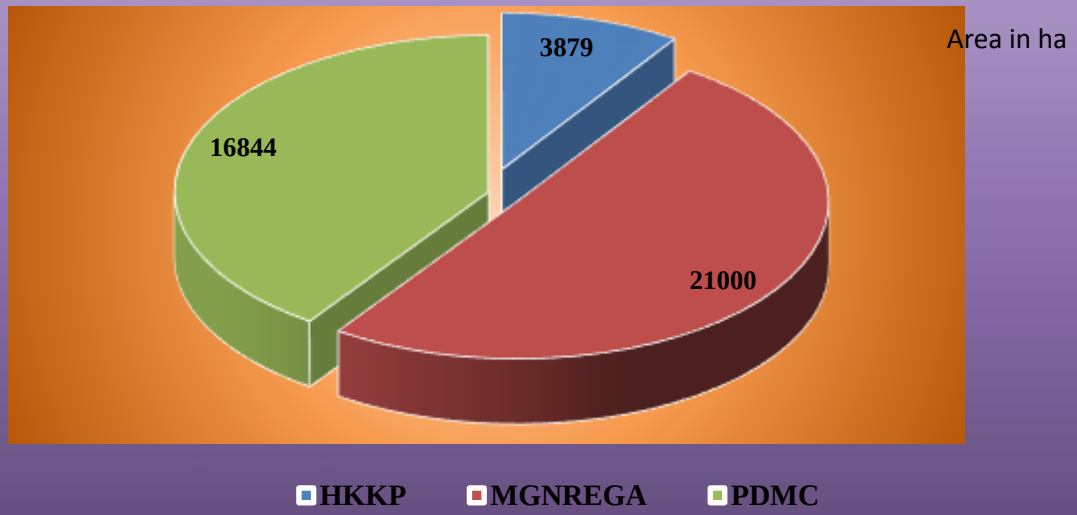


Fig 5.2 Component wise funds required for Ramanagara taluk

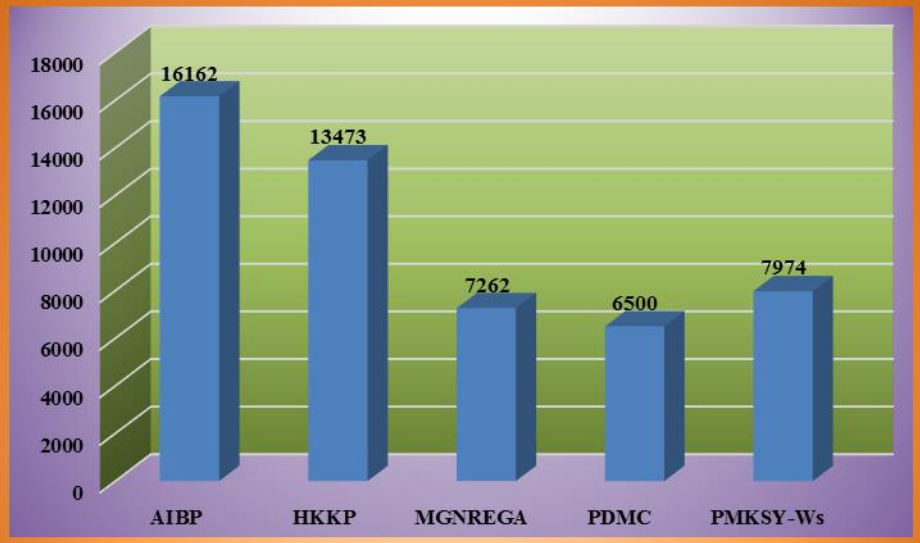


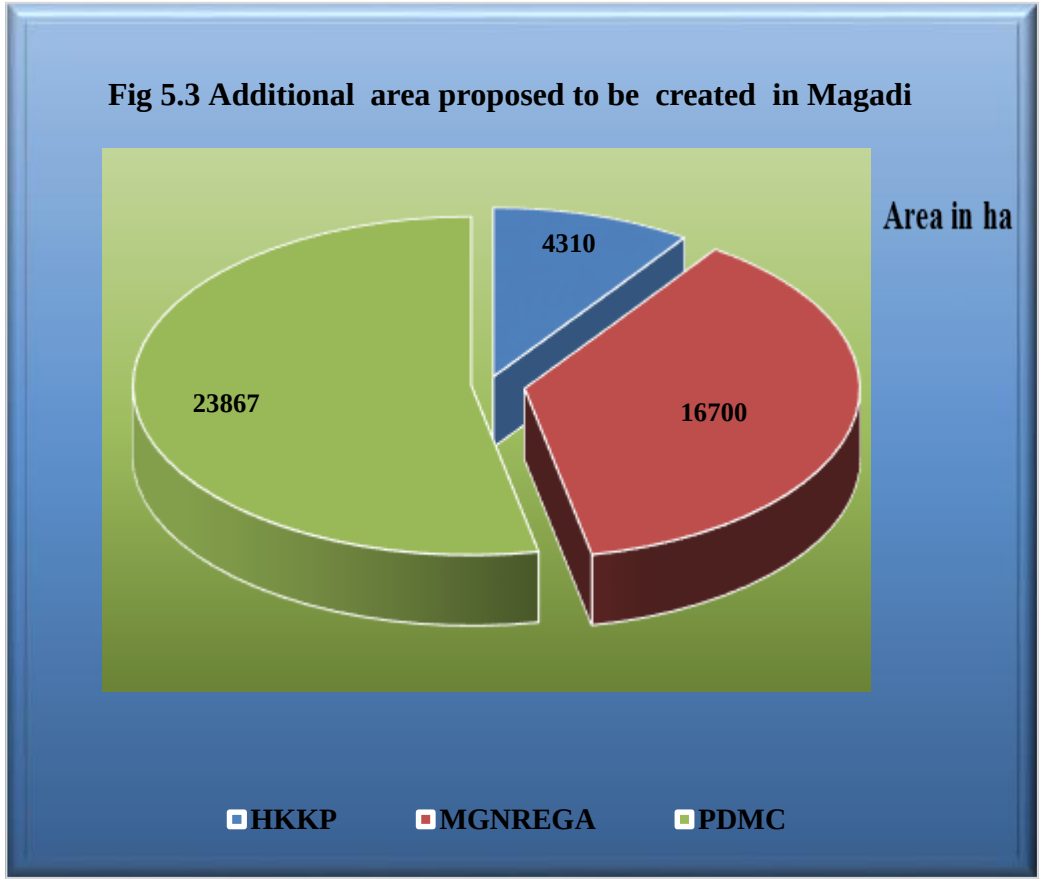
Table 5.2: STRATEGIC ACTION PLAN FOR MAGADI TALUK

Concerned Ministry/ Department	Component	Activity	Total No. / Capacity (Cum)	Command area/Irrigation Potential (Ha)	Estimated cost/Year wise requirement of funds (in lakh Rs.)					
					I Year	II Year	III Year	IV Year	V Year	Total
MoWR	AIBP	Construction of Check dams	12	0	240	240	240	240	240	1200
MoWR	AIBP	Construction of check dams-PRED	754	0	1323	1323	1323	1323	1323	6615
MoWR	AIBP	Construction of ponds	170	0	68	68	68	68	68	340
MoWR	Har Khet Ko Pani	Renovation of irrigation tanks	29	2480	850	850	850	850	850	4250
DoLR-MoRD-PRED-Ramanagara Division	Har khet ko pani	RR of Water Bodies (desilting of tanks, Renovation of existing Tank bunds, sluices, waste weir, canals,etc)	136	1830	1543	1543	1543	1543	1542	7714
DoLR-MoRD Agric Dept	MGNREGA	Farm Ponds (Polythene cover & Diesel pumpset	2000	0	313.6	313.6	313.6	313.6	313.6	1568.0

DoLR-MoRD Agric Dept	MGNREGA	Check dams	25	0	22.6	22.6	22.6	22.6	22.6	113.0
DoLR-MoRD Agric Dept	MGNREGA	Fied lbunds	0	16700	925.2	925.2	925.2	925.2	925.2	4626.0
MOA &FW-DAC&FW - Horticulture Dept	Per drop more crop (Micro Irrigation)	Non-DPAP Drip	0	7455	709	709	709	709	709	3545
MOA &FW-DAC&FW - Agriculture Dept	Per drop more crop (Micro Irrigation)	Non-DPAP Sprinkler	0	13444	546	546	546	546	546	2730
MOA &FW-DAC&FW - Sericulture Dept	Per drop more crop (Micro Irrigation)	DPAP Drip	0	2968	606	605	605	605	605	3026
DoLR-MoRD - Agriculture Dept	PMKSY Watershed	Farm pond (polythene cover &Diesel pumpset)	11000	0	1723.4	1723.4	1723.4	1723.4	1723.4	8617.0

DoLR-MoRD - Agriculture Dept	PMKSY Watershed	Check Dam	110	0	99	99	99	99	99	495
DoLR-MoRD - Agriculture Dept	PMKSY Watershed	Nallah bunds	45	0	45	45	45	45	45	225
DoLR-MoRD - Agric Dept	PMKSY Watershed	Rubber / Boulder Check	50	0	2	2	2	1	1	8
DoLR-MoRD - Agriculture Dept	PMKSY Watershed	Recharge Pits	4500	0	289	289	288	288	288	1442
DoLR-MoRD - Agriculture Dept	PMKSY Watershed	Percolation Tanks	9	0	9	9	9	9	9	45
DoLR-MoRD - Agriculture Dept	PMKSY Watershed	Fishery Pond/ Gokatte	20	0	20	20	20	20	20	100
DoLR-MoRD - Agriculture Dept	PMKSY Watershed	RRS	50	0	25	25	25	25	25	125
		TOTAL	**18910**	**44877**	**9358.2**	**9357.2**	**9357.2**	**9356.2**	**9355.2**	**46784.0**

Fig 5.3 Additional area proposed to be created in Magadi



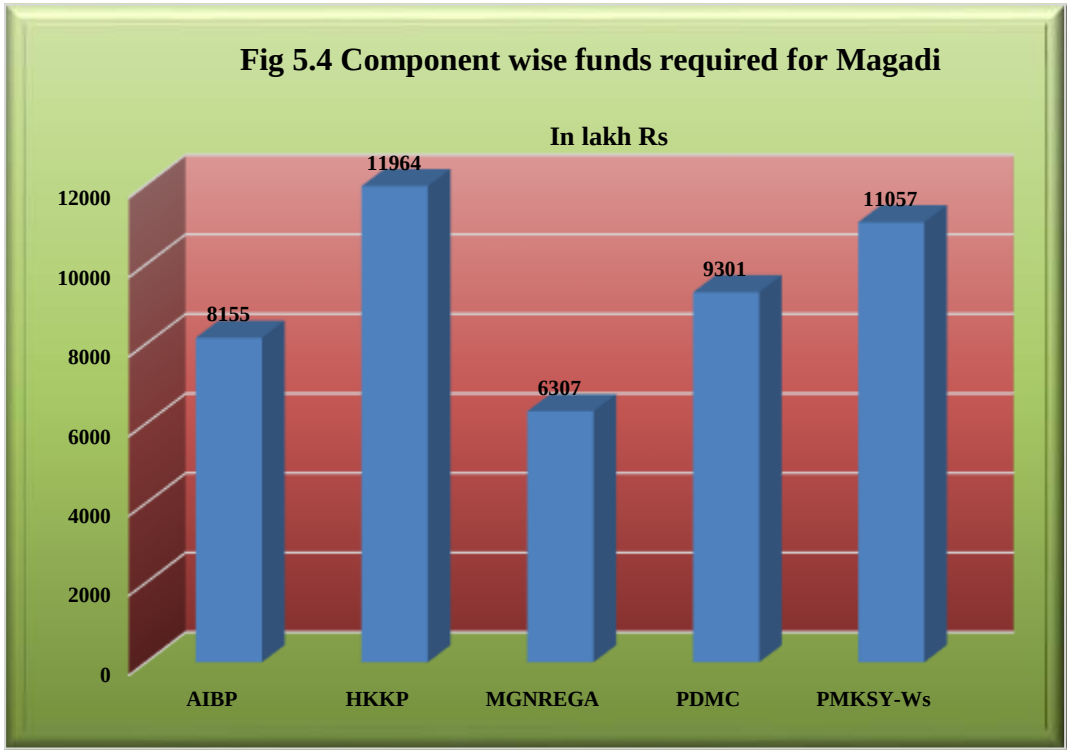


Fig 5.4 Component wise funds required for Magadi
In lakh Rs
12000
10000
8000
6000
4000
2000
0
8155
11964
6307
9301
11057
AIBP
HKKP
MGNREGA
PDMC
PMKSY-Ws

Table 5.3: STRATEGIC ACTION PLAN FOR

TABLE 5.3 : STRATEGIC ACTION PLAN FOR KANAKAPURA TALUK

Concerned Ministry/ Department	Component	Activity	Total No. / Capacity (Cum)	Command area/Irrigation Potential (Ha)	Estimated cost/Year wise requirement of funds (lakh Rs.)					
					I Year	II Year	III Year	IV Year	V Year	Total
MoWR- MI	AIBP	Construction of Check dams - MI	37	0	1871	1871	1871	1871	1871	9355
MoWR- MI	AIBP	Construction of check dams- PRED	900	0	1800	1800	1800	1800	1800	9000
MoWR - Maj	AIBP	Lifting water from Arkavathy for drinking water	4	0	1940	1940	1940	1940	1940	9700
MoWR - Maj	AIBP	Drinking water scheme (Tank filling Scheme)	3	0	1000	1000	1000	1000	1000	5000
MoWR- Maj	AIBP	Construction & improvement of pickups	5	0	140	140	140	140	140	700
MoWR- Maj	AIBP	Providing lift irrigation & other developments	7	0	700	700	700	700	700	3500

MoWR- MI	AIBP	Construction of ponds	456	0	183	183	182	182	182	912
MoWR -MI	Har Khet Ko Pani	Renovation of irrigation tanks	30	8175	2050	2050	2050	2050	2050	10250
MoWR-Maj	Har Khet Ko Pani	Modernisation to canal and allied works in LBLC /RBLC & other works	19	0	1540	1540	1540	1540	1540	7700
MoWR-Maj	Har Khet Ko Pani	Rejuvenation of Arkavathy River- Phase-II (From Tippagondanah alli to Sangama)	2	0	600	600	600	600	600	3000
MoWR-Maj	Har Khet Ko Pani	Rejuvenation of water bodies	5	0	8000	8000	8000	8000	8000	40000
MoWR-Maj	Har Khet Ko Pani	Essential works	2	0	40	40	40	40	40	200
DoLR-MoRD-PRED-Ramanagara Division	Har khet ko pani	RR of Water Bodies (desilting of tanks, Renovation of existing Tank bunds, sluices, waste weir, canals,etc)	118	3356	1611	1611	1610	1610	1610	8052

DoLR-MoRD Agric Dept	MGNREGA	Farm ponds(Polythene cover & Diesel pump set)	2500	0	392.0	392.0	392.0	392.0	392.0	1960.0
DoLR-MoRD Agric Dept	MGNREGA	Check dams	30	0	27.0	27.0	27.0	27.0	27.0	135.0
DoLR-MoRD Agric Dept	MGNREGA	Field Bund		43000	2382.2	2382.2	2382.2	2382.2	2382.2	11911.0
MoWR-Maj	Per drop more crop	Drip irrigation	3	432	500	500	500	500	500	2500
MOA &FW-DAC&FW - Horticulture Dept	Per drop more crop (Micro Irrigation)	Non-DPAP Drip	0	6319	612	612	612	612	612	3060
MOA &FW-DAC&FW – Agric Dept	Per drop more crop (MI)	Non-DPAP Sprinkler	0	18372	747	747	746	746	746	3732
MOA &FW-DAC&FW -Sericulture Dept	Per drop more crop (Micro Irrigation)	DPAP Drip	0	4063	829	829	829	828	828	4143
DoLR-MoRD - Agriculture Dept	PMKSY Watershed	Farm pond (polythene cover &Diesel pumpset)	18500	0	2912.6	2912.6	2912.6	2912.6	2912.6	14563.0

DoLR-MoRD - Agriculture Dept	PMKSY Watershed	Check Dam	158	0	142.2	142.2	142.2	142.2	142.2	711.0
DoLR-MoRD - Agriculture Dept	PMKSY Watershed	Nallah bunds	37	0	37	37	37	37	37	185
DoLR-MoRD - Agriculture Dept	PMKSY Watershed	Rubber / Boulder Check	350	0	12	12	11	11	11	57
DoLR-MoRD - Agriculture Dept	PMKSY Watershed	Recharge Pits	8000	0	513	513	513	513	512	2564
DoLR-MoRD - Agriculture Dept	PMKSY Watershed	Percolation Tanks	12	0	12	12	12	12	12	60
DoLR-MoRD - Agriculture Dept	PMKSY Watershed	Fishery Pond/ Gokatte	28	0	28	28	28	28	28	140
DoLR-MoRD – Agric Dept	PMKSY Watershed	RRS	350	0	175	175	175	175	175	875
TOTAL			**31556**	**83717**	**30795.8**	**30795.8**	**30791.8**	**30790.8**	**30789.8**	**153965.0**

Fig 5.5 Additional area proposed to be created in Kanakapura taluk

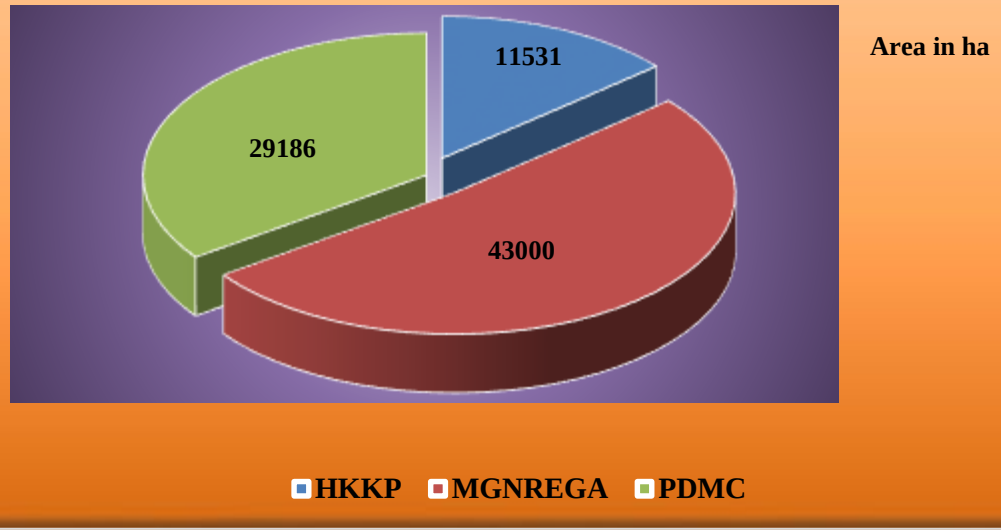


Fig 5.6 Component wise fundsrequired for Kanakapura taluk

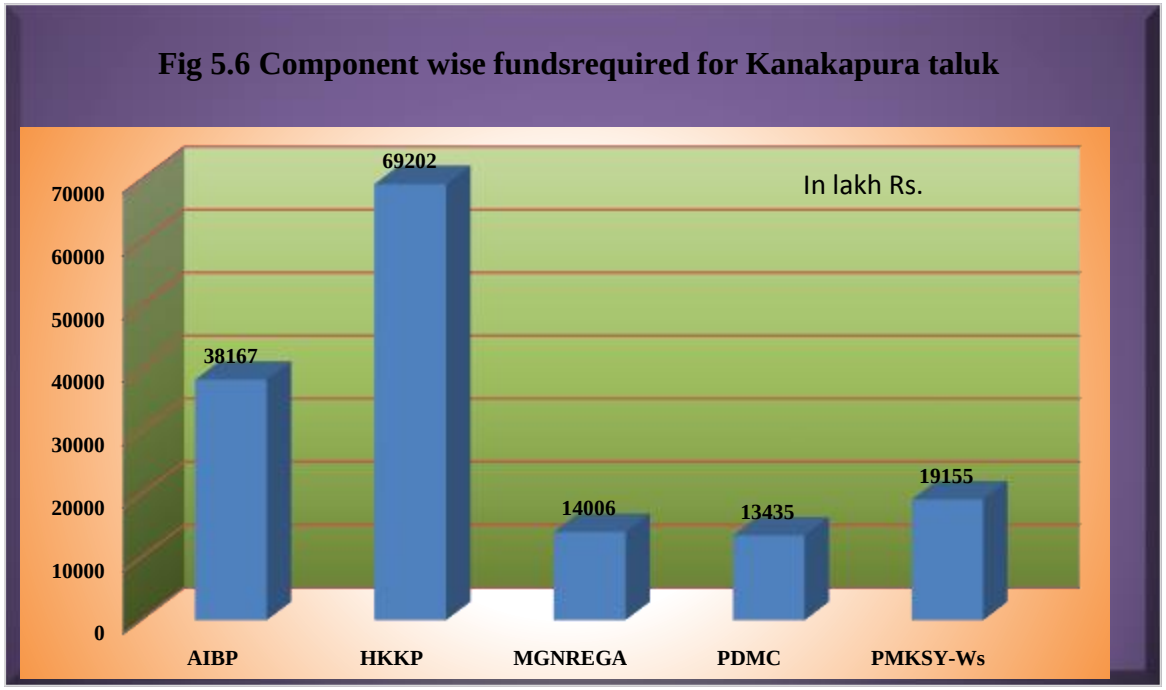


Table 5.4: STRATEGIC ACTION PLAN FOR CHANNAPATANA TALUK

Concerned Ministry/Department	Component	Activity	Total No. / Capacity (Cum)	Command area/Irrigation Potential(Ha)	Estimated cost/Year wise requirement of funds (lakh Rs.)					
					I Year	II Year	III Year	IV Year	V Year	Total
MoWR –MI	AIBP	Construction of Check dams	34	0	170	170	170	170	170	850
MoWR –Maj	AIBP	Lifting water from Shimsha to fill tanks for Drinking water scheme	2	0	3100	3100	3100	3100	3100	15500
MoWR –Maj	AIBP	Lifting water from Iggalur barrage to fill Kanva reservoir for Drinking water scheme	2	0	1000	1000	1000	1000	1000	5000
MoWR -MI	AIBP	Construction of ponds	78	0	32	31	31	31	31	156
MoWR-MI	Har Khet Ko Pani	Renovation of tanks	29	3192	1410	1410	1410	1410	1410	7050
MoWR-Maj	Har Khet Ko Pani	Rejuvenation of Iggalur barrage	2	0	100	100	100	100	100	500
MoWR-Maj	Har Khet Ko Pani	Modernization of LBC/RBC, distributaries, service roads etc.,	8	0	280	280	280	280	280	1400
MoWR –Maj	Har Khet Ko Pani	Modernization of Kanva canal system	7	0	3800	3800	3800	3800	3800	19000
MoWR –Maj	Har Khet Ko Pani	Rejuvenation of Kanva river	5	0	500	500	500	500	500	2500

