Govt. of Gujarat

Pradhan Mantri Krishi Sinchayee Yojana (PMKSY)

District Irrigation Plan (2016-2020)

AMRELI, GUJARAT

GGRC

NABCONS

Prepared by NABCONS in Consultation
with all stakeholder departments under PMKSY

GGRC

GUJARAT GREEN REVOLUTION COMPANY LIMITED

P.O. Fertilizer nagar - 391 750,
Dist. Vadodara (Gujarat) India.

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EXECUTIVE SUMMARY

In an agrarian economy like India, agriculture utilizes the major share of country's exploitable water resources. Though the sector utilizes the maximum share of exploitable water resources, availability of the same at different locations to different extent makes it vital to adopt effective utilization of water through storage, channelizing and judicial use. At some places like Punjab and Haryana, the environmental and socio-economic rationale for this capture by the sector is now being questioned. Accordingly, it is needed to challenge and change the fundamentals of the prevailing view of water resources exploitation. A new and more suitable approach to water resources allocation is necessary if the population is to be adequately fed, without further degradation and destruction of the critical ecosystem services. Water productivity needs to be enhanced considerably, and economic cost-benefit analysis and pricing regimes can play a significant role in such a process. However, these economic measures will not be sufficient on their own. They will need to be buttressed by technological innovation and institutional changes in order to encourage a more equitable distribution of resources and to mitigate potential international conflicts across 'shared' water basins.

Water has unique characteristics that determine both its allocation and use as a resource by agriculture. Agricultural use of water for irrigation is itself contingent on land resources. In a situation of growing water scarcity and rising demands for non-agricultural (household and industrial) use of water, reassessment of sectoral allocations of water are inevitable. In developing countries, irrigated agriculture plays a vital role in contributing towards domestic food security and poverty alleviation. Therefore, achievement of these objectives is dependent on adequate allocations of water to agriculture. Justification of such allocations requires that irrigated agriculture be a cost-effective means of achieving stated political or social objectives, such as food security or poverty alleviation, and that all externalities be taken into account in the pricing mechanism. Improved allocation of irrigation water is required within the agriculture sectors in order to achieve greater efficiency in the use of irrigation water and existing irrigation infrastructure. Reallocation is also required in order to reduce waterlogging and salinization of irrigated land, to decrease the negative environmental impacts and

other externalities of irrigation (caused by over extraction of groundwater and depletion and pollution of surface water).

Government of India launched Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) to address the constraints in providing assured irrigation as well as increasing efficiency and productivity of current water use to bring more prosperity to the rural areas. Priorities of Government of India were reflected in the Hon'ble President's address to the joint Session of the Parliament of 16th Lok Sabha where he 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 Pani'. 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 popularised to ensure 'Per drop-More crop".

PMKSY has been approved with an indicative outlay of Rs.50,000 crore over a period of five years from 2015-16 to 2019-20. The programme is an amalgamation of on-going schemes of Ministry of Water Resources, River Development and Ganga Rejuvenation, Ministry of Agriculture & Cooperation and Ministry of Rural Development. The existing schemes AIBP, CADWM, MI, SWMA, Watershed & Convergence with MGNREGA were brought together under the umbrella program of PMKSY. Further the scheme seeks convergence with scheme like Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNRES), Rashtriya Krishi Vikas Yojana (RKVY), Jawaharlal Nehru National Solar Mission and Rural Electrification programmes (JLNNSM&REP), Rural Infrastructure Development Fund (RIDF), Members of Parliament Local Area Development Scheme (MPLAD), Members of Legislative Assembly Local Area Development Fund (MLALAD), Local Body Funds (LBF), Working Plan of State Forest Department (WPSFD) etc. The PMKSY will be implemented in an area development mode only by adopting a decentralized state level planning and projectised execution structure that will allow the state to draw up their own irrigation development plans based on DIPs and SIPs with a horizon of 5-7 years. The program will be supervised and coordinated utilizing the existing mechanism and structure available under Rashtriya

Krishi Vikas Yojana (RKVY) program with state agriculture department acting as the State Nodal Agency for implementation of PMKSY. However, the implementing departments for the four components like AIBP, PMKSY (Har Khet Ko Pani), PMKSY (Per drop more crop) and PMKSY (watershed development) will be decided by the respective program ministry/department.

The 05 chapters along with introduction chapter, explains the profile of district, its water requirement for agriculture and allied sector, water availability, assessment of water requirement for various sectors and strategic action plan for augmentation and effective management of available water resources.

District Demography: As per 2011 census, the total population of the district is 1514190 out of which count of female and male members are 743141and 771049 respectively. District is predominantly rural and around 74.47% of the population resides in rural area.

Agriculture in Amreli: Agriculture and horticulture plays an important role inrural economy in Amreli district. The Gross Irrigated Area of Amreli district is 189171.3 hectare which is around 28.86% of the 655376.3 hectare of gross cropped area

District Water Profile: Water available in the district is mostly sourced from ground water. The surface irrigation availability for the district is lower than the availability of ground water irrigation. 239.38 mcm water through surface irrigation and 767.96 mcm through ground water is available in the district

Further 16% of the total agricultural area of Amreli district falls in Savarkundla Block. The lowest irrigated area under agriculture is in Amreli taluka with only 2% of the total irrigated land in the district, while savarkundla has the highest irrigated area with 25% of the total irrigated area.

Yield per Hectare of Major Crops: In Kharif season is majority of crops are grown under rainfed conditions, where as in summers and rabi cultivation is mostly done in

irrigated conditions. Cultivation of horticulture crop is mainly done in irrigated area, while only 10% of the fruits production land is reported to be rainfed. Yields reported in Amreli district are reportedly lesser than state average. By enhancing the water resources availability for irrigation purpose through rainwater harvesting, soil & water conservation measures, the productivity of crops can be enhanced further.

Existing Type of Irrigation: Savarkundla block has the maximum number of canal and reservoir structures (30%) while covering a command area of 9449 hectares (14%). The highest command area is covered in Dhari block (19661 ha). Bagasara block has the minimum number of canal and reservoir structures (3%) while the least command area is in the liliya block with 938 hectares (1%) under canal irrigation in the district. Amreli block has the least command area covered by surface irrigation.

Water Budget: The total water gap for the district is currently 1426.49 MCM and has been estimated at 1435.31 MCM during 2020, i.e. the supply of water is insufficient to meet the current and future demand of the district. It was observed that all the blocks except Dhari faced the issue of supply shortage, i.e. they have their demand greater than the available supply.

Strategic Action Plan under PMKSY: Year wise financial outlay for the four years can is calculated in the report, i.e. in financial year 2016-17, a budget of Rs 14538.40lakh is proposed. In the subsequent three years, Rs.10992.10lakh, Rs.10030.54lakh and Rs.9560.56lakh budget is estimated for various departments. The total financial outlay proposed for the district of Amreli under PMKSY for the year 2016-20 is Rs. 45121.60 lakh.

Department wise Financial Outlay: The highest allocation of funds is proposed for per drop more crop component i.e. Rs. 22281.26 lakh (49.38%), which is to be executed by Gujarat Green Revolution Company Ltd (GGRC). This component has two sub components namely micro irrigation through Drip and Sprinkler. Har khet ko pani component has the second highest allocation with Rs. 13459.56 lakh (29.83%) will be executed mainly by State and panchayat irrigation departments, GSLDC and GWRDC. A total of Rs.144.33 lakh (0.32%) has been proposed for extension and training purpose, which shall be undertaken by ATMA. Gujarat State Watershed Management Agency

(GSWMA) has proposed a plan of Rs. 6781.46 lakh (15.03%) under various component of watershed.

Expected Output and Outcome: In the district of Amreli, the project for four year plans to bring an additional 15489.55 ha under irrigation. Amreli taluka has the highest area planned to be brought under irrigation by this plan (2317 ha), while Kambha has the least (696 ha)

The employment generation is being calculated for Amreli district by taking 40% cost of watershed dept. and 20% cost of all other dept. as labor charge, the cost is divided by Rs.178 to generate total Man-days. The total man-days after calculation come 7565274.

It can be observed that highest employment potential is in Savarkundla (15.89%), while Jafrabad has the least (3.27%). The PMKSY interventions are also likely to generate an additional income of Rs. 11311.60 lakh to the farmers of the district. This is based on the assumption of at least 60% of potential utilised and Rs. 42,000 per ha incremental income from rainfed to irrigated farming and 11559 jobs on recurring basis (in 26932 ha additional area brought under irrigation at the rate of 2.33 ha average land holding by farmers).

INTRODUCTION

Background

Preparation of decentralized area specific district planning process visualized in various plans took concrete shape through the years and initiatives like specific guidelines on methodologies and processes for preparation of district plans; framework for preparation of perspective plan, medium term and annual plans by then planning commission in 1969 and the 73rd and 74th constitutional amendments conferring constitutional status to Panchayats at district and sub district level; local self-government in urban areas; constitution of district planning committee to consolidate the plans prepared at Panchayats and municipalities and prepare a draft development plan for the whole district.