DoLR-MoRD-PRED-Ramanagara Division	Har khet ko pani	RR of Water Bodies (desilting of tanks, Renovation of existing Tank bunds, sluices, waste weir, canals,etc)	84	1131	546	546	545	545	545	2727
DoLR-MoRD Agric Dept	MGNREGA	Farm ponds(Polythene cover & Diesel pump set)	1300	0	203.8	203.8	203.8	203.8	203.8	1019.0
DoLR-MoRD Agric Dept	MGNREGA	Check dams	20	0	18.0	18.0	18.0	18.0	18.0	90.0
DoLR-MoRD Agric Dept	MGNREGA	Field Bund	0	10300	570.6	570.6	570.6	570.6	570.6	2853.0
MOA &FW-DAC&FW - Horticulture Dept	Per drop more crop (Micro Irrigation)	Non-DPAP Drip	0	4048	394	394	394	394	394	1970
MOA &FW-DAC&FW - Agriculture Dept	Per drop more crop (Micro Irrigation)	Non-DPAP Sprinkler		7936	323	323	322	322	322	1612
MOA &FW-DAC&FW - Sericulture Dept	Per drop more crop (Micro Irrigation)	DPAP Drip	0	1860	380	379	379	379	379	1896
DoLR-MoRD - Agriculture Dept	PMKSY Watershed	Farm pond (polythene cover &Diesel pumpset)	5700	0	889.6	889.6	889.6	889.6	889.6	4448.0

DoLR-MoRD -Agri Dept	PMKSY Watershed	Check Dam	91	0	82	82	82	82	82	410
DoLR-MoRD - Agriculture Dept	PMKSY Watershed	Nallah bunds	8	0	8	8	8	8	8	40
DoLR-MoRD - Agriculture Dept	PMKSY Watershed	Rubber / BoulderCheck	100	0	4	3	3	3	3	16
DoLR-MoRD –Agri Dept	PMKSY Watershed	Recharge Pits	7800	0	500	500	500	500	500	2500
DoLR-MoRD –Agri Dept	PMKSY Watershed	Percolation Tanks	6		6	6	6	6	6	30
DoLR-MoRD - Agriculture Dept	PMKSY Watershed	Fishery Pond/ Gokatte	14		14	14	14	14	14	70
DoLR-MoRD - Agriculture Dept	PMKSY Watershed	RRS	100		50	50	50	50	50	250
TOTAL			**15390**	**28503**	**14381.0**	**14378.0**	**14376.0**	**14376.0**	**14376.0**	**71887.0**

Fig 5.7 Additional area proposed to be created in Channapatna taluk

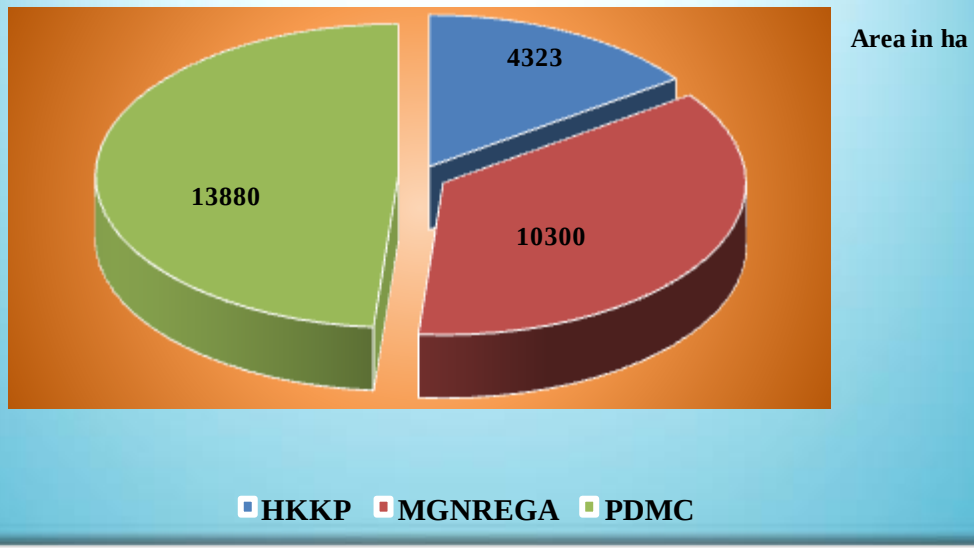
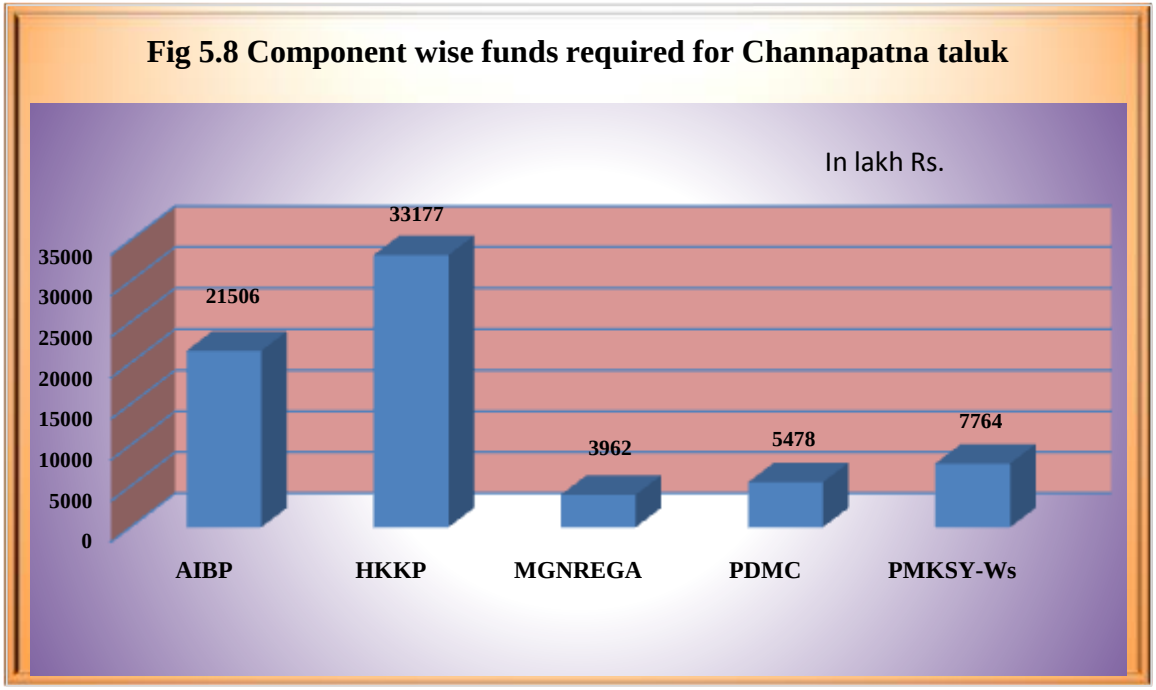


Fig 5.8 Component wise funds required for Channapatna taluk



STRATEGIC ACTION PLAN FOR RAMANAGARA DISTRICT

Table 5.5 : District Irrigation Plan - AIBP works

Sl. No	Name of the Blocks/sub Districts	Concerned Ministry/Department	Activity	Total No. / Capacity (Cum)	Command area/Irrigation Potential (Ha)	Estimated cost/Year wise requirement of funds (lakh Rs.)					
						I Year	II Year	III Year	IV Year	V Year	Total
1	Channapatna	MoWR - MI	Construction of Check dams MI	34	0	170	170	170	170	170	850
2	Channapatna	MoWR - Maj	Lifting water from Shimsha to fill tanks for Drinking water scheme	2	0	3100	3100	3100	3100	3100	15500
3	Channapatna	MoWR - Maj	Lifting water from Iggalur barrage to fill Kanva reservior for Drinking water scheme	2	0	1000	1000	1000	1000	1000	5000
3a	Channapatna	MoWR - MI	Construction of ponds	78	0	32	31	31	31	31	156
4	Kanakapura	MoWR- MI	Constuction of Check dams - MI	37	0	1871	1871	1871	1871	1871	9355
4a	Kanakapura	MoWR- MI	Construction of check dams- PRED	900	0	1800	1800	1800	1800	1800	9000
4b	Kanakapura	MoWR- MI	Drinking water scheme (Tank filling Scheme)	3	0	1000	1000	1000	1000	1000	5000
5	Kanakapura	MoWR - Maj	Lifting water from Arkavathy for drinking water	4	0	1940	1940	1940	1940	1940	9700

6	Kanakapura	MoWR-Maj	Construction & improvement of pickups	5	0	140	140	140	140	140	700
7	Kanakapura	MoWR-Maj	Providing lift irrigation & other developments	7	0	700	700	700	700	700	3500
7a	Kanakapura	MoWR-MI	Construction of ponds	456	0	183	183	182	182	182	912
8	Magadi	MoWR	Construction of Check dams - MI	12	0	240	240	240	240	240	1200
8a	Magadi	MoWR	Construction of check dams- PRED	754	0	1323	1323	1323	1323	1323	6615
8b	Magadi	MoWR	Construction of ponds	170	0	68	68	68	68	68	340
9	Ramanagara	MoWR	Construction of Check dams-MI	11	0	490	490	490	490	490	2450
9a	Ramanagara	MoWR	Construction of check dams- PRED	332	0	332	332	332	332	332	1660
10	Ramanagara	MoWR - Maj	Prevention of degradation of Arkavathy valley -Construction & improvements of pickups	2	0	40	40	40	40	40	200
11	Ramanagara	MoWR - Maj	Drinking water scheme (Tank filling Scheme)	2	0	2300	2300	2300	2300	2300	11500
12	Ramanagara	MoWR - Maj	Construction of ponds	176	0	71	71	70	70	70	352
Total				2987	**0**	**16800**	**16799**	**16797**	**16797**	**16797**	**83990**

Table 5.6: District irrigation plan- Har Khet Ko Pani

Sl. No	Name of the Blocks/sub Districts	Concerned Ministry/Department	Activity	Total No. / Capacity (Cum)	Command area/Irrigation Potential (Ha)	Estimated cost/Year wise requirement of funds (lakh Rs.)					
						I Year	II Year	III Year	IV Year	V Year	Total
1	Channapatna	MoWR-MI	Renovation of tanks	29	3192	1410	1410	1410	1410	1410	7050
2	Channapatna	MoWR-Maj	Rejuvenation of Iggalur barrage	2	0	100	100	100	100	100	500
3	Channapatna	MoWR-Maj	Modernization of LBC/RBC, distributaries, service roads etc	8	0	280	280	280	280	280	1400
4	Channapatna	MoWR – Maj	Modernization of Kanva canal system	7	0	3800	3800	3800	3800	3800	19000
5	Channapatna	MoWR – Maj	Rejuvenation of Kanva river	5	0	500	500	500	500	500	2500
6	Channapatna	DoLR-MoRD-	RR of Water Bodies (desilting of tanks, Renovation of existing Tank bunds, sluices, waste weir, canals,etc)	84	1131	546	546	545	545	545	2727
7	Kanakapura	MoWR –MI	Renovation of irrigation tanks	30	8175	2050	2050	2050	2050	2050	10250
12	Kanakapura	MoWR- Maj	Modernisation to	19	0	1540	1540	1540	1540	1540	7700

			canal and allied works in LBLC /RBLC & other works								
13	Kanakapura	MoWR- Maj	Rejuvenation of Arkavathy River-Phase-II (From Tippagondanahalli to Sangama)	2	0	600	600	600	600	600	3000
14	Kanakapurab	DoLR-MoRD-PRED-Ramanagara Division	RR of Water Bodies (desilting of tanks, Renovation of existing Tankbunds, sluices, waste weir, canals,etc)	118	3356	1611	1611	1610	1610	1610	8052
15	Kanakapura	MoWR- Maj	Rejuvenation of water bodies	5	0	8000	8000	8000	8000	8000	40000
16	Kanakapura	MoWR- Maj	Essential works	0	0	40	40	40	40	40	200
17	Magadi	MoWR	Renovation of irrigation tanks	29	2480	850	850	850	850	850	4250
18	Magadi	DoLR-MoRD-	RR of Water Bodies (desilting of tanks, Renovation of existing Tank bunds, sluices, waste weir, canals,etc)	136	1830	1543	1543	1543	1543	1542	7714
19	Ramanagara	MoWR	Renovation of Reserviors	15	3367	1830	1830	1830	1830	1830	9150

20	Ramanagara	MoWR – Maj	Rejuvenation of existing LBC and RBC canal for efficient watering to contemplated atchkat	2	0	400	400	400	400	400	2000
21	Ramanagara	DoLR-MoRD-	RR of Water Bodies (desilting of tanks, Renovation of existing Tank bunds, sluices, waste weir, canals,etc.,)	56	512	465	465	465	464	464	2323
Total				**547**	**24043**	**25565**	**25565**	**25563**	**25562**	**25561**	**127816**

Table 5.7: District irrigation plan – Per drop more crop-micro irrigation

Sl. No	Name of the Blocks/ sub Districts	Concerned Ministry/Department	Activity	Total No. / Capacity(Cum)	Command area/Irrigation Potential (Ha)	Estimated cost/Year wise requirement of funds (lakh Rs.)					
						I Year	II Year	III Year	IV Year	V Year	Total
1	Channapatna	MOA &FW-DAC&FW -	Non-DPAP Drip (Hort)	0	4084	394	394	394	394	394	1970
2	Channapatna	MOA &FW-DAC&FW -	Non-DPAP Sprinkler (Agri)	0	7936	323	323	322	322	322	1612
3	Channapatna	MOA &FW-DAC&FW -	DPAP Drip (Seri)	0	1860	380	379	379	379	379	1896
4	Kanakapura	MOA &FW-DAC&FW -	Non-DPAP Drip (Hort)	0	6319	612	612	612	612	612	3060
5	Kanakapura	MoWR- Maj	Drip irrigation	3	432	500	500	500	500	500	2500
6	Kanakapura	MOA &FW-DAC&FW -	Non-DPAP Sprinkler (Agri)	0	18372	747	747	746	746	746	3732
7	Kanakapura	MOA &FW-DAC&FW -	DPAP Drip(Seri)	0	4063	829	829	829	828	828	4143
8	Magadi	MOA &FW-DAC&FW	Non-DPAP Drip-Horticulture	0	7455	709	709	709	709	709	3545
9	Magadi	MOA &FW-DAC&FW	Non-DPAP Sprinkler-Agriculture	0	13444	546	546	546	546	546	2730

10	Magadi	MOA &FW-DAC&FW	DPAP Drip-Sericulture	0	2968	606	605	605	605	605	3026
11	Ramanagara	MOA &FW-DAC&FW	Non-DPAP Drip-Horticulture	0	4311	418	418	418	418	417	2089
12	Ramanagara	MOA &FW-DAC&FW	Non-DPAP Sprinkler-Agriculture	0	10248	417	416	416	416	416	2081
13	Ramanagara	MOA &FW-DAC&FW	DPAP Drip-Sericulture	0	2285	466	466	466	466	466	2330
Total				**3**	**83777**	**6947**	**6944**	**6942**	**6941**	**6940**	**34714**

Table 5.8: District irrigation plan- PMKSY-Watershed

SL. No	Name of the Blocks/sub Districts	Concerned Ministry/Department	Activity	Total No. / Capacity (Cum)	Command area/Irrigation Potential (Ha)	Estimated cost/Year wise requirement of funds (lakh Rs.)					
						I Year	II Year	III Year	IV Year	V Year	Total
1	Channapatna	DoLR-MoRD - Agriculture Dept	Farm pond (polythene cover &Diesel pumpset)	5700	0	889.6	889.6	889.6	889.6	889.6	4448
2	Channapatna	DoLR-MoRD - Agriculture Dept	Check Dam	91	0	82	82	82	82	82	410
3	Channapatna	DoLR-MoRD - Agriculture Dept	Nallah bunds	8	0	8	8	8	8	8	40
4	Channapatna	DoLR-MoRD - Agriculture Dept	Rubber / Boulder Check	100	0	4	3	3	3	3	16
6	Channapatna	DoLR-MoRD - Agriculture Dept	Recharge Pits	7800	0	500	500	500	500	500	2500
7	Channapatna	DoLR-MoRD - Agriculture Dept	Percolation Tanks	6	0	6	6	6	6	6	30
8	Channapatna	DoLR-MoRD - Agriculture Dept	Fishery Pond/ Gokatte	14	0	14	14	14	14	14	70
9	Channapatna	DoLR-MoRD - Agriculture Dept	RRS	100	0	50	50	50	50	50	250
10	Kanakapura	DoLR-MoRD - Agriculture Dept	Farm pond (polythene cover &Diesel pumpset)	18500	0	2912.6	2912.6	2912.6	2912.6	2912.6	14563
11	Kanakapura	DoLR-MoRD - Agriculture Dept	Check Dam	158	0	142.2	142.2	142.2	142.2	142.2	711

12	Kanakapura	DoLR-MoRD - Agriculture Dept	Nallah bunds	37	0	37	37	37	37	37	185
13	Kanakapura	DoLR-MoRD - Agriculture Dept	Rubber / Boulder Check	350	0	12	12	11	11	11	57
15	Kanakapura	DoLR-MoRD - Agriculture Dept	Rechharge Pits	8000	0	513	513	513	513	512	2564
16	Kanakapura	DoLR-MoRD - Agriculture Dept	Percolation Tanks	12	0	12	12	12	12	12	60
17	Kanakapura	DoLR-MoRD - Agriculture Dept	Fishery Pond/ Gokatte	28	0	28	28	28	28	28	140
18	Kanakapura	DoLR-MoRD - Agriculture Dept	RRS	350	0	175	175	175	175	175	875
19	Magadi	DoLR-MoRD - Agriculture Dept	Farm pond (polythene cover &Diesel pumpset)	11000	0	1723.4	1723.4	1723.4	1723.4	1723.4	8617
20	Magadi	DoLR-MoRD - Agriculture Dept	Check Dam	110	0	99	99	99	99	99	495
21	Magadi	DoLR-MoRD - Agriculture Dept	Nallah bunds	45	0	45	45	45	45	45	225
22	Magadi	DoLR-MoRD - Agriculture Dept	Rubber / Boulder Check	50	0	2	2	2	1	1	8
24	Magadi	DoLR-MoRD - Agriculture Dept	Recharge Pits	4500	0	289	289	288	288	288	1442
25	Magadi	DoLR-MoRD - Agriculture Dept	Percolation Tanks	9	0	9	9	9	9	9	45
26	Magadi	DoLR-MoRD - Agriculture Dept	Fishery Pond/ Gokatte	20	0	20	20	20	20	20	100
27	Magadi	DoLR-MoRD - Agriculture Dept	RRS	50	0	25	25	25	25	25	125

28	Ramanagara	DoLR-MoRD - Agriculture Dept	Farm pond (polythene cover &Diesel pumpset)	7300	0	1136.6	1136.6	1136.6	1136.6	1136.6	5683
29	Ramanagara	DoLR-MoRD - Agriculture Dept	Check Dam	62	0	55.8	55.8	55.8	55.8	55.8	279
30	Ramanagara	DoLR-MoRD - Agriculture Dept	Nallah bunds	22	0	22	22	22	22	22	110
31	Ramanagara	DoLR-MoRD - Agriculture Dept	Rubber / Boulder Check	100	0	4	3	3	3	3	16
33	Ramanagara	DoLR-MoRD - Agriculture Dept	Recharge Pits	4700	0	302	301	301	301	301	1506
34	Ramanagara	DoLR-MoRD - Agriculture Dept	Percolation Tanks	8	0	8	8	8	8	8	40
35	Ramanagara	DoLR-MoRD - Agriculture Dept	Fishery Pond/ Gokatte	18	0	18	18	18	18	18	90
36	Ramanagara	DoLR-MoRD - Agriculture Dept	RRS	100	0	50	50	50	50	50	250
Total				**68348**	**0**	**9194.2**	**9191.2**	**9189.2**	**9188.2**	**9187.2**	**45950**

Table 5.9: District irrigation plan- MGNREGA

Taluk	Concerned Ministry/ Department	Component	Activity	Total No. / Capacity (Cum)	Command area/Irrigation Potential (Ha)	Estimated cost/Year wise requirement of funds (lakh Rs.)					
						I Year	II Year	III Year	IV Year	V Year	Total
Channapatna	DoLR-MoRD Agric Dept	MGNREGA	Farm ponds (Polythene cover & Diesel pump set)	1300	0	203.8	203.8	203.8	203.8	203.8	**1019**
Channapatna	DoLR-MoRD Agric Dept	MGNREGA	Check dams	20	0	18.0	18.0	18.0	18.0	18.0	**90**
Channapatna	DoLR-MoRD Agric Dept	MGNREGA	Field Bund	0	10300	570.6	570.6	570.6	570.6	570.6	**2853**
Kanakapura	DoLR-MoRD-Agric Dept	MGNREGA	Farm ponds(Polythene cover & Diesel pump set)	2500	0	392	392	392	392	392	**1960**
Kanakapura	DoLR-MoRD-Agric. Dept	MGNREGA	Check dams	30	0	27	27	27	27	27	**135**
Kanakapura	DoLR-MoRD-Agric Dept	MGNREGA	Field Bund	0	43000	2382.2	2382.2	2382.2	2382.2	2382.2	**11911**

Taluk	Concerned Ministry/ Department	Component	Activity	Total No. / Capacity (Cum)	Command area/Irrigation Potential(Ha)	Estimated cost/Year wise requirement of funds (lakh Rs.)					
						I Year	**II Year**	**III Year**	**IV Year**	**V Year**	**Total**
Magadi	DoLR-MoRD Agric Dept	MGNREGA	Farm Ponds (Polythene cover & Diesel pumpset	2000	0	313.6	313.6	313.6	313.6	313.6	**1568**
Magadi	DoLR-MoRD Agric Dept	MGNREGA	Check dams	25	0	22.6	22.6	22.6	22.6	22.6	**113**
Magadi	DoLR-MoRD Agric Dept	MGNREGA	Fied lbunds	0	16700	925.2	925.2	925.2	925.2	925.2	**4626**
Ramanagara	DoLR-MoRD Agric Dept	MGNREGA	Farm pond (Polythene cover & diesel pump set)	1700	0	266.4	266.4	266.4	266.4	266.4	**1332**
Ramanagara	DoLR-MoRD Agric Dept	MGNREGA	Check dams	25	0	22.6	22.6	22.6	22.6	22.6	**113**
Ramanagara	DoLR-MoRD Agric Dept	MGNREGA	Field Bunds	0	21000	1163.4	1163.4	1163.4	1163.4	1163.4	**5817**
TOTAL				**7600**	**91000**	**6307.4**	**6307.4**	**6307.4**	**6307.4**	**6307.4**	**31537**

Table 5.10: PMKSY-DIP Strategic Action Plan - Area by Component in Ramanagara District

Area in ha

Component	Channapatna	Kanakapura	Magadi	Ramanagara	Total
HKKP	4323	11531	4310	3879	**24043**
MGNREGA	10300	43000	16700	21000	**91000**
PDMC	13880	29186	23867	16844	**83777**
Total	**28503**	**83717**	**44877**	**41723**	**198820**

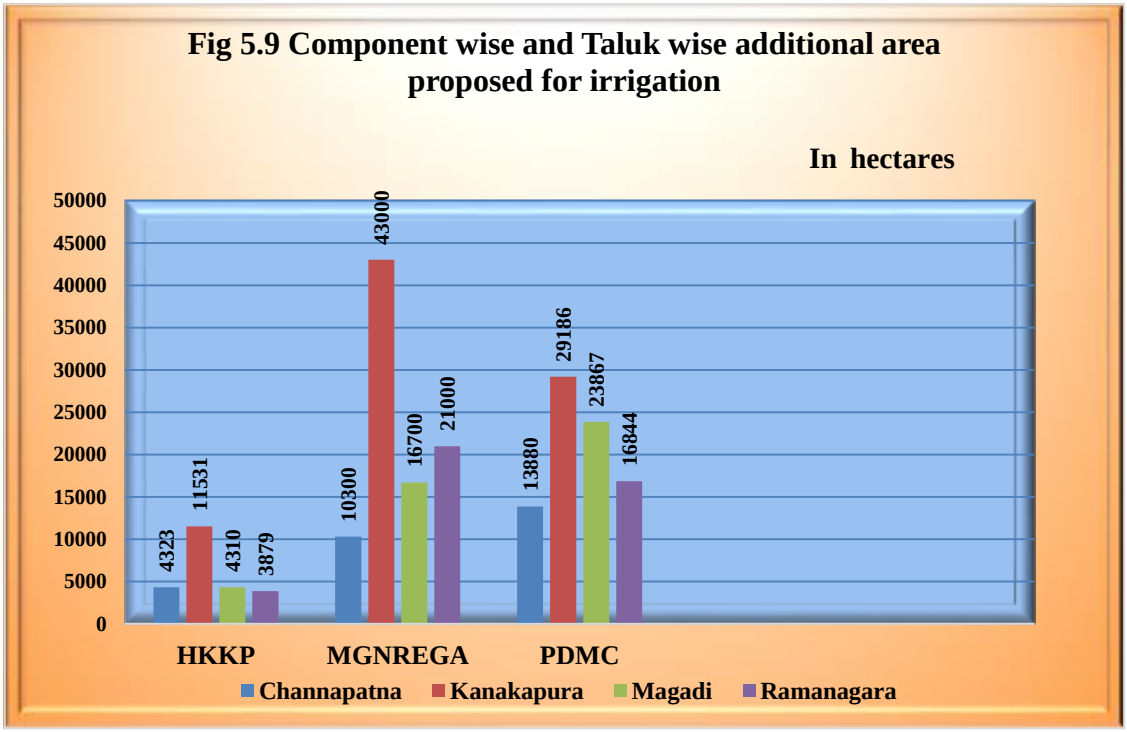


Table 5.11: PMKSY-DIP Strategic Action Plan - Estimated Cost by Component - Ramanagara District

Rs in lakhs

Component	Channapatna	Kanakapura	Magadi	Ramanagara	Total
AIBP	21506	38167	8155	16162	**83990**
HKKP	33177	69202	11964	13473	**127816**
MGNREGA	3962	14006	6307	7262	**31537**
PDMC	5478	13435	9301	6500	**34714**
PMKSY-Ws	7764	19155	11057	7974	**45950**
Total	**71887**	**153965**	**46784**	**51371**	**324007**

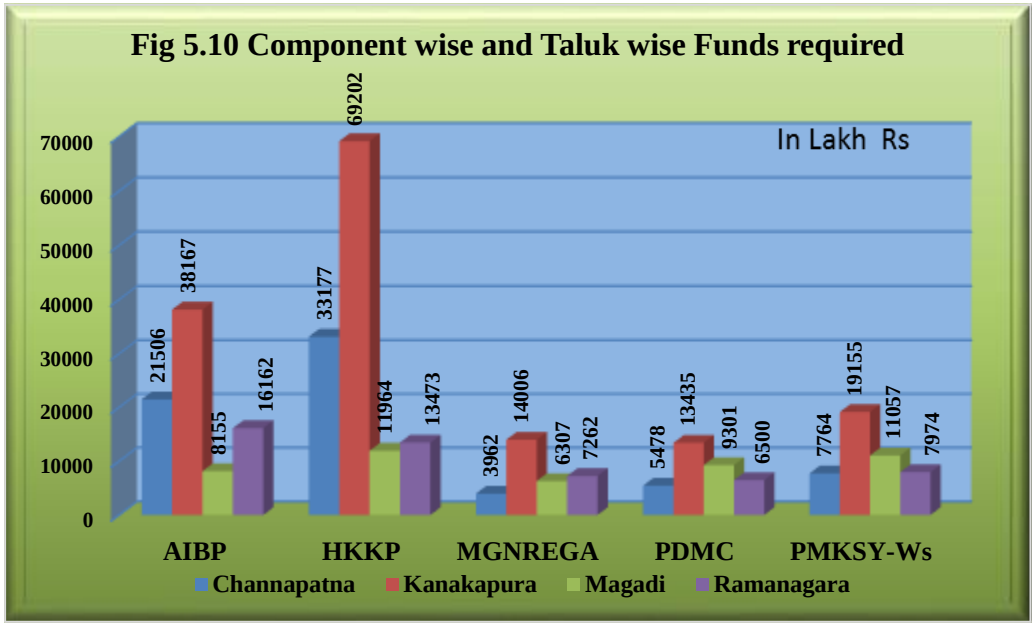


Table 5.12 : PMKSY-DIP Strategic Action Plan-taluk & year wise budget requirement

Rupees in lakhs

Taluk	Year wise Funds required					
	I Year	II Year	III Year	IV Year	V Year	Total
Channapatna	14381.0	14378.0	14376.0	14376.0	14376.0	**71887**
Kanakapura	30795.8	30795.8	30791.8	30790.8	30790.8	**153965**
Magadi	9358.2	9357.2	9357.2	9356.2	9355.2	**46784**
Ramanagara	10277.0	10275.0	10274.0	10273.0	10272.0	**51371**
Total	**64812.0**	**64806.0**	**64799.0**	**64796.0**	**64794.0**	**324007**

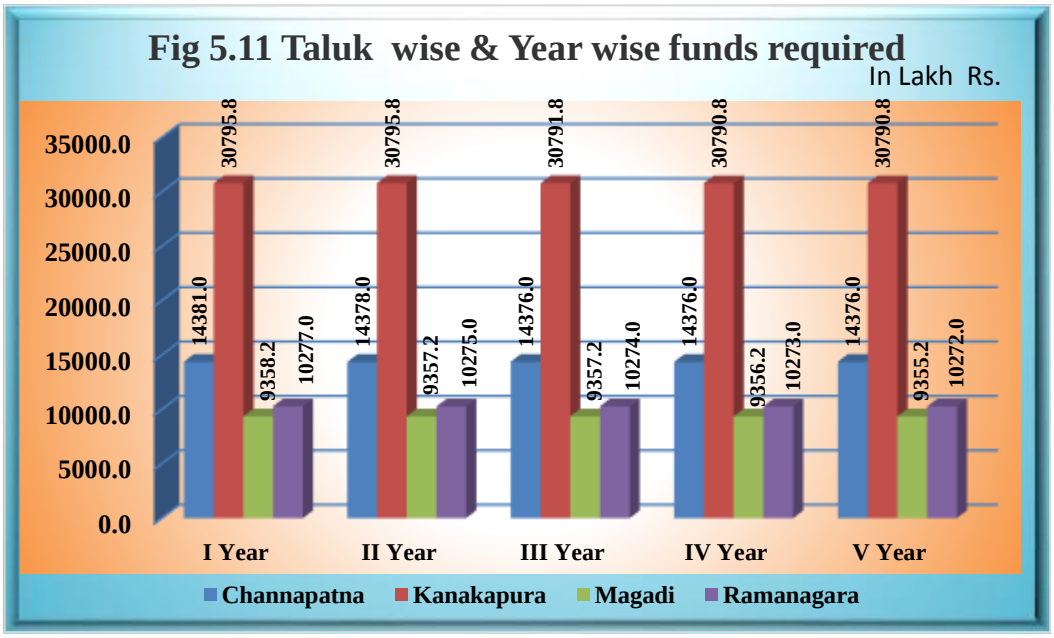
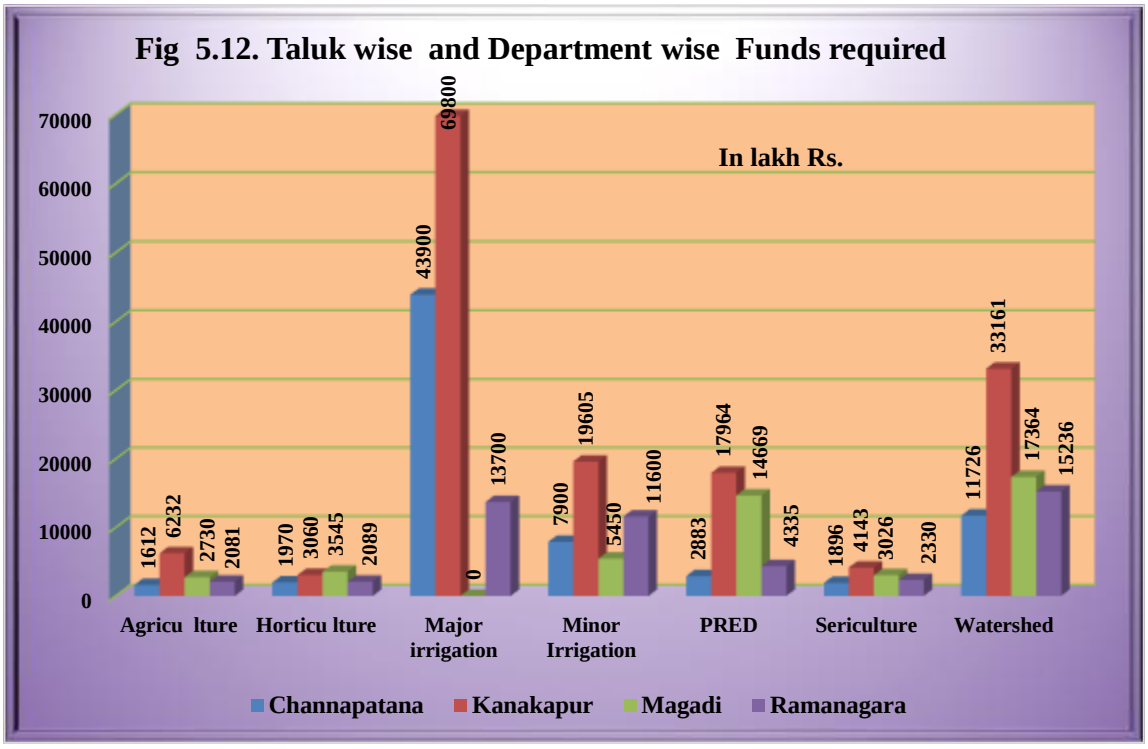


Table 5.13 : PMKSY-DIP Strategic Action Plan – taluk wise & Department wise budget requirement

Rupees in lakhs

Taluk	Agricu lture	Horticu lture	Major irrigation	Minor Irrigation	PRED	Sericu lture	Water shed	Total
Channapatana	1612	1970	43900	7900	2883	1896	11726	71887
Kanakapur	6232	3060	69800	19605	17964	4143	33161	153965
Magadi	2730	3545	0	5450	14669	3026	17364	46784
Ramanagara	2081	2089	13700	11600	4335	2330	15236	51371
Total	**12655**	**10664**	**127400**	**44555**	**39851**	**11395**	**77487**	**324007**



CONCLUSIONS

- There are no major irrigation projects in the district. Two medium irrigation projects namely Byramangala Reservoir Project and Kanva reservoir Project are located in the district. The Byramangala Reservoir Project irrigates a command area of 1949 hectares and Kanva Reservoir Project is built on Kanva river in Channapatna taluk irrigates a command area of 2076 ha.
- Bore wells are the major source of irrigation followed in all taluks. However, the ground water is depleting faster than natural recharge and major part of the district falls under over exploited zone.
- The, total water availability for the district from all sources at present is 0.36102 BCM, which is less than the present requirement (2015) of 0.68519 BCM (Chapter 4). There is negative water balance amounting to -0.32417 BCM during 2015 and -0.39802 BCM during 2020.
- The present plan focuses on creating more water harvesting structures so that run off water is more effectively collected and employed for irrigation.
- Efforts should also be made to enhance the underground recharge (by proper bore well recharge structures) and rejuvenating tanks/lakes by desilting and other means to hold more in tanks/lakes, etc.
- The plan envisages creation of new irrigation potential of 198820 ha in the next five years, which is distributed in all taluks requiring a budgetary provision of Rs 324007 lakhs to achieve this development.
- Around 42% of total irrigation potential expected in the district, will be created in Kanakapura taluk (83717 ha), Magadi, Ramanagara and Channapatna taluk will have benefit of 44877 ha, 41723 ha and 28503 ha respectively.

- Similarly, Kanakapura taluk will have a budgetary requirement of Rs 153965 lakh, out of total budget of Rs 324007 lakh. Channapatna taluk will have a budget of Rs 71887 lakh, Ramanagara Rs.51370 lakhs and Magadi 46784 lakhs.

APPENDICES

Appendix 1.1 Taluk wise Rainfall Pattern of Ramanagara district from 1990 to 2014, (In mm)

TALUK	YEAR	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Pre-monsoon	SW Monsoon	NE Monsoon	ANNUAL
CHANNAPATNA	1990	0.0	0.0	0.0	27.0	199.0	51.3	25.3	101.0	27.0	183.0	34.0	0.0	226.0	204.6	217.0	647.6
CHANNAPATNA	1991	0.0	0.0	0.0	66.4	199.2	244.0	46.6	114.2	237.5	395.6	152.4	0.0	265.6	642.3	548.0	1455.9
CHANNAPATNA	1992	0.0	0.0	0.0	11.8	42.6	170.1	46.0	135.2	136.2	118.7	54.2	0.0	54.4	487.5	172.9	714.8
CHANNAPATNA	1993	0.0	13.0	0.0	7.0	88.6	95.4	72.0	160.0	116.2	175.0	11.0	44.0	108.6	443.6	230.0	782.2
CHANNAPATNA	1994	19.0	0.0	0.0	132.4	77.4	35.8	17.4	33.0	32.6	332.0	24.7	0.0	228.8	118.8	356.7	704.3
CHANNAPATNA	1995	0.0	0.0	0.0	35.2	55.6	71.4	118.2	179.0	141.6	134.6	23.2	0.0	90.8	510.2	157.8	758.8
CHANNAPATNA	1996	0.0	0.0	0.0	80.2	56.0	154.4	20.8	197.6	261.6	181.2	13.8	50.6	136.2	634.4	245.6	1016.2
CHANNAPATNA	1997	0.0	0.0	23.5	28.5	104.2	33.6	48.6	105.4	147.2	183.8	160.6	23.2	156.2	334.8	367.6	858.6
CHANNAPATNA	1998	0.0	0.0	10.0	0.0	74.0	30.0	156.0	196.2	127.4	97.1	98.4	0.0	84.0	509.6	195.5	789.1
CHANNAPATNA	1999	0.0	0.0	0.0	171.2	160.6	50.4	16.2	114.6	167.2	513.8	96.3	14.7	331.8	348.4	624.8	1305.0
Average 1990-1999		**1.9**	**1.3**	**3.4**	**56.0**	**105.7**	**93.6**	**56.7**	**133.6**	**139.5**	**231.5**	**66.9**	**13.3**	**168.2**	**423.4**	**311.6**	**903.3**
CHANNAPATNA	2000	0.0	16.7	0.0	129.4	150.2	82.6	82.6	194.0	272.5	379.7	17.5	3.7	296.3	631.7	400.9	1328.9
CHANNAPATNA	2001	0.0	0.0	9.6	86.3	42.2	2.0	59.8	94.3	265.4	234.2	76.2	0.0	138.1	421.5	310.4	870.0
CHANNAPATNA	2002	0.0	0.0	5.3	10.4	94.8	85.2	63.0	16.0	72.8	93.1	25.7	0.0	110.5	237.0	118.8	466.3
CHANNAPATNA	2003	0.0	7.0	78.2	107.0	36.6	75.5	100.3	151.3	23.5	283.8	49.0	0.0	228.8	350.6	332.8	912.2
CHANNAPATNA	2004	6.1	0.0	0.0	112.1	220.5	75.5	215.9	34.6	259.3	239.8	27.8	0.0	338.7	585.3	267.6	1191.6
CHANNAPATNA	2005	0.0	5.0	12.0	69.3	171.0	20.7	99.6	202.1	237.7	374.0	95.3	3.7	257.3	560.1	473.0	1290.4
CHANNAPATNA	2006	0.0	0.0	95.2	5.7	130.6	86.9	32.9	25.2	59.4	46.1	53.7	0.0	231.5	204.4	99.8	535.7
CHANNAPATNA	2007	0.0	0.0	0.0	40.1	36.3	59.0	85.5	150.6	94.3	202.9	30.4	27.3	76.4	389.4	260.6	726.4
CHANNAPATNA	2008	0.0	2.2	126.7	5.2	194.5	30.2	61.9	271.1	75.4	181.4	33.6	2.5	328.6	438.6	217.5	984.7
CHANNAPATNA	2009	0.0	0.0	58.1	63.8	170.8	98.4	54.8	145.3	306.8	56.7	30.5	50.7	292.7	605.3	137.9	1035.9
Average 2000-2009		**0.6**	**3.1**	**38.5**	**62.9**	**124.8**	**61.6**	**85.6**	**128.5**	**166.7**	**209.2**	**44.0**	**8.8**	**229.9**	**442.4**	**261.9**	**934.2**
CHANNAPATNA	2010	1.6	0.0	8.5	34.0	107.2	29.7	100.4	80.6	136.3	119.7	186.5	1.6	151.3	347.0	307.8	806.1
CHANNAPATNA	2011	0.0	9.5	13.0	129.5	132.0	82.5	151.0	72.0	42.0	198.5	88.0	4.5	284.0	347.5	291.0	922.5
CHANNAPATNA	2012	0.0	0.0	0.0	37.0	96.0	12.5	77.5	75.0	29.5	85.5	77.0	21.5	133.0	194.5	184.0	511.5