The decentralized planning process was further strengthened through emphasis by planning commission on preparation of district level plans and making it an integral part of the process of preparation of the states 11th five year plan. The Planning commission issued guidelines in August 2006 for preparation of the district plans. The guidelines define the District Planning as 'the process of preparing an integrated plan for the local government sector in a district taking into account the resources (natural, human and financial) available and covering the sectoral activities and schemes assigned to the district level and below and those implemented through local governments in a state. The document that embodies this statement of resources and their allocation for various purposes is known as the District Plan".

Government of India through a resolution in National Development Council on 29th May 2007 conceived a special Additional Central Assistance Scheme (ACAS) to address the slow growth of agriculture and allied sectors by incentivizing states to draw up plans for their agriculture sectors more comprehensively. The NDC resolution states "GoI introduced a new Additional Central Assistance Scheme to incentivize states to draw up plans for their agriculture sector more comprehensively, taking agro-climatic conditions, natural resource issues and technology into account, and integrating livestock, poultry and fisheries, etc. This involved a new scheme for Additional Central

Assistance (ACA) to State Plans, administered by the Union Ministry of Agriculture over and above its existing Centrally Sponsored Schemes, to supplement the State-specific strategies including special schemes for beneficiaries of land reforms. The newly created National Rainfed Area Authority on request, was to assist States in planning for rainfed areas".

The NDC in its resolution advised the states to prepare a comprehensive district agriculture plans (C-DAP) that will fully utilize available resources and include allied agriculture sectors. Further, GOI issued a manual on preparation of comprehensive district agriculture plans to help the states prepare C-DAP. As per these guidelines, the objective of district planning is 'to design an integrated and participatory action plan for the development of local area in general and agriculture and allied sectors in particular'. The objectives of Comprehensive District Agriculture Plan (C-DAP) were:

- To prepare a Comprehensive District Agriculture Plan (C-DAP) through participatory process involving various organisations and stakeholders.
- To enable optimum utilisation of scarce natural, physical & financial resources.
- To assess and plan for the infrastructure required to support the agriculture development.
- To establish linkages with the required institutional support services, like credit, technology transfer, ICT, research etc.
- To evolve an action plan for achieving sustainable agricultural growth with food security and cropping system that will improve farmers' income.

The guidelines required the state/district authorities to (i) ensure that the agricultural plans are prepared for the district and then integrated into the agricultural plans of the State based on the agro-climatic conditions, availability of technology, trained manpower and natural resources; (ii) local needs / crops / feed and fodder / animal husbandry / dairying / fisheries / priorities are reflected in the plan; (iii) productivity gaps for important crops and livestock and fisheries are reduced; and (iv) the returns to the farmers from these are maximized.

The latest move in the process of strengthening of decentralized planning process was the Government of India guidelines issued in 2015 in the form of a template for the preparation of District Irrigation Plan (DIP) and State Irrigation Plan (SIP) as part of the Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) program and made the preparation of DIP and SIP mandatory for the states to receive funds from the program. The present report is a product of these long drawn efforts of Government of India to strengthen the decentralized planning process in the country focusing on the vital resource i.e., water.

Water is of vital importance for human & animal life, maintenance of ecological balance and promotion of developmental activities. Considering its vital importance and ever increasing demand for water, in the face of population growth, urbanization & industrialization and considerations of climatic change, making water, an increasingly a scarce resource, available to multiple uses, planning and management of this vital resources, utilization of water economically, optimally and equitably assumes greater importance.

According to the 12th Five year Plan the water budget estimates of India by Ministry of Water Resources suggests an availability of 1123 billion cubic meters (BCM) against a current estimated demand of 710 BCM. The Standing Committee of the Ministry of Water Resources estimates that this water demand will rise to 1093 BCM by 2025. Though the existing water availability in the immediate future seems to be adequate, with the near constant supply of water resources in the face of increasing demand on account of population growth, urbanisation and industrialization will strain the water supply-demand balance.

The per capita water availability which stood at 5,177 cubic meters in 1951 was reduced to 1820 cubic meters in 2001 while the international prescribed limit is 1800 cubic meters. The projected per capita availability of water is 1341 cubic meters in 2025 and 1140 cubic meters in 2050 suggesting shortage of water in the medium term[1]. Further, the all India water balance estimates does not reflect the variations in water balance

[1]Ministry of Water Resources (2011), Strategic Plan for Ministry of Water Resources, Government of India, New Delhi.

across time and space- certain areas having a positive water balance and the others facing acute shortage. The problem is further accentuated by water quality related issues.

With the abundant surface and ground water supply in the first five decades since independence, more than 80 percent of the total available water resources were allocated for irrigation purposes and the rest meeting the domestic and industrial demands. In a recent study[2]on the demand for water from agriculture, domestic and industrial uses in 2000, 2025 and 2050 seems to suggest that domestic demand (34 BCM in 2000, 66 BCM in 2025 and 101 BCM in 2050) and industrial demand (42 BCM in 2000, 92 BCM in 2025 and 161 BCM in 2050) for water will utilize the total balance water available while agriculture demand for water will be (605 BCM in 2000, 675 BCM in 2025 and 637 BCM in 2050). This change is partly because of the changing sectoral contributions of India's GDP and also partly because of dynamics of irrigation development in the country where the initial expansion in area under irrigation is propelled by the availability of abundant water resources and availability of good quality land. This is no longer the case in many of the states where the availability of land and water are serious constraints for further expansion of irrigation. Further, as per the erstwhile planning commission up to March 2012 out of 141 million hectares of net sown area in the country 114 (or 81%) million hectares is Irrigation Potential Created (IPC) and 88 (or 62%) million hectares is Irrigation Potential Utilised (IPU) leaving almost 20% of irrigated potential unutilized. This leaves 40 percent of the net sown area in the country dependent on rainfall which makes farming a high risk and less productive.

The competing demands for water resources and the emerging issues and concerns were to be addressed through certain basic principles and commonality in approaches in dealing with planning, development and management of water resources[3] under an Integrated Water Resource Management framework. The main objectives of water resource management as delineated in National Water Policy 2012 are:

[2] Amarasinghe, U.A., Shah T., Turral, H. and Anand, B.K. 2007. *India's water future to 2025-2050:Business-as-usual scenario and deviations*. Research Report 123, International Water Management Institute, Colombo.
[3]Ministry of Water Resources, National Water Policy, 2012, Government of India, New Delhi.

a) Planning, development and management of water resources need to be governed by common integrated perspective considering local, regional, State and national context, having an environmentally sound basis, keeping in view the human, social and economic needs.
b) Principle of equity and social justice must inform use and allocation of water.
c) Good governance through transparent informed decision making is crucial to the objectives of equity, social justice and sustainability. Meaningful intensive participation, transparency and accountability should guide decision making and regulation of water resources.
d) Water needs to be managed as a common pool community resource held, by the state, under public trust doctrine to achieve food security, support livelihood, and ensure equitable and sustainable development for all.
e) Water is essential for sustenance of eco-system, and therefore, minimum ecological needs should be given due consideration.
f) Safe Water for drinking and sanitation should be considered as pre-emptive needs, followed by high priority allocation for other basic domestic needs (including needs of animals), achieving food security, supporting sustenance agriculture and minimum eco-system needs. Available water, after meeting the above needs, should be allocated in a manner to promote its conservation and efficient use.
g) All the elements of the water cycle, i.e., evapo-transpiration, precipitation, runoff, river, lakes, soil moisture, and ground water, sea, etc., are interdependent and the basic hydrological unit is the river basin, which should be considered as the basic hydrological unit for planning.
h) Given the limits on enhancing the availability of utilizable water resources and increased variability in supplies due to climate change, meeting the future needs will depend more on demand management, and hence, this needs to be given priority, especially through (a) evolving an agricultural system which economizes on water use and maximizes value from water, and (b) bringing in maximum efficiency in use of water and avoiding wastages.
i) Water quality and quantity are interlinked and need to be managed in an integrated manner, consistent with broader environmental management

approaches inter-alia including the use of economic incentives and penalties to reduce pollution and wastage.

j) The impact of climate change on water resources availability must be factored into water management related decisions. Water using activities need to be regulated keeping in mind the local geo climatic and hydrological situation.

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The funds under this program would be provided to the states as per the pattern of assistance of Centrally Sponsored Schemes (CSS) decided by the Ministry of Finance and NITI Aayog. During 2015-16 the existing pattern of assistance of ongoing scheme was continued. An outlay of Rs. 50,000 crore has been approved for 2015-20. The financial assistance provided to the state governments from this centrally sponsored scheme is subject to fulfillment of certain conditions. Firstly, a state will become eligible to access PMKSY fund only if it has prepared the District Irrigation Plans (DIP) and State Irrigation Plan (SIP), excepting for the initial year, and the expenditure in water resource development for agriculture sector in the year under consideration is not less than the baseline expenditure, which is defined as the average of the expenditure in irrigation sector irrespective of the department in the state plan in three years prior to the year under consideration. Secondly, States will be given additional weightage for levying charges on water and electricity for irrigation purposes, so as to ensure sustainability of the programme. Thirdly, interstate allocation of PMKSY fund will be decided based on

- Share of percentage of unirrigated area in the state vis-à-vis national average including prominence of areas classified under Desert Development Programme (DDP) and Drought Prone Area Development Programme (DPAP)

- Increase in percentage share of expenditure on water resource development for agriculture sector in State Plan expenditure in the previous year over three years prior to it and
- Improvement in irrigation efficiency in the state.