CHANNAPATNA	2013	0.0	0.0	3.0	74.5	94.5	87.0	35.0	109.5	256.5	107.5	40.5	0.0	172.0	488.0	148.0	808.0
CHANNAPATNA	2014	0.0	0.5	29.0	44.0	60.5	40.0	24.5	92.5	241.1	82.5	4.5	0.0	134.0	398.1	87.0	619.1
Average 2010-2014		**0.3**	**2.0**	**10.7**	**63.8**	**98.0**	**50.3**	**77.7**	**85.9**	**141.1**	**118.7**	**79.3**	**5.5**	**174.9**	**355.0**	**203.6**	**733.4**
Channapatna Taluk Average of 1990 to 2014		**0.9**	**2.1**	**17.5**	**60.9**	**109.5**	**68.5**	**73.3**	**116.0**	**149.1**	**186.5**	**63.4**	**9.2**	**191.0**	**406.9**	**259.0**	**857.0**
KANAKAPURA	1990	1.2	0.0	34.8	38.4	85.4	7.4	44.0	97.4	30.6	116.8	9.2	0.0	159.8	179.4	126.0	465.2
KANAKAPURA	1991	0.0	0.0	0.0	34.5	39.0	177.5	9.8	102.8	159.7	274.2	93.6	0.0	73.5	449.8	367.8	891.1
KANAKAPURA	1992	0.0	0.0	0.0	17.2	91.1	173.2	29.8	60.4	210.0	139.0	128.4	0.0	108.3	473.4	267.4	849.1
KANAKAPURA	1993	0.0	0.0	0.0	53.4	62.0	144.0	23.0	121.3	115.5	132.8	43.8	63.2	115.4	403.8	239.8	759.0
KANAKAPURA	1994	0.0	0.0	0.0	119.0	126.5	64.3	71.5	45.1	89.7	302.2	25.8	0.0	245.5	270.6	328.0	844.1
KANAKAPURA	1995	1.2	0.0	0.0	41.4	62.8	83.8	20.0	180.8	158.9	137.6	50.8	0.0	105.4	443.5	188.4	737.3
KANAKAPURA	1996	0.0	7.0	0.0	59.0	58.6	190.2	101.4	188.4	205.4	287.2	0.0	40.8	124.6	685.4	328.0	1138.0
KANAKAPURA	1997	0.0	0.0	46.0	38.4	55.8	37.0	40.2	120.6	188.5	270.2	116.2	26.0	140.2	386.3	412.4	938.9
KANAKAPURA	1998	0.0	0.0	0.0	86.5	39.8	32.2	148.2	183.6	79.2	88.2	72.6	11.2	126.3	443.2	172.0	741.5
KANAKAPURA	1999	0.0	0.0	0.0	100.0	107.4	56.0	9.6	75.4	97.0	371.4	84.0	9.4	207.4	238.0	464.8	910.2
Average 1990-99		**0.2**	**0.7**	**8.1**	**58.8**	**72.8**	**96.6**	**49.8**	**117.6**	**133.5**	**212.0**	**62.4**	**15.1**	**140.6**	**397.3**	**289.5**	**827.4**
KANAKAPURA	2000	0.0	10.6	0.0	27.0	67.2	68.0	70.8	220.6	197.0	435.2	30.0	4.0	104.8	556.4	469.2	1130.4
KANAKAPURA	2001	16.0	0.0	0.0	54.2	24.8	0.0	19.4	70.8	228.0	131.0	41.8	0.0	95.0	318.2	172.8	586.0
KANAKAPURA	2002	0.0	0.0	0.0	13.0	48.5	50.6	32.6	5.6	152.1	93.6	17.0	0.0	61.5	240.9	110.6	413.0
KANAKAPURA	2003	0.0	0.0	14.4	25.4	10.6	47.8	62.0	75.5	32.0	274.1	9.2	0.0	50.4	217.3	283.3	551.0
KANAKAPURA	2004	0.0	38.6	2.0	72.0	155.3	150.0	163.2	23.0	221.0	258.4	5.0	0.0	267.9	557.2	263.4	1088.5
KANAKAPURA	2005	12.0	0.0	35.0	134.0	124.4	67.0	120.0	118.6	189.0	514.6	134.0	22.0	305.4	494.6	670.6	1470.6
KANAKAPURA	2006	0.0	0.0	86.0	0.0	88.0	94.0	19.6	34.0	48.2	84.0	89.0	0.0	174.0	195.8	173.0	542.8
KANAKAPURA	2007	0.0	0.0	0.0	49.2	112.0	58.6	92.6	90.6	69.0	188.1	43.0	37.0	161.2	310.8	268.1	740.1
KANAKAPURA	2008	0.0	0.0	60.0	33.5	85.2	9.0	98.0	231.2	158.5	125.3	65.0	2.0	178.7	496.7	192.3	867.7
KANAKAPURA	2009	0.3	0.2	42.5	27.1	233.1	89.4	38.0	198.5	262.4	25.9	63.9	25.1	303.2	588.3	114.9	1006.4
Average 2000-2009		**2.8**	**4.9**	**24.0**	**43.5**	**94.9**	**63.4**	**71.6**	**106.8**	**155.7**	**213.0**	**49.8**	**9.0**	**170.2**	**397.6**	**271.8**	**839.7**
KANAKAPURA	2010	1.7	0.0	11.2	113.4	148.5	79.0	149.3	143.4	70.0	130.3	182.6	1.3	274.8	441.7	314.2	1030.7
KANAKAPURA	2011	0.0	29.0	11.0	122.5	182.0	35.0	84.5	71.5	25.0	164.0	31.5	4.0	344.5	216.0	199.5	760.0
KANAKAPURA	2012	0.0	0.0	0.0	51.5	34.5	6.5	69.0	69.0	21.0	99.0	1.0	4.0	86.0	165.5	104.0	355.5
KANAKAPURA	2013	0.0	2.5	11.5	27.0	93.5	91.5	97.5	159.5	254.0	174.0	40.0	0.5	134.5	602.5	214.5	951.5

KANAKAPURA	2014	0.0	0.5	51.9	18.5	207.5	145.0	15.5	54.5	116.0	160.0	0.0	0.0	278.4	331.0	160.0	769.4
Average 2010-2014		**0.3**	**6.4**	**17.1**	**66.6**	**133.2**	**71.4**	**83.2**	**99.6**	**97.2**	**145.5**	**51.0**	**2.0**	**223.6**	**351.3**	**198.4**	**773.4**
Kanakapura taluk Average of 1990-2014		**1.1**	**4.0**	**16.4**	**56.3**	**100.3**	**77.1**	**68.2**	**108.0**	**128.8**	**190.1**	**54.4**	**8.7**	**178.2**	**382.1**	**253.2**	**813.5**
MAGADI	1990	3.2	0.0	8.0	6.0	86.1	56.8	44.5	83.0	42.8	177.6	49.6	18.0	103.3	227.1	245.2	575.6
MAGADI	1991	0.0	0.0	0.0	84.4	103.4	139.3	55.4	166.0	329.0	266.5	52.0	0.0	187.8	689.7	318.5	1196.0
MAGADI	1992	0.0	0.0	0.0	16.0	158.8	229.0	64.0	140.4	237.5	146.2	26.3	5.5	174.8	670.9	178.0	1023.7
MAGADI	1993	0.0	0.0	1.0	15.2	132.9	87.8	96.4	125.4	204.8	117.2	45.2	35.0	149.1	514.4	197.4	860.9
MAGADI	1994	7.0	6.0	0.0	16.4	60.0	42.8	126.1	84.0	63.5	331.4	10.1	10.0	89.4	316.4	351.5	757.3
MAGADI	1995	0.0	0.0	18.0	76.5	87.8	13.0	72.7	216.2	80.1	136.0	3.0	0.0	182.3	382.0	139.0	703.3
MAGADI	1996	0.0	0.0	8.0	52.5	74.3	88.0	24.5	241.4	301.8	171.6	3.0	8.0	134.8	655.7	182.6	973.1
MAGADI	1997	4.0	0.0	44.0	67.6	64.6	44.4	36.0	107.2	185.9	150.0	91.2	39.6	180.2	373.5	280.8	834.5
MAGADI	1998	0.0	0.0	0.0	43.8	75.0	45.6	143.3	351.9	165.5	78.9	53.6	10.0	118.8	706.3	142.5	967.6
MAGADI	1999	0.0	21.2	0.0	66.4	92.0	37.1	48.4	119.1	191.2	359.9	80.2	16.0	179.6	395.8	456.1	1031.5
Average 1990-1999		**1.4**	**2.7**	**7.9**	**44.5**	**93.5**	**78.4**	**71.1**	**163.5**	**180.2**	**193.5**	**41.4**	**14.2**	**150.0**	**493.2**	**249.2**	**892.4**
MAGADI	2000	0.0	88.0	0.0	163.0	145.9	90.6	65.0	262.8	205.3	318.6	4.8	0.0	396.9	623.7	323.4	1344.0
MAGADI	2001	0.0	0.0	6.0	108.0	7.0	26.0	81.0	99.6	308.0	119.4	88.0	4.4	121.0	514.6	211.8	847.4
MAGADI	2002	0.0	0.0	0.0	22.0	101.0	51.0	53.0	48.4	94.0	159.8	38.8	0.0	123.0	246.4	198.6	568.0
MAGADI	2003	0.0	0.0	44.1	62.0	0.0	63.4	56.0	217.4	42.0	244.0	0.0	0.0	106.1	378.8	244.0	728.9
MAGADI	2004	0.0	0.0	18.0	60.0	214.0	45.0	172.2	76.2	143.0	154.0	19.0	0.0	292.0	436.4	173.0	901.4
MAGADI	2005	0.0	76.0	2.0	83.0	89.0	45.0	269.4	129.8	76.1	301.8	76.6	9.4	250.0	520.3	387.8	1158.1
MAGADI	2006	0.0	0.0	113.0	10.3	83.0	137.4	29.3	17.0	59.4	111.7	109.8	0.0	206.3	243.1	221.5	670.9
MAGADI	2007	0.0	0.0	0.0	132.1	172.9	139.4	88.5	123.8	265.6	267.6	0.0	0.0	305.0	617.3	267.6	1189.9
MAGADI	2008	0.0	26.0	87.2	12.6	125.1	8.0	182.5	206.5	87.4	149.2	45.0	11.0	250.9	484.4	205.2	940.5
MAGADI	2009	0.1	0.0	23.0	60.2	225.9	178.2	60.9	77.4	250.7	19.1	33.7	14.7	309.2	567.2	67.5	943.9
Average 2000-2009		**0.0**	**19.0**	**29.3**	**71.3**	**116.4**	**78.4**	**105.8**	**125.9**	**153.2**	**184.5**	**41.6**	**4.0**	**236.0**	**463.2**	**230.0**	**929.3**
MAGADI	2010	19.7	0.0	7.8	91.4	87.6	61.7	112.2	115.9	121.9	169.3	136.8	1.3	206.5	411.7	307.4	925.6
MAGADI	2011	0.5	0.0	0.0	0.5	216.0	40.5	185.0	207.4	93.5	254.5	61.0	6.0	217.0	526.4	321.5	1064.9
MAGADI	2012	1.0	0.0	0.0	119.0	38.5	4.0	72.0	117.0	54.0	120.5	110.0	10.0	158.5	247.0	240.5	646.0
MAGADI	2013	0.0	0.0	31.5	31.0	107.0	93.5	32.5	36.5	137.0	59.0	17.5	9.5	169.5	299.5	86.0	555.0
MAGADI	2014	0.0	0.0	43.5	28.5	49.0	92.5	51.5	167.1	193.5	269.0	46.0	8.0	121.0	504.6	323.0	948.6

Average 2010-2014		**4.2**	**0.0**	**16.6**	**54.1**	**99.6**	**58.4**	**90.6**	**128.8**	**120.0**	**174.5**	**74.3**	**7.0**	**174.5**	**397.8**	**255.7**	**828.0**
Magadi taluk Average of 1990-2014		**1.9**	**7.2**	**17.9**	**56.6**	**103.2**	**71.7**	**89.2**	**139.4**	**151.1**	**184.2**	**52.4**	**8.4**	**186.9**	**451.4**	**245.0**	**883.2**
RAMANAGARA	1990	0.0	0.0	2.0	9.0	156.0	39.5	53.0	65.9	15.5	215.5	19.4	8.0	167.0	173.9	242.9	583.8
RAMANAGARA	1991	4.0	0.0	0.0	68.8	71.2	258.3	34.6	151.2	226.8	294.8	123.0	0.0	144.0	670.9	417.8	1232.7
RAMANAGARA	1992	0.0	0.0	0.0	28.0	103.0	122.3	113.4	115.6	178.8	217.8	40.4	0.0	131.0	530.1	258.2	919.3
RAMANAGARA	1993	0.0	0.0	0.0	39.0	92.8	96.4	51.0	157.0	155.0	212.4	84.2	54.0	131.8	459.4	350.6	941.8
RAMANAGARA	1994	4.0	0.0	0.0	46.0	63.4	29.8	93.0	42.4	32.2	248.8	20.4	0.0	113.4	197.4	269.2	580.0
RAMANAGARA	1995	0.0	0.0	0.0	76.0	51.0	68.0	77.0	155.6	92.5	107.2	10.0	0.0	127.0	393.1	117.2	637.3
RAMANAGARA	1996	0.0	0.0	0.0	91.4	98.0	142.8	35.5	291.0	261.0	121.8	8.8	34.4	189.4	730.3	165.0	1084.7
RAMANAGARA	1997	0.0	0.0	23.0	14.2	158.5	92.8	65.4	142.6	234.0	363.7	171.4	36.4	195.7	534.8	571.5	1302.0
RAMANAGARA	1998	0.0	0.0	2.4	100.4	10.4	38.4	563.6	376.4	220.6	108.7	73.9	16.2	113.2	1199.0	198.8	1511.0
RAMANAGARA	1999	0.0	0.0	0.0	95.8	116.0	46.8	30.0	121.9	212.1	466.3	105.5	7.5	211.8	410.8	579.3	1201.9
Average 1990-1999		**0.8**	**0.0**	**2.7**	**56.9**	**92.0**	**93.5**	**111.7**	**162.0**	**162.9**	**235.7**	**65.7**	**15.7**	**152.4**	**530.0**	**317.1**	**999.5**
RAMANAGARA	2000	0.0	9.0	0.0	82.5	75.0	57.8	105.4	258.7	249.2	337.6	12.1	3.0	166.5	671.1	352.7	1190.3
RAMANAGARA	2001	0.0	0.0	4.2	141.3	25.3	3.2	37.9	102.4	363.7	146.4	115.2	0.0	170.8	507.2	261.6	939.6
RAMANAGARA	2002	0.0	0.0	4.6	19.2	150.4	70.3	63.5	30.4	77.0	89.6	56.9	0.0	174.2	241.2	146.5	561.9
RAMANAGARA	2003	0.0	7.2	60.8	99.1	56.8	122.7	85.5	115.2	41.6	226.1	19.8	0.0	223.9	365.0	245.9	834.8
RAMANAGARA	2004	0.0	0.0	1.2	82.4	212.4	45.0	236.0	44.0	190.0	190.1	8.0	0.0	296.0	515.0	198.1	1009.1
RAMANAGARA	2005	0.0	2.0	3.2	48.2	233.9	16.2	231.1	39.2	228.1	275.2	98.0	0.0	287.3	514.6	373.2	1175.1
RAMANAGARA	2006	0.0	0.0	112.0	8.0	55.2	131.0	28.2	29.0	39.0	71.0	63.0	0.0	175.2	227.2	134.0	536.4
RAMANAGARA	2007	0.0	0.0	0.0	58.0	36.0	64.0	110.1	126.0	153.2	131.0	24.0	23.0	94.0	453.3	178.0	725.3
RAMANAGARA	2008	0.0	34.6	200.8	43.2	75.8	19.4	125.2	321.6	128.2	116.8	36.6	0.0	354.4	594.4	153.4	1102.2
RAMANAGARA	2009	0.0	0.0	30.1	60.8	259.7	115.2	55.9	155.3	322.8	21.9	30.1	27.0	350.6	649.2	79.0	1078.8
Average 2000-2009		**0.0**	**5.3**	**41.7**	**64.3**	**118.1**	**64.5**	**107.9**	**122.2**	**179.3**	**160.6**	**46.4**	**5.3**	**229.3**	**473.8**	**212.2**	**915.4**
RAMANAGARA	2010	2.8	0.0	18.8	89.9	127.2	125.3	109.2	121.5	87.7	127.7	156.4	3.3	238.7	443.7	287.4	969.8
RAMANAGARA	2011	1.5	0.5	4.0	220.5	231.0	72.5	171.4	85.5	72.0	118.4	24.0	9.0	457.5	401.4	151.4	1010.3
RAMANAGARA	2012	0.0	0.0	0.0	47.0	103.5	24.0	46.0	129.0	73.5	57.5	94.5	18.5	150.5	272.5	170.5	593.5
RAMANAGARA	2013	1.0	3.5	0.0	87.5	90.0	81.5	70.5	115.0	329.5	88.5	55.0	0.0	182.0	596.5	143.5	922.0
RAMANAGARA	2014	0.0	0.0	34.0	45.5	72.0	76.5	52.5	47.5	213.5	151.5	40.0	10.5	151.5	390.0	202.0	743.5
Average 2010-2014		**1.1**	**0.8**	**11.4**	**98.1**	**124.7**	**76.0**	**89.9**	**99.7**	**155.2**	**108.7**	**74.0**	**8.3**	**236.0**	**420.8**	**191.0**	**847.8**

Ramanagara taluk Average of 1990-2014	**0.6**	**2.0**	**18.6**	**73.1**	**111.6**	**78.0**	**103.2**	**127.9**	**165.8**	**168.3**	**62.0**	**9.7**	**205.9**	**474.9**	**240.1**	**920.9**
District Mean																
1990-1999	**1.1**	**1.2**	**5.5**	**54.0**	**91.0**	**90.5**	**72.3**	**144.2**	**154.0**	**218.2**	**59.1**	**14.5**	**152.8**	**461.0**	**291.8**	**905.6**
2000-2009	**0.9**	**8.1**	**33.4**	**60.5**	**113.5**	**67.0**	**92.7**	**120.8**	**163.7**	**191.8**	**45.4**	**6.8**	**216.4**	**444.3**	**244.0**	**904.6**
2010-2014	**1.5**	**2.3**	**13.9**	**70.6**	**113.9**	**64.0**	**85.4**	**103.5**	**128.4**	**136.8**	**69.6**	**5.7**	**202.3**	**381.3**	**212.2**	**795.7**
District Average from 1990-2014	**1.1**	**3.9**	**17.6**	**61.7**	**106.1**	**73.8**	**83.5**	**122.8**	**148.7**	**182.3**	**58.1**	**9.0**	**190.5**	**428.8**	**249.3**	**868.6**

Appendix 5.1: Strategic Action Plan for Minor Irrigation in Ramanagara Distirct under PMKSY

Sl. No.	Name of the Blocks/sub Districts	Concerned Ministry/Department	Component	Activity	Total No. / Capacity(Cum)	Command area/Irrigation Potential(Ha)	Period Implementation(5/7 yrs)	Estimated cost in lakh Rs.)	Addition Irrigation Acthkat in Ha
				Ramanagara Taluk:-					
				1) Byramangala Reservior	21149490.37	**1618.78**	5 Years	6000.00	150.00
				2) Nelligudda tank	6127123.443	**406.00**	5 Years	1500.00	50.00
				3) Vajarahalli tank	147791.6195	**42.10**	5 Years	100.00	15.00
				4) Hejjala tank	152887.8822	**60.70**	5 Years	100.00	15.00
				5) Thalaguppe tank	48414.49604	**40.70**	5 Years	100.00	15.00
				6) Heggadagera Eregowdana tank	1106455.266	**117.31**	5 Years	100.00	20.00
				7) Rangarayana doddi tank	962627.4066	**68.65**	5 Years	50.00	10.00
				8) Bollappana halli amni tank	325594.564	**48.56**	5 Years	500.00	25.00
				9) Kethohalli tank	358154.0204	**54.62**	5 Years	100.00	15.00
				10)Thammanayakanahalli tank	811438.2786	**174.00**	5 Years	100.00	15.00
				11)Annahalli tank	834371.4609	**206.40**	5 Years	100.00	15.00
				12)Averahalli tank	973159.6829	**207.50**	5 Years	100.00	20.00
				13)Jakkanahalli tank	279728.1993	**40.00**	5 Years	100.00	15.00
				14)Vaddarahalli tank	934314.8358	**231.00**	5 Years	100.00	15.00
				15)Achalu tank	122310.3058	**50.58**	5 Years	100.00	15.00
					Total	**3366.90**		**9150.00**	**410.00**
				Kanakapura taluk:-					
				1) Hosadoddi tank	384343.1484	**130.00**	5 Years	300.00	35.00