Vision

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.

Objective

The objectives of the PMKSY are to:

a) Achieve convergence of investments in irrigation at the field level (preparation of district level and, if required, sub district level water use plans).
b) Enhance the physical access of water on the farm and expand cultivable area under assured irrigation (Har Khet Ko Pani),
c) Integration of water source, distribution and its efficient use, to make best use of water through appropriate technologies and practices.
d) Improve on-farm water use efficiency to reduce wastage and increase availability both in duration and extent,
e) Enhance the adoption of precision-irrigation and other water saving technologies (More crop per drop).
f) Enhance recharge of aquifers and introduce sustainable water conservation practices
g) Ensure the integrated development of rainfed areas using the watershed approach towards soil and water conservation, regeneration of ground water, arresting runoff, providing livelihood options and other NRM activities.
h) Promote extension activities relating to water harvesting, water management and crop alignment for farmers and grass root level field functionaries.
i) Explore the feasibility of reusing treated municipal waste water for peri-urban agriculture, and

j) Attract greater private investments in irrigation.

Strategy/approach

To achieve these objectives PMKSY adopted strategies that include

a) Creation of new water sources; repair, restoration and renovation of defunct water sources; construction of water harvesting structures, secondary & micro storage, groundwater development, enhancing potentials of traditional water bodies at village level like Jal Mandir (Gujarat); Khatri, Kuhl (H.P.); Zabo (Nagaland); Eri, Ooranis (T.N.); Dongs (Assam); Katas, Bandhas (Odisha and M.P.) etc.
b) Developing/augmenting distribution network where irrigation sources (both assured and protective) are available or created;
c) Promotion of scientific moisture conservation and run off control measures to improve ground water recharge so as to create opportunities for farmers to access recharged water through shallow tube/dug wells;
d) Promoting efficient water conveyance and field application devices within the farm viz, underground piping system, Drip & Sprinklers, pivots, rain-guns and other application devices etc.;
e) Encouraging community irrigation through registered user groups/farmer producers' organisations/ NGOs; and
f) Farmer oriented activities like capacity building, training and exposure visits, demonstrations, farm schools, skill development in efficient water and crop management practices (crop alignment) including large scale awareness on more crop per drop of water through mass media campaign, exhibitions, field days, and extension activities through short animation films etc.

Programme Components

PMKSY has following four components:

1. Accelerated Irrigation Benefit Programme (AIBP)

To focus on faster completion of ongoing Major and Medium Irrigation including National Projects.

2. PMKSY (Har Khet ko Pani)

This component focuses on-

a) Creation of new water sources through Minor Irrigation (both surface and ground water)
b) Repair, restoration and renovation of water bodies; strengthening carrying capacity of traditional water sources, construction rain water harvesting structures (Jal Sanchay);
c) Command area development, strengthening and creation of distribution network from source to the farm;
d) Ground water development in the areas where it is abundant, so that sink is created to store runoff/ flood water during peak rainy season.
e) Improvement in water management and distribution system for water bodies to take advantage of the available source which is not tapped to its fullest capacity (deriving benefits from low hanging fruits). At least 10% of the command area to be covered under micro/precision irrigation.
f) Diversion of water from source of different location where it is plenty to nearby water scarce areas, lift irrigation from water bodies/rivers at lower elevation to supplement requirements beyond IWMP and MGNREGS irrespective of irrigation command.
g) Creating and rejuvenating traditional water storage systems like Khatri, Kuhl etc. at feasible locations.

3. PMKSY (Per Drop More Crop)

a) Programme management, preparation of State/District Irrigation Plan, approval of annual action plan, Monitoring etc.
b) Promoting efficient water conveyance and precision water application devices like drips, sprinklers, pivots, rain-guns in the farm (Jal Sinchan);

c) Topping up of input cost particularly under civil construction beyond permissible limit (40%), under MGNREGS for activities like lining inlet, outlet, silt traps, distribution system etc.
d) Construction of micro irrigation structures to supplement source creation activities including tube wells and dug wells (in areas where ground water is available and not under semi critical/ critical/ over exploited category of development) which are not supported under AIBP, PMKSY (Har Khet Ko Pani), PMKSY (Watershed) and MGNREGS as per block/district irrigation plan.
e) 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;
f) Water lifting devices like diesel/ electric/ solar pumpsets including water carriage pipes, underground piping system.
g) Extension activities for promotion of scientific moisture conservation and agronomic measures including cropping alignment to maximise use of available water including rainfall and minimise irrigation requirement (Jal Sarankchan);
h) Capacity building, training and awareness campaign including low cost publications, use of pico projectors and low cost films for encouraging potential use water source through technological, agronomic and management practices including community irrigation.
i) The extension workers will be empowered to disseminate relevant technologies under PMKSY only after requisite training is provided to them especially in the area of promotion of scientific moisture conservation and agronomic measures, improved/ innovative distribution system like pipe and box outlet system, etc. Appropriate Domain Experts will act as Master Trainers.
j) Information Communication Technology (ICT) interventions through NeGP-A to be made use in the field of water use efficiency, precision irrigation technologies, on farm water management, crop alignment etc. and also to do intensive monitoring of the Scheme.

4. PMKSY (Watershed Development)

a) Effective management of runoff water and improved soil & moisture conservation activities such as ridge area treatment, drainage line treatment, rain water harvesting, in-situ moisture conservation and other allied activities on watershed basis.
b) Converging with MGNREGS for creation of water source to full potential in identified backward rainfed blocks including renovation of traditional water bodies

Rationale/ Justification

In reference to the status and need of irrigation, the water resource management including irrigation related priorities was identified for Amreli district by the peoples' representatives of district with support from administration and technical experts. For instance the reports of Strategic Research and Extension Plan (SREP) prepared under ATMA program, Comprehensive District Agriculture Plan (C-DAP) prepared as part of Rashtriya Krishi Vikas Yojana (RKVY), Potential Linked Credit Plans (PLP) of NABARD and the Integrated District Development Plan etc. identified number of irrigation related issues for Amreli district including (i) promoting water use efficiency through sprinkler and drip irrigation; (iii) promoting protected polyhouse cultivation to minimize risk factors and enhance quality and productivity; (iv) Improvement of on-farm water delivery and efficiency of existing irrigation systems; (v) promotion of soil conservation of arable & non-arable land through engineering measures; (vi) creation of new water harvesting structures, check dams, ponds, tanks, etc (vii) increase the forest cover in the district and (viii) land improvement measures.

Methodology

During the course of preparation of District Irrigation Plan (DIP) the team visited Amreli district to collect data and have interaction with all the stakeholders. Methodology adopted to prepare DIP is outlined in brief as under:

a) Collection of primary and secondary data from field from various sources including published documents and websites.

b) Various meetings were held to obtain ground level realities and data from key personnel/stakeholders through structured, unstructured interviews, focused group discussions etc.

c) Meetings with various State Government departments and related institutions were held

d) Meeting through VC was also held with State Level authorities.

e) GIS maps of the area's/clusters were studied to understand the land morphology, topography of the district.

f) Focused group discussions and interaction with of agriculture officers, horticulture officers, soil conservation officers, extension officers, rural development department, animal husbandry department, irrigation officers both at blocks and district level for identifying the key issues and focus areas of the region.

g) Discussion with NABARD officer of Amreli district was also held during the visit.

h) Team members also participated in the State Level workshop and held active discussions with GoI officers, State Level officers and scientists of various institutions

On the basis of detailed discussion and analysis of data, the team arrived at the projections of various components of PMKSY and Department wise plan for four years from 2016-17 to 2019-20 as detailed in the plan.

CHAPTER 1. GENERAL INFORMATION OF THE DISTRICT

1.1 District Profile

Amreli district derive its name from the town of Amreli, which is the headquarters of the district. Amreli district is situated in north east corner of Saurashtra peninsula in Gujarat between 20.45° to 22.15° latitude and 70.13° to 71.45° longitude. It is surrounded by Bhavnagar district in east, in north Rajkot district, in west Junagadh district and Arabian Sea in the south. It has a coastal line of about 62 km. The geographical area of the district is 7397 square km.

The district is in agro climatic zone 6th and 7th south Saurashtra & north Saurashtra respectively. The climate of the district varies from moderately hot throughout the year except in winter. The climate is humid along with the coastal belt. The temperature varies from 8.01° Celsius in January to 43.7° Celsius in May. The average rainfall of last three years is 706 mm. The district receives rain from South-West monsoon from June to September.

Table 1.1: District Profile

Name of the District	District Code	Latitude	Longitude
Amreli	13	20.45 to 22.15	70.13 to 71.45

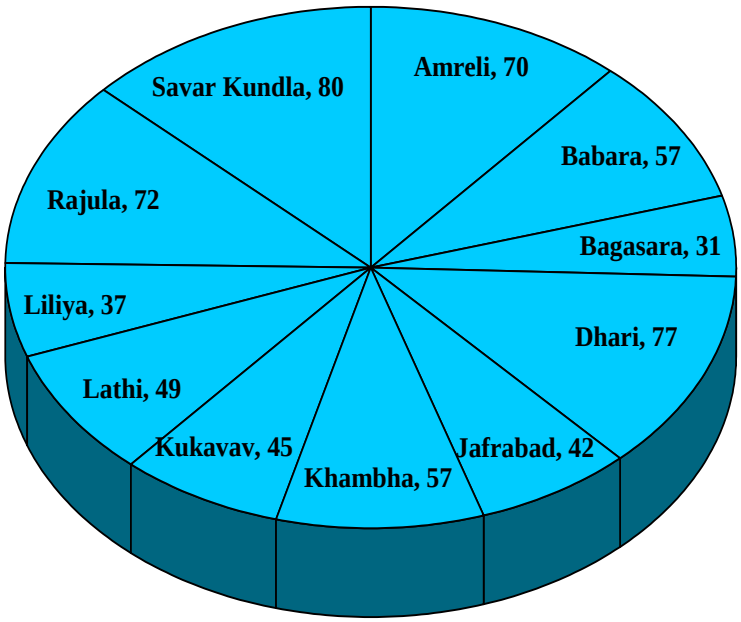


Figure 1 Taluka wise number of villages in the district

Administrative setup of Amreli

Amreli is the headquarters of the Amreli district. For administrate purpose, the district is divided in to 11strata called blocks or Talukas with their headquarters at Amreli, Babra, Dhari, Bagsara, Kunkavav, Khambha, Jafrabad, Lathi, Liliya, Rajula and Savarkundla.Amreli district has 616 inhabited villages.

Map 1 Administrative map of Amreli District

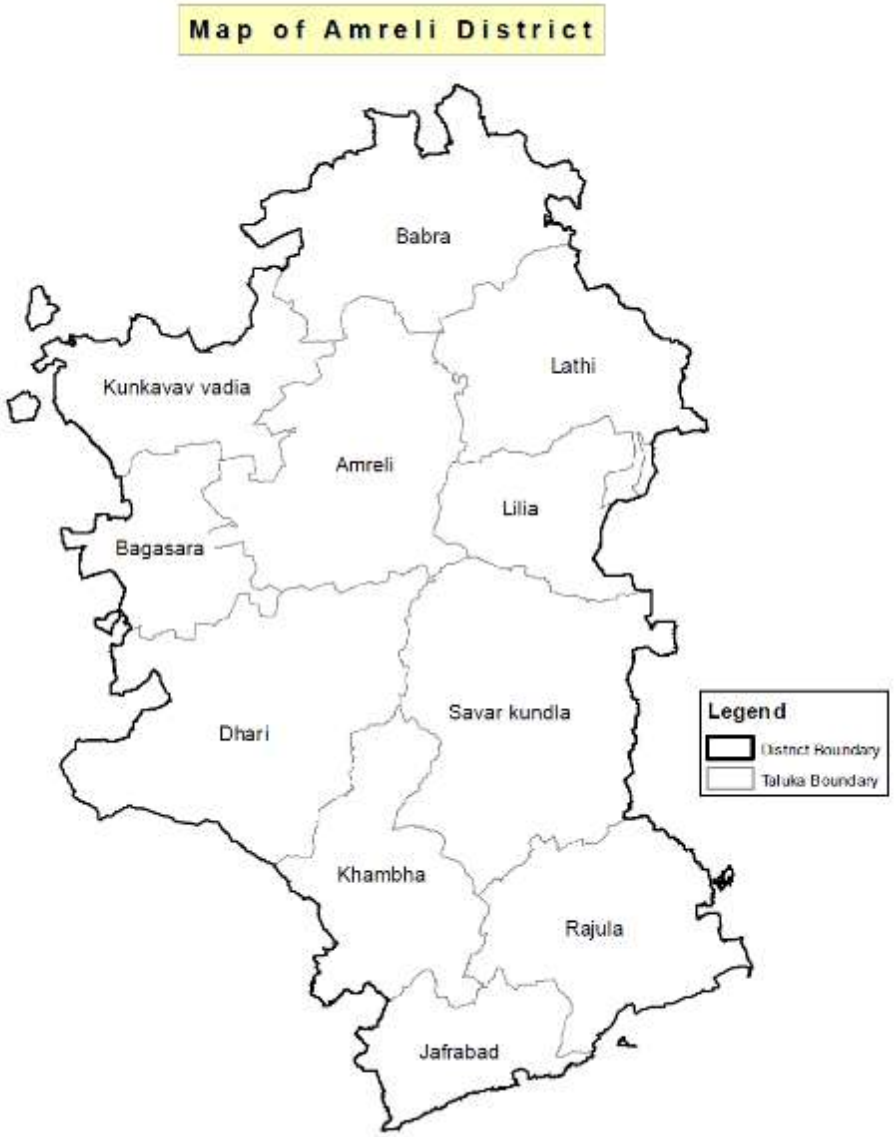


Table 1.2: Administrative set-up of Amreli

No. of Development Blocks/ Talukas	11 (Amreli, Babra, Dhari, Bagsara, Kunkavav, Khambha, Jafrabad, Lathi, Liliya, Rajula and Savarkundla)
No. of Villages	616
No. of Gram Panchayats	592

The district is headed by the Collector & District Magistrate. At the Sub Division level an officer Called Prant Officer & SDM holds the office and a Mamlatdar in each Taluka Office for the smooth administration and quick disposal of services to the people.

The District Development Officer looks after the development activities of the district supported by the Taluka Development Officers in each Taluka along with Chief Judicial Magistrate, Executive Engineers and other officers look after their respective departments for carrying out development and regulatory functions. At Village level, Talati cum Mantri functions under Gram Panchayat and carry out revenue and developmental work of the Government.

1.2 Demography

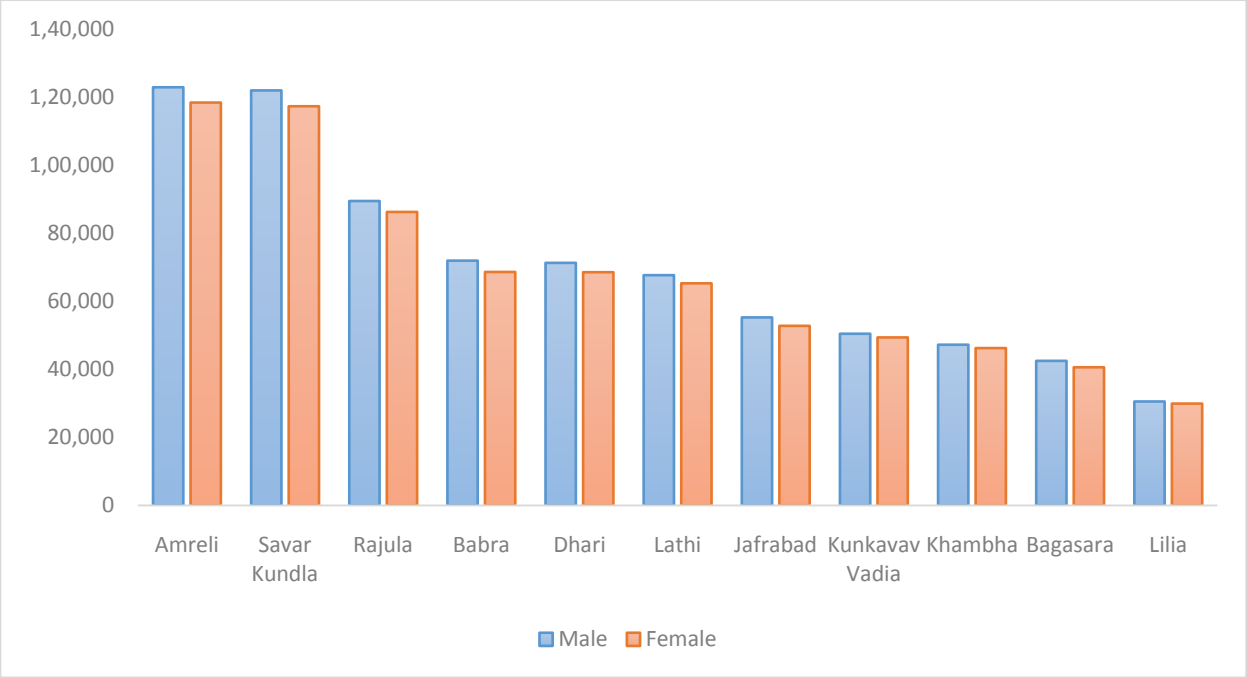
The population of the district according to the census, 2011 is 1514190, which include 771049 male and 743141 female. Of the total population 74.47% were living in rural areas of the district (as of 2011).

Table 1.3: Distribution of male and female population in blocks of Amreli

Blocks	population		
	Male	Female	Total
Amreli	122,893	118,386	241279
Savar Kundla	121,965	117,307	239272
Rajula	89,454	86,239	175693
Babra	71,923	68,598	140521
Dhari	71,281	68,526	139807
Lathi	67,654	65,260	132914
Jafrabad	55,238	52,764	108002
Kunkavav Vadia	50,438	49,356	99794
Khambha	47,214	46,217	93431
Bagasara	42,469	40,585	83054
Lilia	30,520	29,903	60423
Total	771,049	743,141	1514190

Source: Census of India, 2011

Figure 1.2: Block wise male and female population of Amreli District



Amreli taluka is the most populated block of the district whereas Lilia has lowest population (Table 1.3). The population density of Amreli district is 205 people per sq. km. The population density of Amreli is lower as compared to the population density of the State (308 person per sq.km.).