				2) Doddathandya tank	945243.4881	**275.00**	5 Years	300.00	35.00
				3) Murukani tank	881653.4541	**293.00**	5 Years	300.00	35.00
				4) Bannikuppe tank	717723.6693	**167.00**	5 Years	200.00	20.00
				5) Hulibele tank	565911.6648	**181.60**	5 Years	300.00	30.00
				6)Horalagallu tank	407616.0815	**147.60**	5 Years	300.00	30.00
				7) Rayasandra tank	326160.8154	**105.25**	5 Years	300.00	20.00
				8) Keralalu sandra tank	230945.6399	**65.90**	5 Years	100.00	35.00
				9) Cheeluru tank	1595413.364	**56.60**	5 Years	200.00	20.00
				10)Maralavadi tank	10514439.41	**1011.00**	5 Years	1000.00	15.00
				11)Neralahatti tank	1673612.684	**320.00**	5 Years	300.00	15.00
				12)Pichanakere tank	396375.9909	**96.20**	5 Years	200.00	15.00
				13)Anajavadi tank	155719.1393	**45.53**	5 Years	150.00	15.00
				14)Agrahara Haravana kere	169875.4247	**45.52**	5 Years	300.00	20.00
				15)Jattipalya tank	171574.1789	**40.43**	5 Years	250.00	15.00
				16)Thattekere	672706.6818	**192.00**	5 Years	300.00	20.00
				17)Chilukana kere	730464.3262	**52.56**	5 Years	500.00	25.00
				18)Muninagara tank	2116081.54	**300.00**	5 Years	500.00	25.00
				19)Medamaranahalli tank	1924405.436	**320.00**	5 Years	250.00	20.00
				20)Ravathanahalla tank	4109569.649	**1250.00**	5 Years	500.00	30.00
				21)Kadashivanahalli tank	812570.7814	**77.00**	5 Years	200.00	30.00
				22)Harandappanahalli tank	557191.393	**132.60**	5 Years	100.00	20.00
				23)Thattiguppe tank	1925254.813	**378.00**	5 Years	300.00	30.00
				24)Hanchaguli tank	450169.8754	**120.00**	5 Years	200.00	15.00
				25)Gorgi tank	2010192.525	**194.40**	5 Years	300.00	25.00

				26)Doddahalahalli tank	3190260.476	**445.00**	5 Years	300.00	35.00
				27)Boohalli tank	331257.0781	**72.28**	5 Years	300.00	30.00
				28)Harihara tank	950169.8754	**179.20**	5 Years	600.00	35.00
				29)Chikkagondanahalli tank	5902038.505	**931.00**	5 Years	400.00	35.00
				30) Suvarnamukhi Anicut RBC and LBC improvemens works		**550.00**	5 Years	1000.00	80.00
						8174.67	**Total**	**10250.00**	**810.00**
				Channapatna taluk:-					
				1) Doddamalluru tank	1186296.716	**425.00**	5 Years	300.00	25.00
				2) Ramammana kere	2452151.755	**380.00**	5 Years	200.00	20.00
				3)Patlu tank	488391.846	**70.30**	5 Years	300.00	30.00
				4) Mogenahalli tank	332672.7067	**55.00**	5 Years	200.00	20.00
				5)Haruru tank	1562570.781	**86.00**	5 Years	200.00	25.00
				6) Kudlooru tank	4558323.896	**105.22**	5 Years	200.00	20.00
				7) Mandya Bommanayakanahalli tank	887032.8426	**86.90**	5 Years	150.00	20.00
				8) Honnanayakanahalli tank	1047565.119	**58.80**	5 Years	200.00	20.00
				9) Dashavara tank	475651.1891	**97.00**	5 Years	200.00	20.00
				10)Kelagera tank	95130.23783	**98.00**	5 Years	200.00	20.00
				11)Nagavaraherakere tank	347395.2435	**84.80**	5 Years	250.00	25.00
				12)Bevooru tank	1789071.348	**92.30**	5 Years	300.00	25.00
				13)Machanayakanahalli tank	532276.3307	**46.60**	5 Years	200.00	20.00
				14)Neraluru tank	6228765.572	**160.00**	5 Years	200.00	20.00
				15)Malurupatna Dodda tank	651189.128	**77.10**	5 Years	300.00	30.00
				16)Sankalagere tank	1359003.398	**66.30**	5 Years	150.00	15.00

				17)Sulleri tank	1234428.086	**84.40**	5 Years	200.00	20.00
				18)Harokoppa tank	260475.6512	**61.50**	5 Years	200.00	20.00
				19)Akkuru tank	407701.0193	**74.00**	5 Years	500.00	35.00
				20)Sogala tank	2315968.29	**78.40**	5 Years	200.00	20.00
				21)Harisandra tank	263306.9083	**62.00**	5 Years	200.00	20.00
				22)Honganuru tank	2559456.399	**165.00**	5 Years	600.00	35.00
				23)Santhemogenahalli tank	420441.6761	**99.00**	5 Years	200.00	20.00
				24)Kodamballoi tank	464043.0351	**109.30**	5 Years	200.00	20.00
				25)Sigarajapura tank	271800.6795	**64.00**	5 Years	200.00	20.00
				26)Mungadahalli mulli tank	108437.1461	**58.30**	5 Years	200.00	20.00
				27)Byrashattihalli tank	36806.34202	**194.00**	5 Years	200.00	30.00
				28)Shanuboganahalli tank	314269.5357	**74.00**	5 Years	400.00	35.00
				29)Virupakshipura tank	6172140.43	**79.69**	5 Years	200.00	20.00
						3192.91	**Total**	**7050.00**	**670.00**
				Magadi Taluk:					
				1) Magadi Gowramma kere	934314.8358	40.47	5 Years	300.00	35.00
				2) Belagumba Kere	350226.5006	70.82	5 Years	150.00	25.00
				3) Byala Uramundina Kere	160249.1506	41.74	5 Years	100.00	20.00
				4) Muthurayana Gudi Palya	220271.8007	89.03	5 Years	150.00	15.00
				5) Kalya Dodda Kere	210079.2752	63	5 Years	100.00	20.00
				6) Kempasagara Kere	1698754.247	157.97	5 Years	200.00	15.00
				7)Hongekaval Somanakatte kere	110135.9003	43.32	5 Years	150.00	15.00
				8) Dodda Mudigere Uramundina Kere	147225.3681	44.23	5 Years	100.00	30.00

				9) Thippasandra Kere	1627972.82	109.4	5 Years	200.00	25.00
				10) Sankigatta Kere	1925254.813	167.14	5 Years	200.00	35.00
				11) Baginigere Tank	176670.4417	70.52	5 Years	100.00	30.00
				12)Hullenahalli Basavanakatte kere	113250.2831	86.75	5 Years	150.00	25.00
				13) Mayasandra Kere	1840317.101	156.62	5 Years	100.00	20.00
				14) Hebbalalu Kere	849377.1234	67.65	5 Years	150.00	15.00
				15) Tavarekere Dodda Kere	537938.8448	89.26	5 Years	100.00	25.00
				16) Chikkahalli Kere	325594.564	100.39	5 Years	150.00	25.00
				17) Kajipalya Kere	143827.8596	43.71	5 Years	150.00	20.00
				18) Kenchapura Kere	283125.7078	114.53	5 Years	100.00	15.00
				19) Kodihally Kere	642978.4824	51.93	5 Years	100.00	15.00
				20) Narasandra Dodda Kere	1203284.258	61.51	5 Years	100.00	25.00
				21) Biskur Dodda Kere	1382785.957	130.31	5 Years	200.00	30.00
				22) Muthusagara Kere	146942.2424	43.3	5 Years	150.00	30.00
				23)Hulikal Hirekere	2606738.392	207	5 Years	150.00	25.00
				24)Kannur Kere	161947.9049	41.28	5 Years	100.00	20.00
				25)Srigiripura Doddakere	146942.2424	54.63	5 Years	100.00	20.00
				26)Thammenahallikere	1867780.294	152.16	5 Years	200.00	15.00
				27)Solur Doddakere	478482.4462	44.92	5 Years	150.00	15.00
				28)Gudemaranahally Dodda Kere	818799.547	63.94	5 Years	150.00	15.00
				29) Banavadi Doddakere	FALSE	72.54	5 Years	200.00	15.00
						2480.07	**Total**	**4250.00**	**635.00**
				Grand Total		**17214.55**		**30700.**	**2525.00**

								00	
17				Newly Created WHs					
17.1			PMKSY Water shed	Farm Ponds					
17.2				**Check Dams:**					
				1) Channapatna taluk			**5Years**		
				Construction of Check dam near Kadaramangala village in Malur hobli				10.00	
				Construction of Check dam near Kadaramangala Halla in Malur hobli				10.00	
				Construction of Check dam near Gowagere village in Malur hobli				10.00	
				Construction of Check dam near Gowagere halla in Malur hobli				10.00	
				Construction of Check dam near M.B. halli in Malur hobli				10.00	
				Construction of Check dam near M.B. halli Halla in Malur hobli				10.00	
				Construction of Check dam near Honnanayakanahalli tank in Malur hobli				15.00	
				Construction of Check dam near Honnanayakanahalli (Averahalli village) feeder chanal in Malur hobli				15.00	

				Construction of Check dam near Bevoor Thimmappana betta in Malur hobli				25.00
				Construction of Check dam near Siddarameswara Betta halla in Malur hobli				25.00
				Construction of Check dam near Kelagere Konanakatte halla in Malur hobli				15.00
				Construction of Check dam near Nagavaraherekere halla in Malur hobli				25.00
				Construction of Check dam near Muguregowdana land in Mukke village in Malur hobli				50.00
				Construction of Check dam near Dashavara tank halla in Malur hobli				15.00
				Construction of Check dam near H.Mogenahalli tank halla in Malur hobli				15.00
				Construction of Check dam near Harur tank feeder canal in Malur hobli				25.00
				Construction of Check dam near Mylanayakanahalli halla in Malur hobli				25.00

				Construction of Check dam near Kodamballi tank halla in Virupakshipura hobli				15.00
				Construction of Check dam near Kodamballi tank halla feeder dcanal in Virupakshipura hobli				20.00
				Construction of Check dam near B.V.halli tank halla in Virupakshipura hobli				20.00
				Construction of Check dam near Menasiganahalli gudda halla in Virupakshipura hobli				20.00
				Construction of Check dam near Virupakshipura halla in Virupakshipura hobli				30.00
				Construction of Check dam near Honganur tank halla in Virupakshipura hobli				20.00
				Construction of Check dam near Honganur tank feeder canal halla in Virupakshipura hobli				20.00
				Construction of Check dam near Santhemogenahalli halla in Virupakshipura hobli				15.00
				Construction of Check dam near Santhemogenahalli tank feeder canal halla in Virupakshipura hobli				15.00

				Construction of Check dam near Kurnagere betta halla in Virupakshipura hobli				25.00
				Construction of Check dam near Narashimaswamy temple feeder canal halla in Virupakshipura hobli				25.00
								535.00
				2) Ramanagara taluk			5 years	
				Construction of Check dam near Mottedoddi halla in Kaylancha hobli				500.00
				Construction of Breidge Cum Barrage near Kotahalli halla in Kaylancha hobli				500.00
				Construction of Check dam near K.P.Doddi village halla in Kaylancha hobli				500.00
				Construction of Check dam near Lakshmipura village halla in Kutagal hobli				100.00
				Construction of Check dam near Lakshmipura Kolamaranakuppe village halla in Kutagal hobli				200.00
				Construction of Check dam near Lakshmipura Melaalli village halla in Kutagal hobli				200.00

				Construction of Check dam near Lakshmipura Talemale village halla in Kutagal hobli				200.00
				Construction of Check dam near Gollarahalli Voddarakempanapalya village halla in Kutagal hobli				100.00
				Construction of Check dam near Nalligudda tank halla in Bidadi hobli				50.00
				Construction of Check dam near Bijjrahalli katte halla				50.00
				Construction of Check dam near Bijjrahalli katte halla in Bidadi hobli				50.00
								2450.00
				3) Kanakapura taluk			5 years	
				Construction of Check dam near Basanavabetta Halla in Sathnur hobli				600.00
				Construction of Check dam near Thimmnadoddi village Halla				150.00
				Construction of Check dam near Thatteguppe Halla				100.00
				Construction of Check dam near Hunase podu Halla				100.00
				Construction of Check dam near Anthegowdanadoddi Halla				200.00

				Construction of Check dam near Thattekere Halla				200.00
				Construction of Check dam to halla near Muninagara village				250.00
				Construction of Check dam Voddarakuppe dandya Halla				200.00
				Construction of Check dam to Hanumanthanhalla village dodda halla				250.00
				Construction of Check dam to Ninganpura Terubeedi halla				200.00
				Construction of Check dam to Devarahalli Bilikal bettada halla				200.00
				Construction of Check dam to Kumbaradoddi halla				300.00
								2750.00
				4) Magadi talk:				
				Construction of Check dam near Bilagumga village Madabal hoblli				100.00
				Construction of Check dam near Harthi village Madabal hoblli				100.00
				Construction of Check dam near Hanumapura village Kasaba hoblli				100.00
				Construction of Check dam near Hujagal village Kasaba hoblli				100.00

				Construction of Check dam near Halshettahalli village Kasaba hoblli				100.00
				Construction of Check dam near Halshettahalli village Kasaba hoblli				100.00
				Construction of Check dam near Sathnur village Kasaba hoblli				100.00
				Construction of Check dam to Bargavathi valley Kasaba hoblli				100.00
				Construction of Check dam near Basavanapura village Kalya panchyath				100.00
				Construction of Check dam near Srigiripura village Kudur hobli				100.00
				Construction of Check dam near Thippasandra hand post				100.00
				Construction of Check dam near Baganigere village				100.00
								1200.00

Annexure 5.2a: List of works proposed under Pradhan Mantri Krishi Sinchaya yojana (PMKSY) in Manchanabele Reservoir Project, Sub-division, Manchanabele. -Magadi / Ramanagara Taluk

Sl.No	Name of Work	Purpose	Estimated cost. (Rs in Crore)	Grant Required for the Year				
				2017-18	2018-19	2019-20	2020-21	2021-22
1	Filling of tanks falling in Bidadi hobli of Ramangara taluk and Harohalli hobli of Kanakapura taluk by lifting water from Byramangala tank.	Drinking water scheme (Tank filling Scheme)	115.00	50.00	65.00	0.00	0.00	0.00
2	Prevention of degradation of Arkavathy valley near Madarasbaradoddi in Ramanagara Taluk	Construction and improvements to pickups	1.00	1.00	0.00	0.00	0.00	0.00
3	Prevention of degradation of Arkavathy valley near Kattamanadoddi in Ramanagara Taluk		1.00	1.00	0.00	0.00	0.00	0.00
4	Rejuvenation of existing LBC and RBC canal for efficient watering to contemplated atchkat	Rejuvenation	20.00	10.00	10.00	0.00	0.00	0.00
	Total		**137.00**	**62.00**	**75.00**	**0.00**	**0.00**	**0.00**

Annexure 5.2b: List of works proposed under Pradhan Mantri Krishi Sinchaya yojana (PMKSY) in Arkavathy Reservoir Project, Sub-division, Arobele. Kanakapura Taluk

Sl.No	Name of Work	Purpose	Estimated cost. (Rs in Crore)	Grant Required For the Year				
				2017-18	2018-19	2019-20	2020-21	2021-22
1	Lifting of water from foreshore of Arkavathy Dam to feed Garalapura and 12 other tanks of Kanakapura Taluk Ramanagara District.	Drinking water scheme (Tank filling Scheme)	70.00	30.00	40.00	0.00	0.00	0.00
2	Lifting water from river Arkavathy near T. Bekuppe to fill the tanks at Srinivasanahalli, Keralalsandra, Narayanapura and other villages in Kanakapura.		27.00	12.00	15.00	0.00	0.00	0.00
3	Prevention of degradation of Arkavathy valley near Chikkamudavadi in Kanakapura Taluk	Construction and improvements to pickups	1.00	1.00	0.00	0.00	0.00	0.00
4	Prevention of degradation of Arkavathy valley near Badeshebanadoddi in Kanakapura Taluk		0.60	0.60	0.00	0.00	0.00	0.00
5	Prevention of degradation of Arkavathy valley near Kunagal in Kanakapura Taluk		0.90	0.90	0.00	0.00	0.00	0.00
6	Prevention of degradation of Arkavathy valley near Hunasahalli in Kanakapura Taluk		0.90	0.90	0.00	0.00	0.00	0.00
7	Prevention of degradation of Arkavathy valley near Aralalusandra in Kanakapura Taluk		3.60	3.60	0.00	0.00	0.00	0.00
8	Design, Supply, Installation, Construction and Commission of Pumping Machinery, Pump House Electrical works, Pipe	Micro irrigation	5.00	5.00	0.00	0.00	0.00	0.00

	Network, Drip, Drip Irrigation system for Providing irrigation facility to **72Ha** of area of SCP beneficiaries. under **Arekoppa Micro Irrigation Scheme** in Aerokoppa village in kanakapura taluk Ramanagara District							
9	Design, Supply, Installation, Construction and Commission of Pumping Machinery, Pump House Electrical works, Pipe Network, Drip, Drip Irrigation system for Providing irrigation facility to **360 Ha.** of area of SCP beneficiaries. under **Hegganuru Micro Irrigation Scheme** in Hegganuru and other villages in kanakapura taluk Ramanagara District.		20.00	5.00	15.00	0.00	0.00	0.00
10	Modernisation to canal and allied works in LBC of ARP(0-23 KM)	Modernisation	15.00	5.00	10.00	0.00	0.00	0.00
11	Modernisation to canal and allied works in RBC of ARP(0-22 KM)		15.00	5.00	10.00	0.00	0.00	0.00
12	Modernisation to canal and allied works in RBLC of ARP(6-23 KM)	Modernisation	5.00	5.00	0.00	0.00	0.00	0.00
13	Modernisation of RBLIS Head works of ARP		2.00	2.00	0.00	0.00	0.00	0.00
14	Modernisation of LBLIS Head works of ARP		2.00	2.00	0.00	0.00	0.00	0.00
15	Modernisation of LBLC (0 to 3 KM and Reverse canal 0 to 3.2 KM) under ARP		2.00	2.00	0.00	0.00	0.00	0.00
16	Modernisation of LBLC (4 to 18 KM) under ARP		4.00	2.00	2.00	0.00	0.00	0.00
17	Modernisation of RBLC (0 to 5 KM) under ARP		2.00	2.00	0.00	0.00	0.00	0.00

18	Improvements to distributaries and allied works in RBLC of ARP (35 No.s in 6-23 KM)	Improvements to canal	5.00	5.00	0.00	0.00	0.00	0.00
19	Improvements to distributaries and allied works in LBLC of ARP (0 to18 KM and Reverse canal 0-3.20 KM)		5.00	1.00	2.00	2.00	0.00	0.00
20	Improvements to distributaries and allied works in LBC of ARP (52 No.s)		10.00	5.00	5.00	0.00	0.00	0.00
21	Improvements to distributaries and allied works in RBC of ARP (41 No.s)		10.00	5.00	5.00	0.00	0.00	0.00
22	Rejuvenation of Arkavathy River- Phase-II (From Tippagondanahalli to Sangama)	Rejuvenation	30.00	10.00	20.00	0.00	0.00	0.00
23	Development of Down stream of Arkavathy Reservoir (Beautification)	Irrigation	10.00	0.00	5.00	5.00	0.00	0.00
24	Providing Solar Power Project at Down Stream of Arkavathy Reservoir Project		15.00	0.00	5.00	5.00	5.00	0.00
25	Providing New lift irrigation schemes on Left side foreshore of Arkavathy Reservoir/ River		5.00	0.00	5.00	0.00	0.00	0.00
26	Providing New lift irrigation schemes on Right side foreshore of Arkavathy Reservoir/ River		5.00	0.00	5.00	0.00	0.00	0.00
	Total		**271.00**	**110.00**	**144.00**	**12.00**	**5.00**	**0.00**

Annexure 5.2c:List of works proposed under Pradhan Mantri Krishi Sinchaya yojana (PMKSY) in Iggaluru Barrage Project, Sub-division, Iggalur. - Channapatna Taluk

Sl.No	Name of Work	Purpose	Estimated cost. (Rs in crore)	Grant Required For the Year				
				2017-18	2018-19	2019-20	2020-21	2021-22
1	Lifting water from Shimsha River to feed Tanks In kanakapura & Ramanagara Taluk, Ramanagara District.	Drinking water scheme (Tank filling Scheme)	155.00	110.00	45.00	0.00	0.00	0.00
2	Rejuvenation of Iggalur Barrage	Rejuvenation	5.00	0.00	2.00	3.00	0.00	0.00
3	Modernization of flow canal from Ch.0.0 to 15.0km of IAP.	Modernisation of Canal	2.00	2.00	0.00	0.00	0.00	0.00
4	Modernization of Distributaries coming under flow canal from Ch.0.0 to 15.0km of IAP.		2.50	1.00	1.50	0.00	0.00	0.00
5	Modernization of LBC ,RBC, distributaries,service roads,pump, motors & electrical sub station & of LIS 'B' Point of IAP.	Modernisation of Canal	2.00	0.00	0.00	0.00	2.00	0.00
6	Modernization of LBC ,RBC,distributaries,service roads & electrical sub station of LIS 'A' Point of IAP.		2.00	0.00	0.00	0.00	0.00	2.00
7	Modernization of LBC ,RBC,distributaries,service roads & electrical sub station of LIS 'D' Point of IAP.		2.00	0.00	0.00	0.00	0.00	2.00
8	Modernization of LBC ,RBC,distributaries,service roads & electrical sub station of LIS 'C' Point of IAP.		2.00	0.00	0.00	0.00	0.00	2.00
9	Modernization of LBC ,RBC,distributaries,service roads & electrical sub station of LIS 'C2' Point of IAP.		1.50	0.00	0.00	0.00	0.00	1.50
	Total		**174.00**	**113.00**	**48.50**	**3.00**	**2.00**	**7.50**