In terms of sex-ratio, Amreli has964 females per 1,000 males as against 919 females per 1,000 males of state average. Sex ratio in all the Talukas is unfavorable (<1000 male) to females. It is highest in Lilia (980 female per 1000 male) and lowest in Babra (927 female per 1000 male).

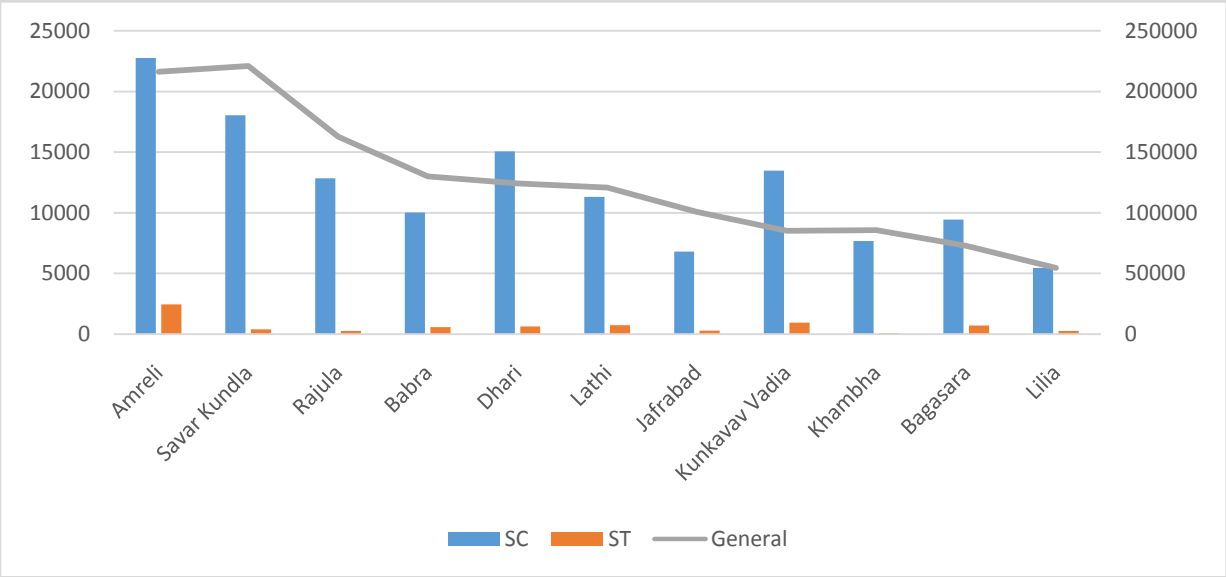
Table 1.4: Category wise population in blocks of Amreli

Name of Sub-District	Total population	Total scheduled castes population	Total scheduled tribes population	General Population
Amreli	241279	22766	2444	216069
Savar Kundla	239272	18032	386	220854
Rajula	175693	12851	252	162590
Babra	140521	10024	589	129908
Dhari	139807	15058	620	124129

Lathi	132914	11323	735	120856
Jafrabad	108002	6808	286	100908
Kunkavav Vadia	99794	13487	956	85351
Khambha	93431	7666	87	85678
Bagasara	83054	9448	711	72895
Lilia	60423	5452	256	54715
Total	1514190	132915	7322	1373953

Source: Census of India, 2011

Figure 1.3: Block wise percentage of SC, ST & General population in Amreli District



Source: Census of India, 2011

1.3 Biomass and Livestock

Livestock Population

The current livestock population in the district is 893,078 of which 235,287 are small animals while 657,791 are large animals.

Out of 893,078 animals in Amreli district, 17% of the animals are from Savarkundla taluka, 13% from Babra and 11% fromDhari Block. Indigenous cows accounts for 35% of the total animals followed by Indescriptive buffalo (27%),Goats(15%) and sheep (15%).

Large Animals account for 74% of the total livestock while small animals constitute only 26%.

Table 1.5: Population of small animals in the blocks of Amreli

Block	Goats	Sheep	Total Small Animals
Kukavav	7789	6739	14528
Babra	15966	16326	32292
Lathi	9189	5721	14910
Lilia	3579	3852	7431
Amreli	10912	11560	22472
Bagsara	6980	5618	12598
Dhari	13131	10110	23241
Savarkundla	29478	17503	46981
Khambha	15525	8090	23615
Jafrabad	5576	2223	7799
Rajula	13119	16301	29420
Total	131244	104043	235287

Source: Pashupalan branch, District panchayat amreli Date: 11/3/16

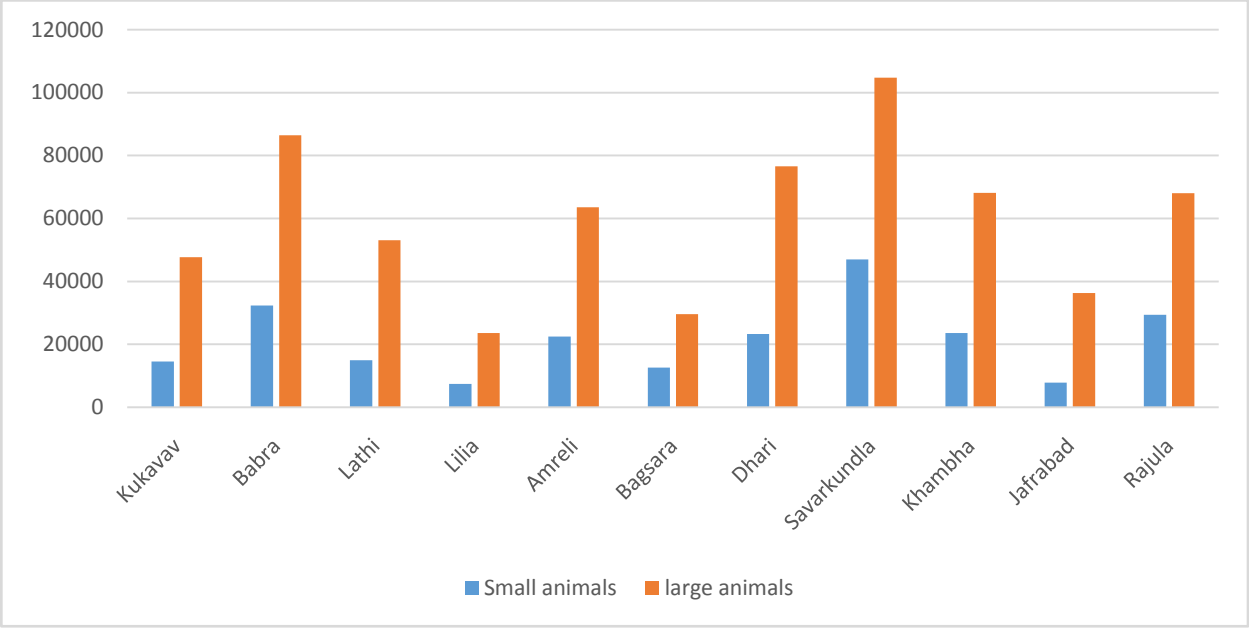
Table 1.6: Population of large animals in the blocks of Amreli

Block	Large Animals		Draft Animal	Total Large Animals
	Indigenous Cow	In descript Buffalo		
Kukavav	21148	17310	9216	47674
Babra	46415	25937	14109	86461
Lathi	28226	14807	10023	53056
Lilia	11167	7983	4475	23625
Amreli	29413	25578	8577	63568
Bagsara	13446	11151	5013	29610
Dhari	35913	28473	12162	76548

Savarkundla	46945	39813	17954	1E+05
Khambha	32229	26339	9595	68163
Jafrabad	19104	11826	5421	36351
Rajula	27904	31528	8591	68023
Total	311910	240745	105136	657791

Source: Pashupalan branch, District panchayat amreli Date: 11/3/16

Figure 1.4: block wise population of small and large animals in Amreli



1.4 Agro-Ecology, Climate, Hydrology and Topography

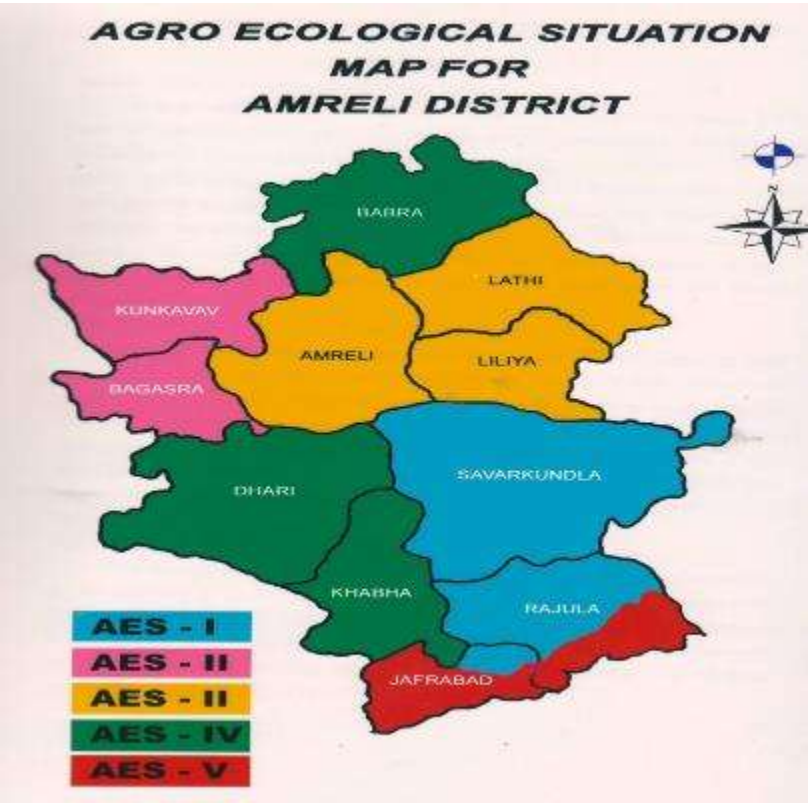
According to the C-DAP of the district, the area of Amreli is plain as well as hilly. Dhari, Khambha, Rajula, Savarkundla, Jafrabad and Babra talukas possess hills and plains. Amreli, Liliya, Lathi, Kukavav and Bagasara possess plains. Part of Dhari and Khambha taluka fall in Gir forest where precious Asiatic Lion are living.

In Amreli monsoon rain starts in the last week of June and remains active till last week of September. Normally in this district Savarkunla (903 mm), Jafrabad(876 mm), Khambha(735 mm) talukas are getting more rains as compared to other talukas. In the year 2010 average rainfall of the district was 824 mm distributed over 45 rainy days. The talukas having hills (Rajula, Jafrabad, Dhari, Savarkundla, Khambha and Babra) have ample scope of Wind Farms through which cheap electricity maybe produced

In this district weather, there is a lot of variation. At one side Rajula and Jafrabad blocks have cool and humid weather (Nearby Arabian Sea), whereas in remaining area dry and hot temperaturesare experienced. At Amreli, the district head quarter, the coolest / most cold temperature was recorded on 20, January 2008,while the hottest temperature 46.2c was recorded on 5th May 2002.

Agro Ecological Zone Type	Normal Annual Rainfall (mm)	Average Monthly Rainfall (mm)	No of Rainy Days	Average Weekly Temperature (oC)								
				Period								
				Summer (Apr-May)			Winter (Oct- Mar)			Rainy (Jun-Sep)		
				Min	Max	Mean	Min	Max	Mean	Min	Max	Mean
North Saurashtra Agro-Climatic Zone	561.8	132.3	26.6	23.9	40.35	32.125	15.73	32.87	24.3	24.7	33.475	29.08

Map 2 Taluka wise agro ecological map of the district



1.5 Soil Profile

Being agriculture oriented district, majority of the population (about 75%) is engaged in agriculture and animal husbandry (keeping). The district soil is mainly alkaline. Soil of the district can be classified as medium black, shallow black, saline alkaline, hilly and coastal alluvial. Talukas fall under these types of soil are as shown in the map.

Map 3 Soil map of Amreli District

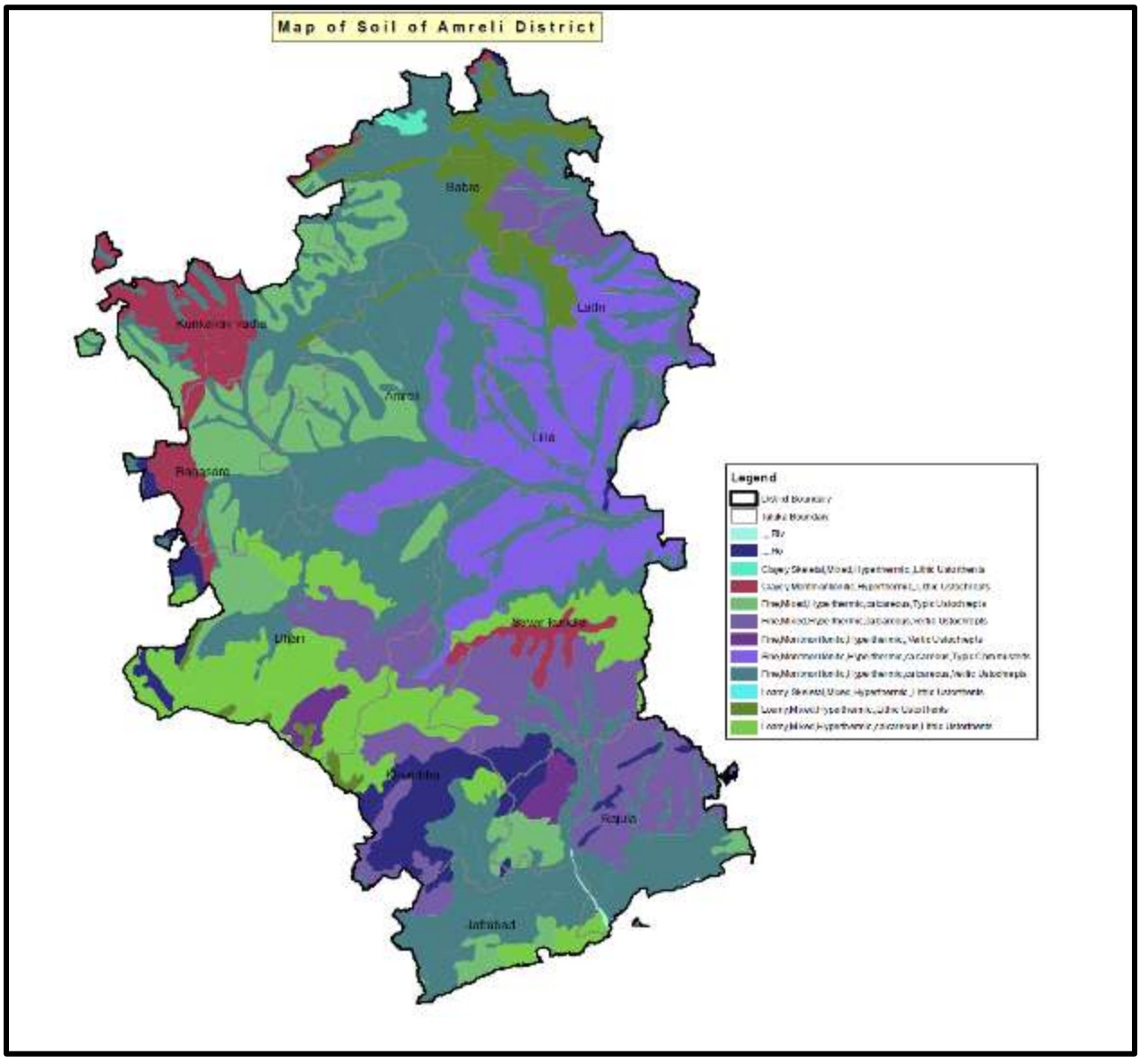


Table 1.7 Soil classification in the district

Sr. No	Particular	Name of Block

1	Medium black soils with 400-700 mm rainfall	**Savarkudla, Rajula and part of Jafrabad**
2	Shallow black soils with 600 to 700 mm rainfall	**Kukavav, Bagasara**
3	Saline alkaline (Heavy texture) soils with 500 -600 mm rainfall	**Amreli, Lathi, Liliya**
4	Hilly soils with 300-600 mm rainfall	**Babra, Dhari, Khambha**
5	**Coastal alluvial soils with 750-1000 mm rainfall**	**Jafrabad and part of Rajula**

Source: SREP Report, ATMA, Amreli, 2006

Soil of the Amreli district is about 80% alkaline. Total 333502 hectares of land falls in alkaline and reclamation measures are remained. Soil erosion is also a major problem in the district. The highest soil erosion (39316 ha) is occurred in Babra taluka.

1.6 Land Use Pattern

The total geographical area (TGA) of Amreli is 691955.2 hectare. The largest block of the district is Savarkundla which comprises TGA of 110050.7 hectare i.e. about 16% of the TGA of the district. The Gross Cropped Area of the district is655376.3 hectare out of which 104218.8 hectare i.e.16% of the area falls in SavarkundlaBlock, followed by Dhari block having GCA of 93861.04 ha i.e. 14% of the district. SavarkundlaBlock alsohas the maximum net sown area of 82040.05 hectare i.e. 16% of the net sown area of the district.

Table 1.8: Area under agriculture (Area in ha.)