Annexure 5.2d:List of works proposed under Pradhan Mantri Krishi Sinchaya yojana (PMKSY) in Kanva Reservoir Project, Sub-division, Channapattana.- Channapatna Taluk

Sl.No	Name of Work	Purpose	Estimated cost. (Rs in crore)	Grant Required For the Year				
				2017-18	2018-19	2019-20	2020-21	2021-22
1	.Scheme to Lift Water from foreshore of Iggalur Barrage to feed Kanva Reservoir and other 17 Tanks for Drinking water supply to 115 villages of Channapatana Taluk. (Additional Works)	Drinking water scheme (Tank filling Scheme)	50.00	20.00	30.00	0.00	0.00	0.00
2	Modernisation of Kanva Canal system under Kanva reservior project.	Canal improvements	40.00	20.00	20.00	0.00	0.00	0.00
3	Flood canal from Markonahalli to Kanva Reservoir		150.00	20.00	20.00	30.00	40.00	40.00
4	Rejuvenation of Kanva River	Rejuvenation	25.00	5.00	5.00	5.00	5.00	5.00
	Total		**265.00**	**65.00**	**75.00**	**35.00**	**45.00**	**45.00**

Annexure 5.3: Strategic Action Plan for Irrigation in District under PMKSY-Horticulture Department- Ramanagara District

Component: PER Drop More Crop – Non-DPAP

Period of Implementation (2016-17)										
Taluk	**Channapatna**		**Ramanagar**		**Magadi**		**Kanakpura**		**Total**	
Crop	**Proposed Area coverage**	**Estimated cost (Rs.in Lakhs)**	**Proposed Area coverage**	**Estimated cost (Rs.in Lakhs)**	**Proposed Area coverage**	**Estimated cost (Rs.in Lakhs)**	**Proposed Area coverage**	**Estimated cost (Rs.in Lakhs)**	**Proposed Area coverage**	**Estimated cost (Rs.in Lakhs)**
Coconut	32.50	7.78	26.00	6.24	55.62	17.45	35.00	8.73	149.12	40.20
Banana	50.40	60.80	75.90	78.60	108.90	163.15	98.65	101.00	333.85	403.55
Mango	52.00	12.47	74.10	17.76	102.80	38.90	110.50	36.00	339.40	105.14
Papaya	29.90	26.05	11.20	13.27	56.60	45.27	45.50	47.76	143.20	132.35
Tomato	16.90	17.25	18.20	14.44	33.30	32.00	28.00	26.10	96.40	89.79
Beans	15.60	15.92	5.20	5.31	11.70	11.94	11.70	11.84	44.20	45.01
Chilly	10.40	10.61	3.90	3.98	6.50	6.63	10.00	7.96	30.80	29.19
	207.70	**150.89**	**214.50**	**139.60**	**375.42**	**315.35**	**339.35**	**239.39**	**1137.0**	**845.22**
Period of Implementation (2017-18)										
Taluk	**Channapatna**		**Ramanagar**		**Magadi**		**Kanakpura**		**Total**	
Crop	**Proposed Area coverage**	**Estimated cost (Rs.in Lakhs)**	**Proposed Area coverage**	**Estimated cost (Rs.in Lakhs)**	**Proposed Area coverage**	**Estimated cost (Rs.in Lakhs)**	**Proposed Area coverage**	**Estimated cost (Rs.in Lakhs)**	**Proposed Area coverage**	**Estimated cost (Rs.in Lakhs)**
Coconut	34.13	8.17	27.30	6.55	58.40	18.33	36.75	9.16	156.58	42.21
Banana	52.92	63.84	79.70	82.53	114.35	171.31	103.58	106.05	350.54	423.73
Mango	54.60	13.10	77.81	18.65	107.94	40.85	116.03	37.80	356.37	110.39

Papaya	31.40	27.35	11.76	13.93	59.43	47.53	47.78	50.15	150.36	138.96
Tomato	17.75	18.11	19.11	15.16	34.97	33.60	29.40	27.41	101.22	94.28
Beans	16.38	16.72	5.46	5.57	12.29	12.54	12.29	12.43	46.41	47.26
Chilly	10.92	11.14	4.10	4.18	6.83	6.97	10.50	8.36	32.34	30.65
	218.09	**158.43**	**225.23**	**146.57**	**394.19**	**331.12**	**356.32**	**251.36**	**1193.819**	**887.483**
Period of Implementation (2018-19)										
Taluk	**Channapatna**		**Ramanagar**		**Magadi**		**Kanakpura**		**Total**	
Crop	**Proposed Area coverage**	**Estimated cost (Rs.in Lakhs)**	**Proposed Area coverage**	**Estimated cost (Rs.in Lakhs)**	**Proposed Area coverage**	**Estimated cost (Rs.in Lakhs)**	**Proposed Area coverage**	**Estimated cost (Rs.in Lakhs)**	**Proposed Area coverage**	**Estimated cost (Rs.in Lakhs)**
Coconut	35.83	8.58	28.67	6.88	61.32	19.24	38.59	9.62	164.40	44.32
Banana	55.57	67.03	83.68	86.66	120.06	179.87	108.76	111.35	368.07	444.91
Mango	57.33	13.75	81.70	19.58	113.34	42.89	121.83	39.69	374.19	115.91
Papaya	32.96	28.72	12.35	14.63	62.40	49.91	50.16	52.66	157.88	145.91
Tomato	18.63	19.02	20.07	15.92	36.71	35.28	30.87	28.78	106.28	98.99
Beans	17.20	17.55	5.73	5.85	12.90	13.16	12.90	13.05	48.73	49.62
Chilly	11.47	11.70	4.30	4.39	7.17	7.31	11.03	8.78	33.96	32.18
	228.99	**166.35**	**236.49**	**153.90**	**413.90**	**347.67**	**374.13**	**263.93**	**1253.509**	**931.857**
Period of Implementation (2019-20)										
Taluk	**Channapatna**		**Ramanagar**		**Magadi**		**Kanakpura**		**Total**	
Crop	**Proposed Area coverage**	**Estimated cost (Rs.in Lakhs)**	**Proposed Area coverage**	**Estimated cost (Rs.in Lakhs)**	**Proposed Area coverage**	**Estimated cost (Rs.in Lakhs)**	**Proposed Area coverage**	**Estimated cost (Rs.in Lakhs)**	**Proposed Area coverage**	**Estimated cost (Rs.in Lakhs)**
Coconut	37.62	9.01	30.10	7.22	64.39	20.21	40.52	10.10	172.63	46.54
Banana	58.34	70.38	87.86	90.99	126.07	188.87	114.20	116.92	386.47	467.16
Mango	60.20	14.44	85.78	20.56	119.00	45.03	127.92	41.67	392.90	121.71

Papaya	34.61	30.16	12.97	15.36	65.52	52.41	52.67	55.29	165.77	153.21
Tomato	19.56	19.97	21.07	16.72	38.55	37.04	32.41	30.21	111.60	103.94
Beans	18.06	18.43	6.02	6.14	13.54	13.82	13.54	13.71	51.17	52.11
Chilly	12.04	12.29	4.51	4.61	7.52	7.68	11.58	9.22	35.65	33.79
	240.44	**174.67**	**248.31**	**161.60**	**434.60**	**365.06**	**392.84**	**277.12**	**1316.185**	**978.450**
	Period of Implementation (2020-21)									
Taluk	**Channapatna**		**Ramanagar**		**Magadi**		**Kanakpura**		**Total**	
Crop	**Proposed Area coverage**	**Estimated cost (Rs.in Lakhs)**	**Proposed Area coverage**	**Estimated cost (Rs.in Lakhs)**	**Proposed Area coverage**	**Estimated cost (Rs.in Lakhs)**	**Proposed Area coverage**	**Estimated cost (Rs.in Lakhs)**	**Proposed Area coverage**	**Estimated cost (Rs.in Lakhs)**
Coconut	39.50	9.46	31.60	7.58	67.61	21.22	42.54	10.61	181.26	48.87
Banana	61.26	73.90	92.26	95.54	132.37	198.31	119.91	122.77	405.80	490.52
Mango	63.21	15.16	90.07	21.59	124.95	47.28	134.31	43.76	412.54	127.79
Papaya	36.34	31.66	13.61	16.13	68.80	55.03	55.31	58.05	174.06	160.87
Tomato	20.54	20.97	22.12	17.55	40.48	38.90	34.03	31.72	117.17	109.14
Beans	18.96	19.35	6.32	6.45	14.22	14.51	14.22	14.39	53.73	54.71
Chilly	12.64	12.90	4.74	4.84	7.90	8.06	12.16	9.68	37.44	35.48
	252.46	**183.41**	**260.73**	**169.68**	**456.33**	**383.31**	**412.48**	**290.98**	**1381.99**	**1027.37**
2016-17 to 2020-21	**1147.67**	**833.75**	**1185.25**	**771.35**	**2074.43**	**1742.50**	**1875.12**	**1322.78**	**6282.48**	**4670.38**

Annexure 5.4a: Programme For Improvements To M.I Tanks (Z.P. Tanks) Magadi Taluk, P.R.E. Division, Ramanagara

Sl. No	Name of G.P.	Name of village	Name of M.I Tanks	Water spread area (Hect)	Live Capacity (Mcft.)	Total atchkat area (Hect)	Improvements required to tanks										Total Amount Required for improvements (in.lakhs)
							Bunds strengthening		waste weir repair/reconstruction		sluice repair/reconstruction		canal/ repair/reconstruction		Cost For De silting (In Lakh)	Cost for Boundry Fixing (In Lakh)	
							Length of the bund (mtr)	Cost (In Lakh)	No	Cost (In Lakh)	No	Cost (In Lakh)	Lengtth (K.M)	Cost (In Lakh)			
1	Bachenahatti	Maralagondala	Maralagondala Hosakere	2.20	2.16	8.52	170.00	3.00	1	1.50	1	2.00	0.15	1.00	17.00	1.00	26.00
2	Thaggikuppe	Thaggikuppe	Thubinakere Thaggikuppe	2.90	0.88	15.07	120.00	2.00	1	1.50	1	2.00	0.14	1.00	23.00	2.00	32.00
3	Thaggikuppe	Thaggikuppe	Halerangiahna Katte - ,, -	1.70	0.66	6.06	150.00	3.00	1	1.50	1	2.00	0.20	1.00	13.00	1.00	22.00
4	Thaggikuppe	Thaggikuppe	Rangegowdana Katte - ,, -	2.00	1.32	8.07	130.00	3.00	1	1.50	1	2.00	0.15	1.00	16.00	1.00	25.00
5	Thaggikuppe	Dubbagottaga	Kannikarakere Dubbagottaga	4.50	1.10	4.6	133.00	3.00	1	2.00	1	2.00	0.25	1.00	36.00	3.00	47.00
6	Belagumba	Rangenahally	Uramundina Kere Rangenahally	1.65	1.10	19.18	150.00	3.00	1	1.50	1	2.00	0.12	0.00	13.00	1.00	21.00
7	Belagumba	Gudepalya	Kempathara Katte, Gudepalya	4.00	4.63	16.19	330.00	7.00	1	1.50	1	2.00	0.15	1.00	32.00	2.00	46.00
8	Belagumba	Harthi	Uramundina Kere, Harthi	3.90	1.72	22.34	350.00	7.00	1	1.50	1	2.00	0.13	1.00	31.00	2.00	45.00
9	Belagumba	Bantarakuppe	Bantarakuppe Kere	6.60	1.65	15.38	160.00	3.00	1	2.00	1	2.50	1.13	5.00	52.00	4.00	69.00
10	Belagumba	Byadarahally	Byadarahally Uramundina Kere	4.80	4.20	7.28	100.00	2.00	1	2.00	1	2.00	0.11	0.00	38.00	3.00	47.00
11	Motagondahalli	Bommanahally	Bommanahally Tank	12.00	1.43	12.14	110.00	2.00	1	3.00	1	4.00	2.20	9.00	95.00	7.00	120.00
12	Motagondahalli	Motaganahally	Motaganahally Dodda Kere	4.50	0.77	4.09	500.00	10.00	1	2.00	1	2.00	0.40	2.00	36.00	3.00	55.00

13	Motagondahalli	Motaganahally	Motaganahally Gowri Katte	1.75	0.99	21.96	160.00	3.00	1	1.50	1	2.00	2.50	10.00	14.00	1.00	32.00
14	Gudemaranhalli	Gargeswarapura	Gargeswarapura Majjigemarada Katte	2.00	1.50	8.09	85.00	2.00	1	1.50	1	2.00	0.70	3.00	16.00	1.00	26.00
15	Gudemaranhalli	Gargeswarapura	Gargeswarapura Arali Katte	2.10	1.30	13.36	325.00	7.00	1	1.50	1	2.00	1.90	8.00	17.00	1.00	37.00
16	Gudemaranhalli	Muddenahally	Muddenahally Ayyan Kere	3.30	0.88	7.58	300.00	6.00	1	1.50	1	2.00	0.48	2.00	26.00	2.00	40.00
17	Gudemaranhalli	Gudemaranahally	Gudemaranahally Chikka Kere	6.90	3.72	5.42	400.00	8.00	1	2.50	1	2.50	0.68	3.00	55.00	4.00	75.00
18	Solur	Kalyanapura	Kalyanapura Gopinayakana Katte	6.10	2.75	7	260.00	5.00	1	2.50	1	2.50	0.30	1.00	48.00	4.00	63.00
19	Solur	Chikkasolur	Chikkasolur Balaji Kere	8.80	2.29	19.82	300.00	6.00	1	2.50	1	3.50	2.20	9.00	70.00	5.00	96.00
20	Kudur	Kuduru	Kuduru Channammana Kere	14.80	24.48	21.18	432.00	9.00	1	4.00	1	5.00	2.00	8.00	117.00	9.00	152.00
21	Solur	Thattekere	Thattekere Chikka Kere	5.60	2.29	7.74	300.00	6.00	1	2.00	1	2.50	1.00	4.00	44.00	3.00	62.00
22	Solur	Ramanahally	Ramanahally Kere	1.60	5.20	9.05	180.00	4.00	1	1.50	1	2.00	1.10	4.00	13.00	1.00	26.00
23	Solur	Goruru	Goruru Kere	6.04	1.82	17.45	300.00	6.00	1	2.00	1	2.50	1.20	5.00	48.00	4.00	68.00
24	Kannuru	Naganahally	Naganahally Kere	3.00	0.78	8.09	150.00	3.00	1	1.50	1	2.00	0.00	0.00	24.00	2.00	33.00
25	Madigondanahalli	Kannasandra	Kannasandra Sare Katte	1.60	0.52	8.56	189.00	4.00	1	1.50	1	2.00	0.00	0.00	13.00	1.00	22.00
26	Lakkenahalli	Biravara	Biravara Hippemarada Kere	6.40	0.10	18.65	360.00	7.00	1	2.00	1	2.50	2.00	8.00	51.00	4.00	75.00
27	Lakkenahalli	Koramangala	Koramangala Kodagi Kere	9.60	3.65	22.25	510.00	10.00	1	3.00	1	4.00	2.20	9.00	76.00	6.00	108.00
28	Lakkenahalli	Hosahalli	Hosahalli Chikka Kere	1.60	0.52	7.28	210.00	4.00	1	1.50	1	2.00	0.70	3.00	13.00	1.00	25.00

29	Motagondahalli	Kodihalli	Kodihalli Kere	2.00	0.52	5.67	210.00	4.00	1	1.50	1	2.00	0.50	2.00	16.00	1.00	27.00
30	Motagondahalli	Pemmanahally	Pemmanahally Kere	2.80	0.52	16.65	295.00	6.00	1	1.50	1	2.00	2.70	11.00	22.00	2.00	45.00
31	Motagondahalli	Basavanahally	Basavanahally Kere	2.80	0.78	8.5	149.00	3.00	1	1.50	1	2.00	2.00	8.00	22.00	2.00	39.00
32	Lakkenahalli	Lakkanahally	Lakkanahally Thavarekatte	2.80	0.78	11.33	160.00	3.00	1	1.50	1	2.00	2.50	10.00	22.00	2.00	41.00
33	Bittasandra	Yannagere	Yannagere Uramundina Kere	2.60	2.08	15.02	370.00	7.00	1	1.50	1	2.00	2.20	9.00	21.00	2.00	43.00
34	Lakkenahalli	Lakkanahally	Lakkanahally Uramundina Kere	3.20	1.04	6.19	360.00	7.00	1	1.50	1	2.00	1.00	4.00	25.00	2.00	42.00
35	Bittasandra	Mallikarjuna Paly H	Mallikarjuna Paly Halasimarada Palay	2.00	0.52	4.86	185.00	4.00	1	1.50	1	2.00	0.50	2.00	16.00	1.00	27.00
36	Bittasandra	Bittasandra	Bittasandra Solli Katte	1.60	1.21	11.74	300.00	6.00	1	1.50	1	2.00	0.60	2.00	13.00	1.00	26.00
37	Bittasandra	Muppenahally	Muppenahally Gowdara Kere	6.00	2.08	12.16	418.00	8.00	1	2.00	1	3.00	0.40	2.00	48.00	4.00	67.00
38	Bittasandra	Channahalli	Channahalli Kere	2.80	0.78	4.45	220.00	4.00	1	1.50	1	2.00	0.81	3.00	22.00	2.00	35.00
39	Banavadi	Palanahally	Palanahally Kere	6.00	0.78	11.74	400.00	8.00	1	2.00	1	3.00	0.80	3.00	48.00	4.00	68.00
40	Madigondanahalli	Gaddige Matt	Gaddige Matt Hosakere	3.00	0.52	18.62	153.00	3.00	1	1.50	1	2.00	1.20	5.00	24.00	2.00	38.00
41	Banavadi	Udukunte	Udukunte Dodda Kere	1.60	0.70	23.93	420.00	8.00	1	1.50	1	2.00	0.60	2.00	13.00	1.00	28.00
42	Banavadi	Shanthapura	Shanthapura Kere	4.90	2.86	18.62	390.00	8.00	1	1.50	1	2.30	1.60	6.00	39.00	3.00	60.00
43	Banavadi	Mylanahalli	Mylanahalli Hosakere	3.00	0.52	19.83	140.00	3.00	1	1.50	1	2.00	0.00	0.00	24.00	2.00	33.00
44	Banavadi	Aluru	Aluru Dodda Kere	10.40	3.48	30.35	480.00	10.00	1	4.00	1	4.00	1.80	7.00	82.00	6.00	113.00
45	Banavadi	Sriranganahally	Sriranganahally Dodda Kere	6.40	2.08	20.3	420.00	8.00	1	2.00	1	2.50	7.00	28.00	51.00	4.00	96.00

46	Bittasandra	Rangenahally	Rangenahally Kere	7.60	4.42	18.21	270.00	5.00	1	2.30	1	3.00	2.50	10.00	60.00	5.00	85.00
47	Chikkahalli	Kurubarahally	Kurubarahally Hosa Kere	0.60	1.92	18.97	240.00	5.00	1	1.50	1	2.00	0.50	2.00	5.00	0.00	16.00
48	Chikkahalli	Tavarekere	Tavarekere Gangena Kere	0.40	2.58	12.36	300.00	6.00	1	1.50	1	2.00	1.00	4.00	3.00	0.00	17.00
49	chikkahalli	Gangenahally	Gangenahally Chikka Kere	0.40	8.08	20.24	240.00	5.00	1	1.50	1	2.00	1.00	4.00	3.00	0.00	16.00
50	Madabal	Puradapalya	Puradapalya Kere	0.30	0.45	6.07	200.00	4.00	1	1.50	1	2.00	0.60	2.00	2.00	0.00	12.00
51	Hullenahallli	Hullenahalli	Hullenahalli Chikka Katte	3.88	0.10	5.67	240.00	5.00	1	1.50	1	2.00	0.60	2.00	31.00	2.00	44.00
52	Bachenahatti	Kalluru	Kalluru Gowdana Kere	3.60	5.20	4.98	240.00	5.00	1	1.50	1	2.00	0.40	2.00	29.00	2.00	42.00
53	Bachenahatti	Kalluru	Kalluru Hosakere	2.50	4.62	11.74	440.00	9.00	1	1.50	1	2.00	0.35	1.00	20.00	2.00	36.00
54	chikkahalli	Sannenahally	Sannenahally kere	10.00	10.00	36.45	420.00	8.00	1	3.00	1	4.00	2.14	9.00	79.00	6.00	109.00
55	chikkahalli	Honnapura	Honnapura Kere	8.00	4.05	12.95	408.00	8.00	1	2.50	1	3.00	0.80	3.00	63.00	5.00	85.00
56	chikkamudigere	Kankere	Kankere Kere	1.16	3.12	20.79	469.00	9.00	1	1.50	1	2.00	0.40	2.00	9.00	1.00	25.00
57	Kannuru	Kannur	Kannur Doddi Katte	5.80	1.44	12.86	380.00	8.00	1	2.00	1	2.50	0.35	1.00	46.00	3.00	63.00
58	Kannuru	Chowdibeguru	Chowdibeguru Gowdana Katte	3.20	0.80	10.93	270.00	5.00	1	1.50	1	2.00	1.20	5.00	25.00	2.00	41.00
59	Kannuru	Chowdibegur	Chowdibegur Kattara Katte	2.80	0.60	5.67	270.00	5.00	1	1.50	1	2.00	0.40	2.00	22.00	2.00	35.00
60	Kannuru	Chowdibegur	Chowdibegur Hosa Katte	3.60	1.30	8.5	307.00	6.00	1	1.50	1	2.00	0.73	3.00	29.00	2.00	44.00
61	Srigiripura	Chikkamaskal	Chikkamaskal Chikka Kere	10.80	1.30	28.42	240.00	5.00	1	3.00	1	4.00	0.62	2.00	86.00	6.00	106.00
62	Srigiripura	Chikkamaskal	Chikkamaskal Sanna Katte	2.00	0.30	12.14	415.00	8.00	1	1.50	1	2.00	0.61	2.00	16.00	1.00	31.00
63	Srigiripura	Chikkamaskal	Chikkamaskal Giddana Katte Vakillarakatte	2.80	0.58	6.88	210.00	4.00	1	1.50	1	2.00	1.23	5.00	22.00	2.00	37.00
64	Srigiripura	Naganahally	Naganahally Narasappana	2.40	0.20	12.25	240.00	5.00	1	1.50	1	2.00	0.90	4.00	19.00	1.00	33.00