Block	Area Under Agriculture				
	TGA	**GCA**	**NSA**	**AST**	**Cropping Intensity (%)**
Amreli	77325.23	77070.33	65853.78	11216.55	117
Lathi	57474.55	57885.2	48288.8	9596.4	120
Liliya	37684.69	34032.3	31381.38	2650.92	108

Bagsara	29995.4	29813.54	24729.86	5083.68	121
Babra	73354.55	67849.4	55313.6	12535.8	123
Kukavav	54581.99	60521.29	47643.52	12877.77	127
Dhari	96298.64	93861.04	63865.75	29995.29	147
Khamba	59529.54	51548.74	38796.25	12752.49	133
Rajula	62966.98	52012.19	41389.27	10622.92	126
Savarkundla	110050.7	104218.8	82040.05	22178.7	127
Jafrabad	32692.89	26563.52	23683.7	2879.82	112
Total:	691955.2	655376.3	522986	132390.3	125

Source: Department of Agriculture, Amreli

TGA- Total Geographical Area, GCA- Gross Cropped Area, NSA- Net Sown Area, AST- Area Sown more than once

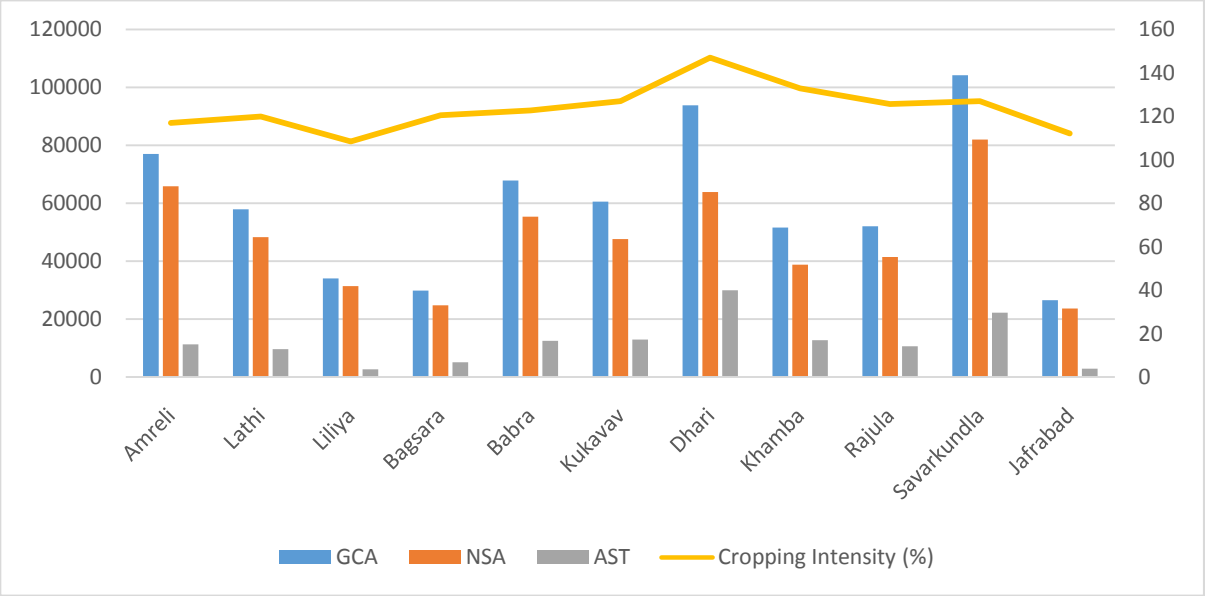


Figure 1.5: TGA, GCA and Cropping Intensities of the blocks

The cropping intensity in Khamba block is 133% and ranks second in the district after Dhari block where cropping intensity is 147%. In the blocks of Kukavav and

Savarkundla, cropping intensity is 127% each. The taluka with the least cropping intensity is Liliya with 108%. Cropping intensity of the district is 125%.

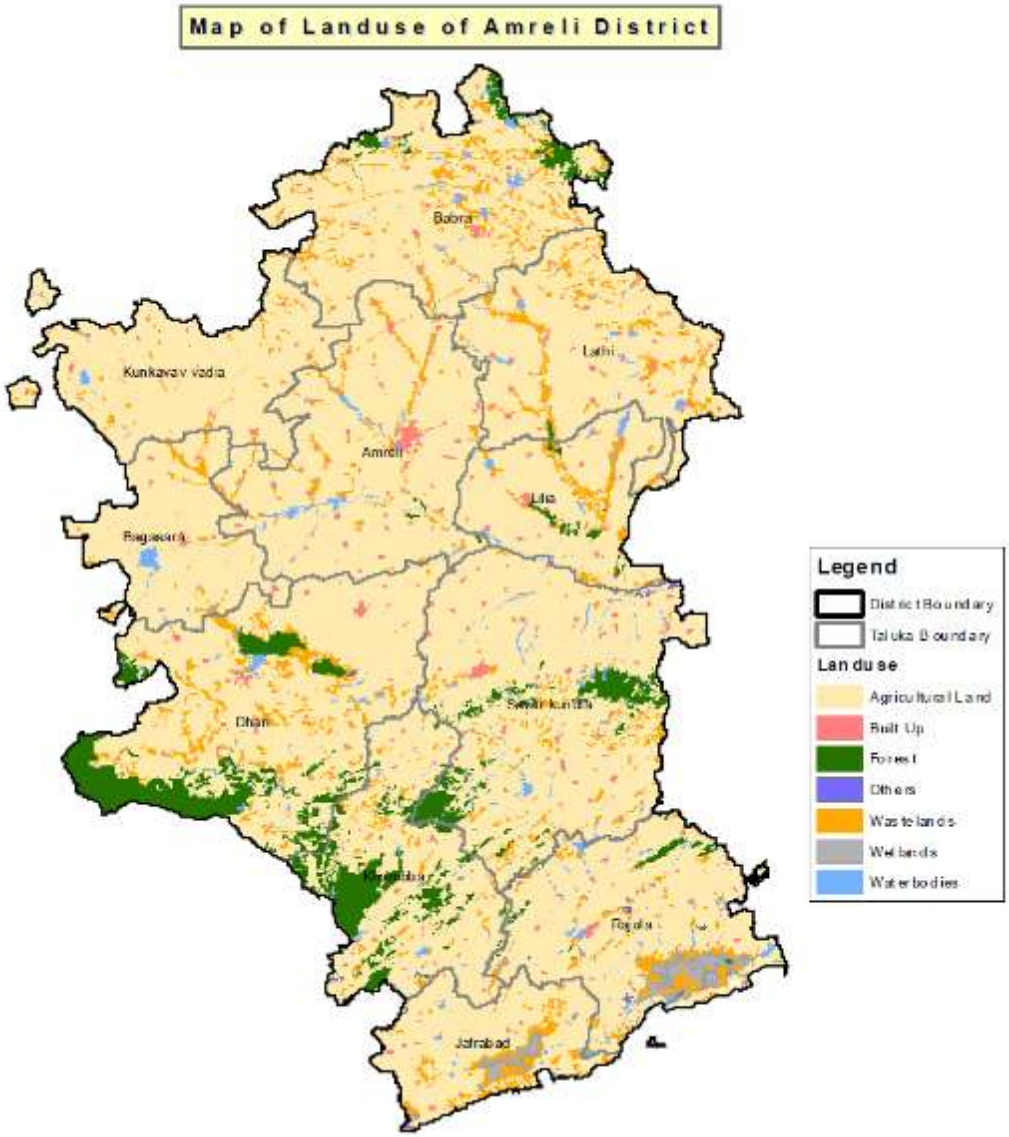
Table 1.9: Area under forest, wasteland and other uses

Block	TGA	Area Under Forest	Area Under Wasteland	Non-Agri. Uses
Amreli	77325.23	102.51	910.95	10457.99
Lathi	57474.55	238.14	1105.55	7842.06
Liliya	37684.69	0	237.27	6066.04
Bagsara	29995.4	54.34	1151.3	4059.9
Babra	73354.55	1802.7	424.12	
Kukavav	54581.99	10.11	465.08	6593.39
Dhari	96298.64	15377.17	1942.8	15112.92
Khamba	59529.54	8468.9	2027.39	10237
Rajula	62966.98	3176.04	5234.57	13167.1
Savarkundla	110050.74	800.36	1589.35	25620.98
Jafrabad	32692.89	199.9	1679.68	7129.61
Total:	691955.2	30230.17	16768.06	106287

Source: Department of Agriculture, Amreli

The district with a total geographical area of 691955.2 hectare but has an area of only 30230.17hectare (4%) under forest. Of the total geographical area, 2% of the land is under wastelands, while 15% is under non-agricultural uses.

Map 4 Land use map of Amreli District


Map of Landuse of Amreli District
Babra
Lathi
Kunkavav vadia
Amreli
Lilia
Rajkavdi
Dhari
Savarkundla
Rajula
Jafrabad
Legend
District Boundary
Taluka Boundary
Landuse
Agricultural Land
Built Up
Forest
Others
Wastelands
Wetlands
Waterbodies

CHAPTER 2. DISTRICT WATER PROFILE

Amreli district is primarily an agricultural district with groundnut, cotton and wheat as the predominant crops. The other major crops cultivated are sorghum, pearl millet, green gram, sesame etc.

Agriculture in the district is characterized with a number of problems such as soil erosion, soil salinity, alkalinity, imbalance of nutrients, over exploitation of ground water leading to depletion of underground water resources, excessive use of fertilizer and pesticides leading to degradation of soil increasing pollution in atmosphere, soil and ground water. (SREP, 2013)

2.1 Area Wise, Crop Wise Irrigation Status

The total geographical area reported in the district for land utilization is 691955.2 ha. The major crops grown in Kharif are groundnut, cotton, pearl, millet and sesamum and that in Rabi are wheat and gram. During summer groundnut, sesame and vegetables are the main crops. The district has a net sown area of 522986 ha against Gross Cropped Area of 655376.3 with cropping intensity of 125%. The net irrigated area (92911ha) constitute 18% of the net sown area (522985.96 ha).