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65	Srigiripura	Dollenahalli	Dollenahalli Chikka Kere	2.40	3.00	12.86	270.00	5.00	1	1.50	1	2.00	1.21	5.00	19.00	1.00	34.00
66	Srigiripura	Hosahalli	Hosahalli Chikka Kere	6.00	2.00	11.03	350.00	7.00	1	2.00	1	3.00	1.05	4.00	48.00	4.00	68.00
67	Srigiripura	Veerasagara	Veerasagara Hosa Kere	3.00	1.80	10.12	400.00	8.00	1	1.50	1	2.00	1.30	5.00	24.00	2.00	43.00
68	Srigiripura	Srigiripura	Srigiripura Ganga Shetti Kere	7.00	3.50	32.32	270.00	5.00	1	2.00	1	3.00	2.25	9.00	55.00	4.00	78.00
69	Srigiripura	Bettahally	Bettahally Nakali Katte	4.80	3.30	8.5	300.00	6.00	1	1.50	1	2.00	0.79	3.00	38.00	3.00	54.00
70	Narasandra	Narasandra	Narasandra Mallappanahally Kere	31.20	21.00	36.83	600.00	12.00	1	5.00	1	5.00	1.98	8.00	247.00	19.00	296.00
71	Srigiripura	Bettahally	Bettahally Uramundina Kere	6.20	1.20	14.31	290.00	6.00	1	2.00	1	2.50	0.93	4.00	49.00	4.00	68.00
72	Adarangi	Adarangi	Adarangi Kanuve Gowdana Katte	1.20	3.00	17.11	265.00	5.00	1	1.50	1	2.00	0.62	2.00	10.00	1.00	22.00
73	Adarangi	Adarangi	Adarangi Hosa Kere	1.95	2.00	10.12	380.00	8.00	1	1.50	1	2.00	1.21	5.00	15.00	1.00	33.00
74	Banavadi	Veerapura	Veerapura Kere	1.60	3.00	6.17	210.00	4.00	1	1.50	1	2.00	0.60	2.00	13.00	1.00	24.00
75	Madigondanahalli	Malligunte	Malligunte Uramundina Kere	2.00	1.00	6.91	275.00	6.00	1	1.50	1	2.00	0.80	3.00	16.00	1.00	30.00
76	Kudur	Kuntanagere	Kuntanagere Uramundina Kere	6.40	1.20	6.9	390.00	8.00	1	2.00	1	2.50	0.95	4.00	51.00	4.00	72.00
77	Ajjanahalli	Ajjanahalli	Ajjanahalli Puttara Kere	2.80	0.60	6.4	290.00	6.00	1	1.50	1	2.00	0.50	2.00	22.00	2.00	36.00
78	Kudur	Kuduru	Kuduru Krishnaraja Katte	8.00	3.50	7.29	350.00	7.00	1	2.50	1	3.00	0.50	2.00	63.00	5.00	83.00
79	Kudur	Khajapalya	Khajapalya Hosa Kere	2.00	1.80	43.71	273.00	5.00	1	1.50	1	2.00	0.75	3.00	16.00	1.00	29.00

80	Kudur	Kuduru	Kuduru Hosa Kere	4.50	3.60	9.71	180.00	4.00	1	1.50	1	2.00	0.70	3.00	36.00	3.00	50.00
81	Biskuru	Bisalahally,	Bisalahally, Basavanagudi Palya Kere	2.40	1.50	9.3	458.00	9.00	1	1.50	1	2.00	1.80	7.00	19.00	1.00	40.00
82	Madigondana halli	Mallikunte	Mallikunte hosa Kere	3.00	2.80	6.47	250.00	5.00	1	1.50	1	2.00	0.39	2.00	24.00	2.00	37.00
83	Madigondana halli	Madagondah ally	Madagondahally Sanna Kere	2.50	1.80	25.92	240.00	5.00	1	1.50	1	2.00	3.00	12.00	20.00	2.00	43.00
84	Madigondana halli	Kallipalya	Kallipalya Hosa Kere	2.00	3.50	13.76	120.00	2.00	1	1.50	1	2.00	2.00	8.00	16.00	1.00	31.00
85	Madigondana halli	Vajarahally	Vajarahally hatchegowdra Katte	3.60	1.00	8.54	150.00	3.00	1	1.50	1	2.00	0.90	4.00	29.00	2.00	42.00
86	Madigondana halli	Hanumapura	Hanumapura Kere	4.00	3.00	14.52	180.00	4.00	1	1.50	1	2.00	0.70	3.00	32.00	2.00	45.00
87	Madigondana halli	Madiganahall y	Madiganahally Uramundina kere	19.20	10.0 0	31.68	460.00	9.00	1	4.00	1	4.00	3.50	14.00	152.00	12.0 0	195.00
88	Madigondana halli	Kannasandra	Kannasandra Vadeyara Katte	8.20	3.90	10.2	360.00	7.00	1	2.50	1	2.50	1.00	4.00	65.00	5.00	86.00
89	Madigondana halli	Kannasandra	Kannasandra Hosa Kere	7.50	3.00	12.14	180.00	4.00	1	2.50	1	2.00	0.50	2.00	59.00	5.00	75.00
90	Narasandra	Chiloor	Chiloor Krishna Budi kere	1.00	3.00	22.76	420.00	8.00	1	1.50	1	2.00	1.00	4.00	8.00	1.00	25.00
91	Narasandra	Maroor	Maroor Surappana Katte	2.40	2.00	16.68	244.00	5.00	1	1.50	1	2.00	0.80	3.00	19.00	1.00	32.00
92	Kalarikaval	Shivanasandr a	Shivanasandra Harvana Katte	3.20	2.00	4.96	377.00	8.00	1	1.50	1	2.00	0.55	2.00	25.00	2.00	41.00
93	Kalya	Hoojigal	Hoojigal Gowdana Katte	2.40	2.00	11.8	180.00	4.00	1	1.50	1	2.00	0.00	0.00	19.00	1.00	28.00
94	Kalya	Halasinganah alli	Halasinganahalli Honkada Katte	2.50	2.00	8.56	150.00	3.00	1	1.50	1	2.00	0.11	0.00	20.00	2.00	29.00
95	Kalya	Kalya	Kalya Beemana Katte	8.00	11.0 0	12.56	450.00	9.00	1	2.50	1	3.00	0.03	0.00	63.00	5.00	83.00
96	Kalarikaval	Hanumantha pura	Hanumanthapur a Hosa Kere	3.50	3.50	8.09	200.00	4.00	1	1.50	1	2.00	1.24	5.00	28.00	2.00	43.00
97	Kalya	Kodipalya	Kodipalya Kere	3.00	2.50	4.05	435.00	9.00	1	1.50	1	2.00	1.00	4.00	24.00	2.00	43.00

98	Kalarikaval	Kalari	Kalari Doddakere	6.20	2.00	23.52	440.00	9.00	1	2.00	1	2.00	1.17	5.00	49.00	4.00	71.00
99	Kalarikaval	Varadahally	Varadahally uramundina kere	2.80	0.78	5.41	270.00	5.00	1	1.50	1	2.00	0.05	0.00	22.00	2.00	33.00
100	Kalarikaval	Doddasomanahally	Doddasomanahally Sanna Kere	10.80	4.00	38.46	378.00	8.00	1	2.50	1	3.00	0.63	3.00	86.00	6.00	109.00
101	Kalarikaval	Janagere	Janagere Lingappaiahna Kere	12.40	2.00	5.81	308.00	6.00	1	4.00	1	2.00	0.35	1.00	98.00	7.00	118.00
102	Thippasandra	Machohalli	Machohalli Yellave Gowdana Kere	4.40	0.78	8.90	389.00	8.00	1	1.50	1	2.00	0.30	1.00	35.00	3.00	51.00
103	chikkamudigere	Kenchappahally	Kenchappahally Uramundina Kere	4.80	1.30	7.78	280.00	6.00	1	1.50	1	2.00	0.44	2.00	38.00	3.00	53.00
104	chikkamudigere	Kalkere	Kalkere Doddakere	6.00	6.00	27.11	406.00	8.00	1	2.00	1	2.00	1.58	6.00	48.00	4.00	70.00
105	Thippasandra	Thalekere	Thalekere Uramundina kere	16.20	6.00	22.79	554.00	11.00	1	4.00	1	5.00	12.47	50.00	128.00	10.00	208.00
106	Seegekuppe	Hulikatte,	Hulikatte, Moge Katte	1.60	2.00	10.93	240.00	5.00	1	1.50	1	2.00	0.00	0.00	13.00	1.00	23.00
107	Seegekuppe	Chakrabavi	Chakrabavi Veerappa Gowdanakere	5.20	56.00	25.53	420.00	8.00	1	1.50	1	2.00	1.30	5.00	41.00	3.00	61.00
108	Seegekuppe	Belavadi	Belavadi Kere	14.40	4.00	10.12	158.00	3.00	1	3.00	1	5.00	0.40	2.00	114.00	9.00	136.00
109	Mathikere	Kottagarahally	Kottagarahally Harvana Katte	3.60	4.00	5.00	120.00	2.00	1	1.50	1	2.00	0.23	1.00	29.00	2.00	38.00
110	Mathikere	Gattipura	Gattipura Hosa Katte	2.80	1.00	5.28	150.00	3.00	1	1.50	1	2.00	0.08	0.00	22.00	2.00	31.00
111	Mathikere	Mathikere	Mathikere Sahukarana Katte	2.00	2.00	7.69	230.00	5.00	1	1.50	1	2.00	0.30	1.00	16.00	1.00	27.00
112	Mathikere	Mathikere	Mathikere Doddakere	10.00	4.20	15.38	345.00	7.00	1	2.50	1	3.00	0.30	1.00	79.00	6.00	99.00
113	Agalakote	Agalakote	Agalakote Hosa Kere	6.40	9.00	11.03	405.00	8.00	1	2.00	1	2.50	0.20	1.00	51.00	4.00	69.00

			(Matadapalya Kere)														
114	Agalakote	Agalakote	Agalakote Sankareswara Kere	3.20	5.00	10.67	330.00	7.00	1	1.50	1	2.00	0.40	2.00	25.00	2.00	40.00
115	Sathanuru	Donikuppe	Donikuppe Moge Katte	2.80	3.00	6.52	240.00	5.00	1	1.50	1	2.00	0.20	1.00	22.00	2.00	34.00
116	Sathanuru	Halasabele	Halasabele Kavala Katte	1.60	2.00	6.47	345.00	7.00	1	1.50	1	2.00	0.30	1.00	13.00	1.00	26.00
117	Kalya	Mayanayakahalli	Mayanayakahalli Kanchikatte	4.80	4.00	15.91	175.00	4.00	1	1.50	1	2.00	0.49	2.00	38.00	3.00	51.00
118	Kalya	Kalya	Kalya Venkatammana Kere	6.40	3.00	11.74	490.00	10.00	1	2.00	1	2.50	1.20	5.00	51.00	4.00	75.00
119	Kalya	Vittalapura	Vittalapura Uramundina Kere	1.60	2.00	5.67	210.00	4.00	1	1.50	1	2.00	0.20	1.00	13.00	1.00	23.00
120	Kalya	Chandurayana hally	Chandurayanahally Uramundinakere	6.40	3.00	9.31	340.00	7.00	1	2.00	1	2.50	0.57	2.00	51.00	4.00	69.00
121	Thaggikuppe	Hosahalli	Hosahalli Kere	7.68	8.00	17.94	838.00	17.00	1	2.00	1	3.00	0.53	2.00	61.00	5.00	90.00
122	Sathanuru	Kempasagara	Kempasagara Kallu katte	2.40	2.00	4.86	190.00	4.00	1	1.50	1	2.00	0.30	1.00	19.00	1.00	29.00
123	Sathanuru	Kempasagara	Kempasagara Hegi Katte	1.80	1.50	6.07	330.00	7.00	1	1.50	1	2.00	0.75	3.00	14.00	1.00	29.00
124	Madabal	Thubinakere	Thubinakere Kere	2.40	3.00	17.13	380.00	8.00	1	1.50	1	2.00	0.80	3.00	19.00	1.00	35.00
125	Nethenahalli	Juttenahally	Juttenahally Kempa Thimmana Katte	2.40	3.00	12.62	130.00	3.00	1	1.50	1	2.00	0.60	2.00	19.00	1.00	29.00
126	Nethenahalli	Vishwanathapura	Vishwanathapura uramundina Kere	2.80	4.00	8.91	200.00	4.00	1	1.50	1	2.00	0.55	2.00	22.00	2.00	34.00
127	Sathanuru	Kondahally	Kondahally Ramaiahna katte	1.60	1.00	5.3	195.00	4.00	1	1.50	1	2.00	0.30	1.00	13.00	1.00	23.00

128	Nethenahalli	Uduvegere	Uduvegere Shettara Katte	0.80	5.00	13.82	360.00	7.00	1	1.50	1	2.00	0.04	0.00	6.00	0.00	17.00
129	Nethenahalli	Nethenahally	Nethenahally Papaiahna katte	2.80	6.00	22.26	210.00	4.00	1	1.50	1	2.00	0.40	2.00	22.00	2.00	34.00
130	Nethenahalli	Uduvegere	Uduvegere hagalabatti Kere	2.00	7.00	4.45	370.00	7.00	1	1.50	1	2.00	0.13	1.00	16.00	1.00	29.00
131	Thaggikuppe	Hosahally	Hosahally Uramundina kere	2.80	4.00	9.31	290.00	6.00	1	1.50	1	2.00	0.46	2.00	22.00	2.00	36.00
132	Madabal	Pura	Pura Bhargavathi Kere	31.00	15.00	36.83	450.00	9.00	1	5.00	1	5.00	1.50	6.00	246.00	19.00	290.00
133	Madabal	Madabal	Madabal uramundina Kere	3.60	2.00	6.96	285.00	6.00	1	1.50	1	2.00	0.20	1.00	29.00	2.00	42.00
134	Ajjanahalli	Guddalahally	Guddalahally Kere	5.20	5.00	9.31	120.00	2.00	1	1.50	1	2.30	0.55	2.00	41.00	3.00	52.00
135	Hanchikuppe	Hanchikuppe	Hanchikuppe Dalavai Kere	6.80	5.00	20.26	220.00	4.00	1	2.00	1	2.50	1.50	6.00	54.00	4.00	73.00
136	Hanchikuppe	Hanchikuppe	Hanchikuppe Doddakere	22.80	4.00	26.3	340.00	7.00	1	5.00	1	5.00	1.70	7.00	181.00	14.00	219.00
			Total	**672.41**	**463.28**	**1830.08**		**798.00**		**256.30**		**322.60**	**134.76**	**541.00**	**5334.00**	**409.00**	**7714.00**

Annexure 5.4b: Strategic Programme For Improvements To M.I Tanks (Z.P. Tanks) Channapatanna Taluk, P.R.E. Division, Ramanagara

Sl. No.	Name of Tank	Location	Capacity (in Mcft.)	Total Atchkat (Hectare)	Improvements required to tanks										Total Amount Required for improvements (in.lakhs)	Remarks
					Bunds streangthing		waste weir repair/reconstruction		sluice repair/reconstruction		canal/ repair/reconstruction		Cost For De silting (In Lakh)	Cost for Boundry Fixing (In Lakh)		
					Length of the bund (mtr)	Cost (In Lakh)	No	Cost (In Lakh)	No	Cost (In Lakh)	Lengtth (K.M)	Cost (In Lakh)				
1	Devarahosahalli (Deshikatte)	Devarahosahalli	6	14.77	900.00	15.00	1	4.00	1	2.50	0.50	2.00	23.00	4.00	50.50	
2	Cholamaranahalli (Hosakere)	Cholamaranahalli	-	2.63	800.00	12.00	1	3.00	1	2.50	0.40	1.80	17.00	1.00	37.30	
3	Ramapura - Thavarekatte	Ramapura	11	27.19	700.00	12.00	1	2.75	1	2.50	0.30	1.50	16.00	6.00	40.75	
4	Vandaraguppe (Sheshaiahnakatte)	Vandaraguppe	32	21.89	1000.00	15.00	1	4.50	1	2.50	0.50	2.00	26.00	2.00	52.00	
5	Honniganahalli (Shivammanakere)	Honniganahalli	.	3.27	600.00	10.00	1	3.50	1	2.50	0.20	1.00	48.00	2.50	67.50	
6	Mangavarapete (Shettikere)	Mangalavarapet	18	4.53	1500.00	14.00	1	5.00	1	2.50	0.60	2.50	31.00	2.80	57.80	
7	Mangavarapete (Narasanakatte)	Mangalavarapet	11	4.37	1000.00	9.00	1	4.00	1	2.50	0.40	2.00	17.00	4.50	39.00	
8	Sunghatta Tank	Sunnaghatta	10	19.10	2000.00	20.00	1	5.00	1	2.50	0.50	2.00	15.00	5.00	49.50	
9	Neelasandra Uramundinakere	Neelasandra	26	19.53	3000.00	30.00	1	3.00	1	2.50	1.00	4.00	26.00	5.00	70.50	
10	Komanahalli Tank	Komanahalli	4	3.84	600.00	10.00	1	2.00	1	2.50	0.30	1.50	13.00	2.50	31.50	

11	Thimmasandra Uramandinakatte	Thimmasandra	21	10.52	2500.00	20.00	1	5.00	1	2.50	0.70	3.00	34.00	4.00	68.50	
12	Brahmanipura Uramundinakatte	Brahmanaipura	36	35.73	1500.00	17.00	1	4.00	1	2.00	0.60	2.50	52.00	12.00	89.50	
13	Tagachagere Tank	Thagachagere	-	3.64	550.00	12.00	1	3.00	1	2.00	0.30	1.50	15.00	3.00	36.50	
14	Huchaiahnadoddi Tank	Huchaiahnadoddi	-	15.84	800.00	14.00	1	4.00	1	3.00	0.30	1.50	26.00	6.00	54.50	
15	Belladakatte	Kannasandra	9	9.31	150.00	10.00	1	2.00	1	2.00	0.10	1.00	10.00	5.00	30.00	
16	Bhukanakatte	Bevoor	-	12.14	400.00	8.00	1	3.00	1	4.00	0.20	1.00	15.00	10.00	41.00	
17	Makali Uramundinakere	Makali	4	3.64	600.00	7.00	1	3.00	1	3.00	0.25	1.50	17.00	4.50	36.00	
18	Nahidolle - Pickup	Nahidolle	-	6.07	-	-	-	-	-	-	0.30	1.50	8.00	9.00	18.50	
19	Kuranakatte	Makali	-	4.85	200.00	2.00	1	2.00	1	2.00	0.10	1.00	5.00	7.00	19.00	
20	Makali Dalayeekere	Makali	4	8.90	400.00	6.00	1	3.00	1	2.00	0.20	1.00	7.50	4.50	24.00	
21	Makali Eregowdanakatte Pickup	Makali	-	6.07	-	-	-	-	-	-	0.25	1.50	6.50	3.50	11.50	
22	Agalabhadranakere	M.Hosahalli	-	24.68	600.00	8.00	1	3.00	1	3.00	0.15	1.50	48.00	9.00	72.50	
23	Abburukatte	Abburu	-	9.41	300.00	8.00	1	2.00	1	4.00	0.10	1.00	7.00	3.00	25.00	
24	Thimmasandra Pickup	Thimmasandra	8	22.78	-	-	-	-	-	-	0.15	1.50	6.50	6.50	14.50	
25	Sogala Gangekere	Sogala	-	11.43	900.00	15.00	1	4.00	1	3.00	0.20	2.00	12.00	4.50	40.50	

26	Sogala Palya Thimmajikere	Sogala Palya	-	20.23	450.00	10.00	1	2.00	1	2.00	0.10	1.00	15.00	5.50	35.50	
27	Mathikere Tank	Mathikere	29	23.47	300.00	10.00	1	2.00	1	2.00	0.10	1.00	58.00	6.00	79.00	
28	Shettihalli Tank	Shettihalli	19	18.61	500.00	12.00	1	2.00	1	2.00	0.10	1.00	13.00	4.00	34.00	
29	Avverahalli Pickup	Avverahalli	13.7	17.40	-	-	-	-	-	-	0.15	1.50	14.00	4.00	19.50	
30	Valagere Doddi Pickup	Valageredoddi	-	4.85	-	-	-	-	-	-	0.10	1.00	6.00	4.50	11.50	
31	Hodikehosahalli Tank	Hodikehoshalli	71	30.79	1900.00	20.00	1	5.00	1	4.00	0.30	2.00	20.00	6.00	57.00	
32	Seebanahalli Tank	Seebanahalli	-	14.97	200.00	5.00	1	2.00	1	2.00	0.10	1.00	9.00	7.50	26.50	
33	Seembahalli Katte	Seebanahalli	-	4.85	100.00	2.00	1	2.00	1	2.00	0.10	1.00	3.00	3.50	13.50	
34	Kengatte	Mudagere	5	13.71	300.00	6.00	1	2.00	1	2.00	0.10	1.00	6.00	3.00	20.00	
35	H.Byadarahalli Tank	H.Byadarahally	5	9.38	250.00	5.00	1	2.00	1	2.00	0.10	1.00	5.50	4.00	19.50	
36	Kolur Pickup	Kolur	-	22.25	-	-	-	-	-	-	0.15	1.50	15.00	2.50	19.00	
37	Belekere Tank (New)	Belekere	-	17.40	500.00	10.00	1	3.00	1	3.00	0.15	1.50	10.00	3.50	31.00	
38	Marchanahalli Pickup	Marchanahalli	-	5.26	-	-	-	-	-	-	0.10	1.00	9.00	4.00	14.00	
39	Belelkere Tank	Belekere	-	19.02	400.00	8.00	1	3.00	1	3.00	0.10	1.00	12.00	3.50	30.50	
40	Byrapatna - Mosarakatte	Mosarakatte	5	6.92	250.00	5.00	1	2.00	1	2.00	0.10	1.00	7.50	3.50	21.00	
41	Huluvadi Pickup	Huluvadi	-	8.09	-	-	-	-	-	-	0.10	1.00	5.00	3.00	9.00	
42	Mankunda Pickup	Mankunda	-	8.09	-	-	-	-	-	-	0.12	1.50	6.00	3.00	10.50	
43	Santhemogahalli Pickup	Santhemogenahalli	-	10.11	-	-	-	-	-	-	0.12	1.50	8.00	4.50	14.00	

44	Guddehosuru Tank	Guddehosuru	-	6.90	200.00	4.00	1	2.00	1	2.00	0.15	1.50	5.00	4.00	18.50	
45	Minakere Tank	Hottiganahosahalli	5	31.76	300.00	6.00	1	3.00	1	3.00	0.10	1.20	20.00	5.00	38.20	
46	Chakkere Halekere	Chakkere	13	20.23	400.00	8.00	1	4.00	1	4.00	0.10	1.20	15.00	5.00	37.20	
47	Krsihnapura New Tank	Krishnapura	-	16.18	180.00	4.00	1	2.00	1	2.00	0.15	1.50	12.00	5.00	26.50	
48	Krishnapura Tank	Krishnapura	4	14.12	100.00	2.00	1	1.00	1	1.00	0.10	1.20	12.00	4.50	21.70	
49	Krishnapura Pickup	Krishnapura	-	1.21	-	-	-	-	-	-	0.12	1.20	5.00	2.50	8.70	
50	Garakalli Doddakere	Garakalli	-	31.97	300.00	6.00	1	3.00	1	3.00	0.10	1.00	20.00	15.00	48.00	
51	Garakalli Pickup	Garakalli		8.09	130.00	3.00	1	2.00	1	2.00	0.10	1.00	6.00	10.00	24.00	
52	Garakalli New Tank	Garakalli	-	16.18	150.00	3.00	1	2.00	1	2.00	0.10	1.00	7.50	12.00	27.50	
53	Iggalur Pickup	Iggaluru	-	6.87	-	-	-	-	-	-	0.10	1.00	3.50	7.00	11.50	
54	Sullere Horohalli Tank	Sullere	-	36.42	250.00	5.00	1	3.00	1	2.00	0.10	1.00	50.00	15.00	76.00	
55	Sadahalli - Huchaiahnakere	Sadahalli	-	8.49	140.00	5.00	1	3.00	1	2.00	0.10	1.00	23.00	8.00	42.00	
56	Ankushanahalli Tank	Ankushanahalli	13	4.85	130.00	4.00	1	2.00	1	2.00	0.10	1.00	2.00	6.00	17.00	
57	Chakkaluru Uramundinakere	Chakkaluru	-	12.14	140.00	4.00	1	2.00	1	2.00	0.10	1.00	8.00	7.00	24.00	
58	Thirumalabattanakere	Chakkaluru	4	25.54	200.00	5.00	1	2.00	1	2.00	0.10	1.00	17.00	8.50	35.50	
59	Madapura Basavanakatte	Madapura	-	2.89	20.00	1.00	1	1.00	1	2.00	0.10	1.00	10.00	2.50	17.50	
60	Singarajipura Pickup	Singarajipura	-	7.28	-	-	-	-	-	-	0.10	1.00	5.00	3.50	9.50	

61	Bhoohalli Tank	Bhoohalli	-	14.56	60.00	1.00	1	1.00	1	1.00	0.10	1.00	10.00	5.50	19.50	
62	Bachegowdanakatte	B.V Halli	-	6.47	50.00	1.00	1	1.00	1	2.00	0.15	1.50	17.00	3.50	26.00	
63	Hunasanahalli Hosakere	Hunasanahalli	4	0.80	100.00	2.00	1	2.00	1	2.00	0.10	1.00	26.00	2.00	35.00	
64	Hunasahalli Chikkakere	Hunasanahalli	4	4.10	200.00	2.00	1	2.00	1	2.00	0.10	1.00	15.00	2.50	24.50	
65	Vaddarahall Uramundinakere	Vaddarahally	5	5.26	160.00	2.00	1	2.00	1	2.00	0.10	1.00	13.00	2.50	22.50	
66	Bananthalli Tank	Banathalli	6	8.16	200.00	2.00	1	2.00	1	2.00	0.10	1.00	10.00	2.50	19.50	
67	J.Byadarahalli Lakki Katte	J.Byadarahalli	3	0.80	100.00	2.00	1	1.00	1	1.00	0.10	1.00	12.00	1.50	18.50	
68	Yaliyur Byranakatte	Yaliyuru	12	10.92	200.00	4.00	1	2.00	1	2.00	0.10	1.00	20.00	8.50	37.50	
69	Kalapura Uramundinakere	Kalapura	2	11.87	80.00	2.00	1	2.00	1	2.00	0.10	1.00	15.00	6.00	28.00	
70	Kumbarakatte	J.Byadarahalli	-	7.79	100.00	3.00	1	2.00	1	2.00	0.10	1.00	13.00	3.50	24.50	
71	Puttakatte	J.Byadarahalli	2	2.02	200.00	5.00	1	2.00	1	2.00	0.10	1.00	17.00	1.50	28.50	
72	Bychapura Jagadapura Tank	Bychapura-Jagadapura	-	13.02	300.00	6.00	1	2.00	1	2.00	0.10	1.00	22.00	2.50	35.50	
73	Doddakere	Jagadapura	-	15.82	300.00	6.00	1	2.50	1	2.00	0.10	1.00	25.00	4.50	41.00	
74	Yelethotahalli Uramundinakere	Yelethotadahalli	26	34.80	600.00	8.00	1	1.00	1	2.00	0.10	1.00	12.00	15.00	39.00	

75	Thubina Kere Tank	Tubinakere	7	19.95	650.00	5.00	1	2.50	1	2.00	0.10	1.00	26.00	8.00	44.50	
76	Kadramangala Pickup	Kadaramangala	100	39.66	-	-	-	-	1	2.00	0.10	1.00	25.00	18.00	46.00	
77	Krunagere Tank	Kurnagere	6	21.95	580.00	4.50	1	1.50	1	2.00	0.10	1.00	16.00	6.00	31.00	
78	Govindanahalli Uramundinakere	Govindanahally	15	10.19	350.00	3.50	1	1.00	1	2.00	0.10	1.00	17.00	4.50	29.00	
79	Malur Shetty Katte	Malurpatna	10	13.05	550.00	4.50	1	2.00	1	2.00	0.10	1.00	12.00	3.50	25.00	
80	Mangapatnada Kere	Kannamangala	2	10.11	220.00	4.00	1	2.50	1	2.50	0.10	1.00	17.00	3.50	30.50	
81	Tank	Kottanahalli	20	7.32	180.00	2.50	1	1.50	1	2.00	0.10	1.20	6.00	3.00	16.20	
82	New Tank	Ujjanahalli	-	18.61	450.00	3.00	1	1.50	1	2.50	0.10	1.20	12.00	6.50	26.70	
83	Hosakere	Agrahara Varagarahalli	60	29.54	180.00	1.50	1	2.00	1	2.50	0.10	1.20	18.00	12.00	37.20	
84	Thoutanahalli Tank	Thoutanahalli	-	12.14	-	-	-	-	1	2.00	0.10	1.20	9.00	4.50	16.70	
		TOTAL	**670.70**	**1131.6**	**34600.0**	**501.5**		**172.75**		**162.00**	**15.06**	**108.90**	**1329.5**	**453.8**	**2728.45**	

Annexure 5.4c: Programme For Improvements To M.I Tanks (Z.P. Tanks) Ramanagara Taluk, P.R.E. Division, Ramanagara

Sl. No.	Name of G.P.	Name of village	Name of M.I Tanks	Water spread area (Hect)	Live Capacity (Mcft.)	Total atchkat area (Hect)	Improvements required to tanks										Total Amount Required for improvements (in.lakhs)
							Bunds streangthing		waste weir repair/reconstruction		sluice repair/reconstruction		canal/ repair/reconstruction		Cost For De silting (In Lakh)	Cost for Boundry Fixing (In Lakh)	
							Length of the bund (mtr)	Cost (In Lakh)	No	Cost (In Lakh)	No	Cost (In Lakh)	Lengtth (K.M)	Cost (In Lakh)			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	Vibhuthikere	Channamanahalli	Channamanahalli Chandikere	10.40	-	16.99	455.00	9.00	1	5.00	1	2.00	-	8.00	26.00	3.00	53.00
2	Bannikuppe (k)	Bannikuppe (k)	Bannikuppe Uramundinakere	6.60	-	13.75	400.00	6.50	1	4.00	1	2.50	-	7.00	19.00	2.50	41.50
3	Bannikuppe (k)	Shivanahalli	Shivanahalli Huchappanakere	8.00	-	5.26	215.00	3.00	1	1.80	1	2.00	-	6.00	10.00	1.50	24.30
4	Bannikuppe (k)	Kadanakuppe	Kadanakuppe, Kadanakuppe Tank	3.70	-	5.26	215.00	3.00	1	1.50	1	2.00	0.80	6.00	10.00	1.50	24.00
5	Vibhuthikere	Thimmaiahna Doddi	Thimmaiahnad oddi New Tank	3.50	-	16.18	240.00	8.00	1	2.50	1	2.50	-	10.00	16.00	3.00	42.00
6	Kailancha	Kailancha	Kailancha, Hemadrayanakere	3.85	-	4.90	210.00	4.00	1	1.50	1	2.00		6.00	12.00	1.50	27.00
7	Kutagal	Ankanahalli	Ankanahalli Uramundinakere	3.85	-	4.45	80.00	4.00	1	1.50	1	2.00	-	6.00	16.00	1.50	31.00
8	Hulikere-gunnuru	Thenginakallu	Thenginakallu Tank	8.50	-	6.00	350.00	3.50	1	2.00	1	1.50	-	6.00	16.00	1.50	30.50
9	Kailancha	Kailancha	Kailancha - Vishnusagara Tank	3.85	-	18.60	395.00	10.00	1	2.00	1	2.00	-	10.00	22.00	3.00	49.00

10	Hunasanahally	Hunasanahally	Hunasanahally - Magadakere	3.00	-	12.14	300.00	6.00	1	3.00	1	1.50	0.80	6.00	18.00	2.50	37.00
11	Vibhuthikere	Chikkenahally	Chikkenahally - Chikkakere	2.10	-	5.66	210.00	3.00	1	1.50	1	1.80	-	7.00	10.00	1.50	24.80
12	Hulikere-gunnuru	K.G.Hosahally	K.G.Hosahally - Angadikere	7.50	-	16.38	240.00	7.50	1	2.50	1	1.50	-	7.50	18.00	2.00	39.00
13	Kutagal	Arehalli	Arehally - Bikkalachammanakere	7.91	-	5.00	250.00	4.00	1	1.50	1	1.80	0.25	6.00	13.00	1.50	27.80
14	Lakshmiura	Doddasulikere	Doddasulikere - Doddasulikere Tank	6.25	-	7.64	210.00	6.00	1	2.20	1	1.50	0.15	7.00	16.00	2.00	34.70
15	Jalamangala	Jalamangala	Jalmangala - Annanakere	3.75	-	10.11	180.00	5.00	1	1.50	1	1.80	0.61	6.00	14.50	2.00	30.80
16	Shanuboganahalli	Kyasapura	Kyasapura - Hosakere	2.50	-	6.47	180.00	3.50	1	1.80	1	1.80	0.27	7.00	13.00	1.50	28.60
17	Doddagangawadi	Doddagangawadi	Doddagangavadi - Uramundinakere	3.33	-	10.11	420.00	6.50	1	2.00	1	1.80	0.18	7.00	14.00	2.50	33.80
18	Shanuboganahalli	Kyasapura	Kyasapura - Dorekere	3.33	-	18.61	420.00	9.50	1	2.50	1	2.00	0.78	10.50	22.00	2.00	48.50
19	Jalamangala	Thalavadi	Thalavadi - Kebbekere	5.40	-	11.73	180.00	6.00	1	1.80	1	1.80	-	6.00	15.00	2.00	32.60
20	Byramangala	Byramangala	Byramangala - Uramundinakere	10.23	-	11.73	600.00	6.00	1	1.80	1	1.80	0.50	6.00	15.00	1.50	32.10
21	Gopahalli	Ramanahalli	Ramanahalli - Uramundinakere	6.80	-	5.26	400.00	5.50	1	1.60	1	1.80	0.20	6.00	12.50	1.50	28.90
22	Kutagal	Hosuru	Hosuru-Hosakere	-	-	8.05	300.00	7.50	1	1.80	1	2.00	0.30	7.50	16.50	1.50	36.80
23	Byramangala	Chikkakuntanahalli	Chikkakuntanahalli - Aliyanakere	14.80	-	6.87	33.00	4.00	1	1.50	1	1.80	0.20	6.50	13.00	1.50	28.30

24	Mayaganahalli	Kanchigarahalli	Kanchigarahalli - Uramundinakere	14.40	-	21.44	540.00	10.50	1	2.50	1	3.00	0.30	10.00	22.00	2.50	50.50
25	Kanchugaranahalli	Bannigiri	Bannigiri - Thubinakere	8.00	-	10.92	180.00	6.00	1	1.50	1	2.50	0.20	6.50	18.00	2.00	36.50
26	Ittamadu	Ittamadu	Ittamadu - Doddakere	8.40	-	8.48	150.00	5.00	1	1.50	1	1.50	-	6.50	13.50	2.00	30.00
27	Kutagal	Hosuru	Hosuru - Uramundinakere	18.50	-	17.39	540.00	10.50	1	2.50	1	2.50	0.60	9.50	25.00	3.00	53.00
28	Byramangala	Kodiyalakarenahalli	Kodiyalakarenahalli Kere	1.48	-	26.29	210.00	6.50	1	2.00	1	2.00	0.60	9.00	18.00	1.50	39.00
29	Byramangala	Kodiyalakarenahalli	Kodiyalakarenahalli - Kodiyalakere	1.60	-	4.45	150.00	3.50	1	1.50	1	1.50	0.30	4.50	12.50	2.00	25.50
30	Kanchugaranahalli	Allalasandra	Allalasandra - Palanakere	4.80	-	4.45	240.00	6.50	1	1.50	1	1.50	0.40	6.00	15.00	2.00	32.50
31	Hunsanahally	Hunsanahally	Hunasanahally - Venkategowdanakere	5.60	-	4.45	250.00	8.00	1	2.00	1	2.50	0.15	8.50	22.00	1.50	44.50
32	Manchanayakanahalli	Lakshmisagara	Lakshmisagara - Muthagadakere	-	-	4.84	220.00	6.00	1	1.50	1	2.00	-	6.50	20.00	1.50	37.50
33	Ittamadu	Bananduru	Bananduru - Eregowdanakere	15.00	-	11.73	400.00	9.50	1	2.50	1	2.50	0.65	8.50	20.00	2.50	45.50
34	Kenchanakuppe	Kakaramanahally	Kakaramanahally - Kyathegowdanakere	15.00	-	5.26	800.00	15.50	1	2.50	1	3.00	0.13	10.50	30.00	3.50	65.00
35	Manchanayakanahalli	Sheshagirihalli	Sheshagirihalli - Sheshagirihalli Tank	7.00	-	4.04	700.00	13.50	1	2.50	1	2.80	1.00	9.50	25.00	2.50	55.80
36	Bannikuppe (b)	Avaregere	Avaregere - Kodagikere	6.50	-	7.68	600.00	10.00	1	2.50	1	2.00	0.80	8.50	28.00	2.50	53.50

37	Gopahalli	Uragahally	Uragahally - Bhakthipura Tank	17.00	-	12.94	360.00	8.50	1	2.50	1	1.80	0.65	9.50	28.00	2.50	52.80
38	Gopahalli	Uragahally	Uragahally - Basavanakere	28.00	-	19.01	400.00	10.50	1	2.80	1	2.50	-	9.50	29.50	3.00	57.80
39	Manchanayakanahalli	Shanumangala	Shanumangala - Uramundinakere	8.00	-	4.85	450.00	8.50	1	1.50	1	2.20	1.00	9.50	28.50	1.00	51.20
40	Gopahalli	Uragahally	Uragahally Hoskere	8.00	-	12.94	380.00	7.50	1	1.50	1	2.00	-	8.50	22.50	2.50	44.50
41	Ittamadu	Bananduru	Bananduru - Mallegowdanakere	0.60	-	4.04	350.00	8.50	1	1.60	1	2.00	0.50	8.00	20.00	1.00	41.10
42	Gopahalli	Uragahally	Uragahally - Chikkarasanahalli Tank	19.00	-	4.45	325.00	6.50	1	1.50	1	2.20	0.80	8.50	26.00	1.50	46.20
43	Ittamadu	Heggadagere	Heggadagere - Kalegowdanakere	11.00	-	10.11	480.00	9.50	1	2.00	1	2.50	-	9.50	29.50	2.00	55.00
44	Manchanayakanahalli	Lakshmisagara	Lakshmisagara - Channegowdanakere	10.00	-	4.84	200.00	6.50	1	1.50	1	2.50	0.80	8.50	26.00	1.50	46.50
45	Ittamadu	Bananduru	Bananduru - Gangegowdanakere	8.00	-	5.66	240.00	8.50	1	2.00	1	2.50	-	8.50	28.00	1.50	51.00
46	Bannikuppe (b)	Bannikuppe	Bannikuppe - Vaddarakatte	7.00	-	5.66	240.00	7.50	1	2.00	1	2.50	0.50	8.50	29.00	1.50	51.00
47	Manchanayakanahalli	Bheemanahalli	Beemanahalli - Muthagadakere	8.00	-	5.65	210.00	6.50	1	1.50	1	2.00	1.00	8.50	26.50	1.50	46.50
48	Akkur	Gurugoladoddi	Gurugoladoddi - Gurugoladoddi Tank	-	-	6.07	240.00	7.00	1	1.50	1	1.90	0.80	8.50	26.00	1.50	46.40
49	Nagarasabhe	Archakarahalli	Archakarahalli - Basavanakere	4.14	-	4.45	120.00	4.50	1	1.50	1	1.50	0.30	8.50	20.00	1.50	37.50

50	Nagarasabhe	Kothipura	Kothipura - Ammannikere	8.29	-	6.87	300.00	8.50	1	2.00	1	2.00	0.80	8.00	26.00	1.50	48.00
51	Gopahalli	Bennahally	Bennahally - Giddegowdana kere	4.14	-	6.47	280.00	6.50	1	2.00	1	2.00	-	8.00	25.00	1.50	45.00
52	Gopahalli	Manchegowd ana palya	Manchegowda napalya - Uramundinaker e	8.87	-	4.83	450.00	8.00	1	1.50	1	2.00	-	8.50	26.00	1.00	47.00
53	Hunasanahally	Koonagal	Koonagal - Venkategowda nakere	-	-	6.07	150.00	8.50	1	1.60	1	2.00	0.50	8.50	26.00	1.50	48.10
54	Gopahalli	Gopahalli	Gopahalli - Chowkahally	-	-	7.28	200.00	7.50	1	2.00	1	2.00	0.80	8.00	29.00	1.50	50.00
55	Gopahalli	Annahally	Annahally - Uramundinaker e	-	-	6.07	270.00	8.50	1	2.00	1	2.50	0.22	8.50	26.00	1.50	49.00
56	Ittamadu	Ittamadu	Ittamadu - Ittamadu New Tank	1.85	-	14.97	247.00	9.50	1	1.80	1	2.50	0.60	9.50	27.00	3.00	53.30
			Total	**387.32**		**511.80**		**399.00**	**56**	**111.60**	**56**	**115.60**	**19.44**	**438.00**	**1151.00**	**107.50**	**2322.70**