Table 2.1: Area Wise, Crop Wise irrigation Status

Crop Type	kharif (Area in ha.)			Rabi (Area in ha.)			Summer (Area in ha.)			Total (Area in ha.)		
	Irr	**Rf**	**Total**	**Irr**	**Rf**	**Total**	**Irr**	**Rf**	**Total**	**Irr**	**Rf**	**Total**
(A)Cereals	0	13400	13400	33442	0	33442	1240	0	1240	34682	13400	48082
(B) Coarse Cereals	0	0	0	0	0	0	0	0	0	0	0	0
(C) Pulses	110	6945	7055	3210	7	3217	100	0	100	3420	6952	10372
(D) Oil Seeds	3783	253876	257659	1152	0	1152	4474	0	4474	9409	253876	263285
(E) Fibre	95117	137027	232144	1979	0	1979	0	0	0	97096	137027	234123
(F) Any other crops.	1584	27734	29318	23465	7	23472	3857	0	3857	28906	27741	56647
Total	100594	438982	539576	63248	14	63262	9671	0	9671	173513	438996	612509

Table 2.2: Block wise horticulture area and production

Taluka	Fruit		Vegetable		Spice		flower		Total	
	Area	Production	Area	Production	Area	Production	Area	Production	Area	Production
Amreli	104	855	**476**	**7447**	109	369.93	6	45.6	695	8718
Babara	114	1086	224	3809	88	208.96	7	56.03	433	5160

Bagasara	157	1215	480	7867	93	384.55	2	15.2	732	9482
Dhari	3552	33509	1223	21600	205.5	593.32	3	23.36	4984	55726
jafarabad	491	3607	302	6025	67	193.02	0	0	860	9825
Khambha	511	4666	674	11944	98.5	206.92	0	0	1284	16817
Kukavav	97	852	272	5069	181	610.41	3	22.8	553	6554
Lathi	154	1414	372	5645	176	672.55	1	9	703	7741
Liliya	51	409	145	1959	157	159.47	0	0	353	2527
Rajula	1118	10561	840	14862	139.5	268.47	0	0	2098	25691
Savarkundala	2648	22220	1001	17194	211.5	582.33	4	30.4	3865	40027
Total	8997	80394	6009	103421	1526	4250.0	26	202.4	16558	188267

Table 2.3: Area Wise, season wise irrigation Status block wise

Crop Type	**kharif (Area in ha.)**			**Rabi (Area in ha.)**			**Summer (Area in ha.)**			**Horticulture &Plantation crops (Area in ha.)**		
	Irrigated	**Rainfed**	**Total**	**Irrigated**	**Rainfed**	**Total**	**Irrigated**	**Rainfed**	**Total**	**Irrigated**	**Rainfed**	**Total**
Amreli	0	64565	64565	2656	0	2656	1253	0	1253	685	10	695
Babara	1267	58738	60005	5780	0	5780	3276	0	3276	422	11	433
Bagasara	5260	21375	26635	10327	0	10327	210	0	210	716	16	732
Dhari	5835	61175	67010	6441	0	6441	182	0	182	4628	355	4984
jafarabad	3500	19215	22715	1472	0	1472	435	0	435	811	49	860
Khambha	14550	22044	36594	2747	0	2747	320	0	320	1232	51	1284
Kukavav	14896	31960	46856	8155	0	8155	275	0	275	543	10	553
Lathi	5780	49039	54819	1871	14	1885	1360	0	1360	688	15	703
Liliya	6000	27045	33045	1172	0	1172	60	0	60	348	5	353
Rajula	14451	29735	44186	9837	0	9837	955	0	955	1986	112	2098
Savarkundala	29055	54091	83146	12790	0	12790	1345	0	1345	3600	265	3865
Total	100594	438982	539576	63248	14	63262	9671	0	9671	15658	900	16558

Source: Department of Agriculture, Amreli

It is apparent from the table that 16% of the total agricultural area of Amreli district falls in Savarkundla Block. The lowest irrigated area under agriculture is in Amreli taluka with only2% of the total irrigated land in the district, while Savarkundla has the highest irrigated area with 25% of the total irrigated area.

2.2 Area and production of major crops

Table 2.4: Production and area of Major Crops

Season	**Rainfed**	**Irrigated**	**Total**

	Crops	Area (ha)	Production (Qtn/Yr)	Area (ha)	Production (Qtn/Yr)	Area(ha)	Production (Qtn/Yr)
kharif	Paddy	0	0	0	0	0	0
	JOWAR	1444	15643	0	1444	0	0
	BAJRI	11877	150100	0	11877	331864.98	10715
	MAIZE	79	1331	0	79	0	0
	RAGI	0	0	0	0	0	0
	MUNG	3081	17313	0	3081	1964.82	2574
	MATH	66	322	0	66	715.36	2630
	UDID	2836	17379	75	2911	787.5	2520
	TUR	518	5393	35	553	1920	6000
	GROUNDNUT	236690	2768245	3550	240240	1259856.04	6595
	CASTOR	916	18993	233	1149	10408.71	12318
	SESAMUM	16232	57015	0	16232	10386.24	2976
	COTTON	137027	270412	95117	232144	918629.7	5477
	TOBACCO	0	0	0	0	0	0
	GUAR SEED	24	120	4	28	1554.11	3335
	SOYABEAN	0	0	0	0	0	0
Rabi	WHEAT	0	0	33242	33242	557781.4	16850
	JOWAR	0	0	0	0	1109.68	1067
	MAIZE	0	0	0	0	0	0
	GRAM	7	77	3200	3207	12035.39	7674
	RAPESEED &	0	0	89	89	390	1500

	MUSTARD						
	SUGARCANE	0	0	77	77	117.98	5899
	ISABGUL	0	0	12	12	0	0
	FENNEL	0	0	0	0	0	0
	TOBACCO	0	0	0	0	0	0
Summer	**GROUNDNUT**	0	0	2854	2854	227894.8	7960
	BAJRA	0	0	1240	1240	65994.68	7548
	PADDY	0	0	0	0	0	0
	MAIZE	0	0	0	0	0	0
	MUNG	0	0	57	57	2086.92	1122
	UDID	0	0	39	39	0	0
	SESAMUM	0	0	1543	1543	1736	1832
Horticulture	**Fruits**	900		8097	8997	0	0
	Vegetable	0		6009	6009	0	0
	Flowers	0		26	26	0	0
	Spices	0		1526	1526	0	0

Source: Department of Agriculture, Amreli

Cropping pattern in Amreli is mostly groundnut-wheat, cotton-wheat, and horticulture based under irrigated conditions. The cropping pattern is mostly uniform in all the blocks. Under irrigated conditions, oilseed crops are cultivated in most blocks. During kharif season, cotton is sown in more than 46 percent area, while groundnut occupies 47 percentof the remaining area. In Rabi 91% of the area cultivated is occupied by wheat while 50% of the summer cropped area is under groundnut and 27% cultivates sesame.

2.3 Status of Irrigation

Table 2.5: Irrigation based classification

Name of Block/ Taluka	Gross	Rainfed (Ha)	Total

	Irrigated Area (Ha)		
AMRELI	4593.6	64575.4	69169
BABARA	10744.6	58749.4	69494
BAGASARA	16513.3	21390.7	37904
DHARI	17086.3	61530.2	78616.5
JAFRABAD	6217.9	19264.1	25482
KHANBHA	18849.4	22095.1	40944.5
KUNKAVAV	23869.3	31969.7	55839
LATHI	9698.6	49068.4	58767
LILIA	7579.9	27050.1	34630
RAJULA	27228.7	29846.8	57075.5
SAVARKUNDALA	46789.7	54355.8	101145.5
Total	189171.3	439895.7	629067

Source: Department of Agriculture, Amreli

The Gross Irrigated Area of Amreli district is 189171.3 hectare which is around 28.86% of the 629067hectare of gross cropped area. The percentage of Gross Irrigated Land to Gross Cropped Area is maximum in Bagasra(55.39%) followed by Rajula (52.35%) and the percentage of Gross Irrigated Land to Gross Cropped Area is minimum in Amreli (5.96%).

CHAPTER 3. WATER AVAILABILITY

3.1 Status of Water Availability

Water available in the district is mostly sourced from ground water. The surface irrigation availability for agriculture is lower than the availability of ground water irrigation. In the district as per the secondary departmental data, canal irrigation from major and medium sources constitutes 133.41 mcm, which provides irrigation during Rabi season. Water available from minor irrigation tank and lift irrigation tanks for all seasonal crops is 105.97 mcm. Hence, grossly, 239.38 mcm water through surface irrigation and 767.96 mcm through ground water is available in the district for growing crops in three crop seasons.

Table 3.1: Status of water availability in Amreli(MCM)

Sr. No	Source	Kharif	Rabi	Summer	Total
1	**Surface Irrigation**	99.28	140.1	0	239.38
(i)	Canal (Major & Minor Irrigation)	0	133.41	0	133.41
(ii)	Minor Irrigation Tank	23.55	6.69	0	30.24
(iii)	Lift Irrigation Tanks	75.73			75.73
2	**Ground water**	713.22	54.74	0.00	767.96

Source: State and Panchayat Irrigation Dept.

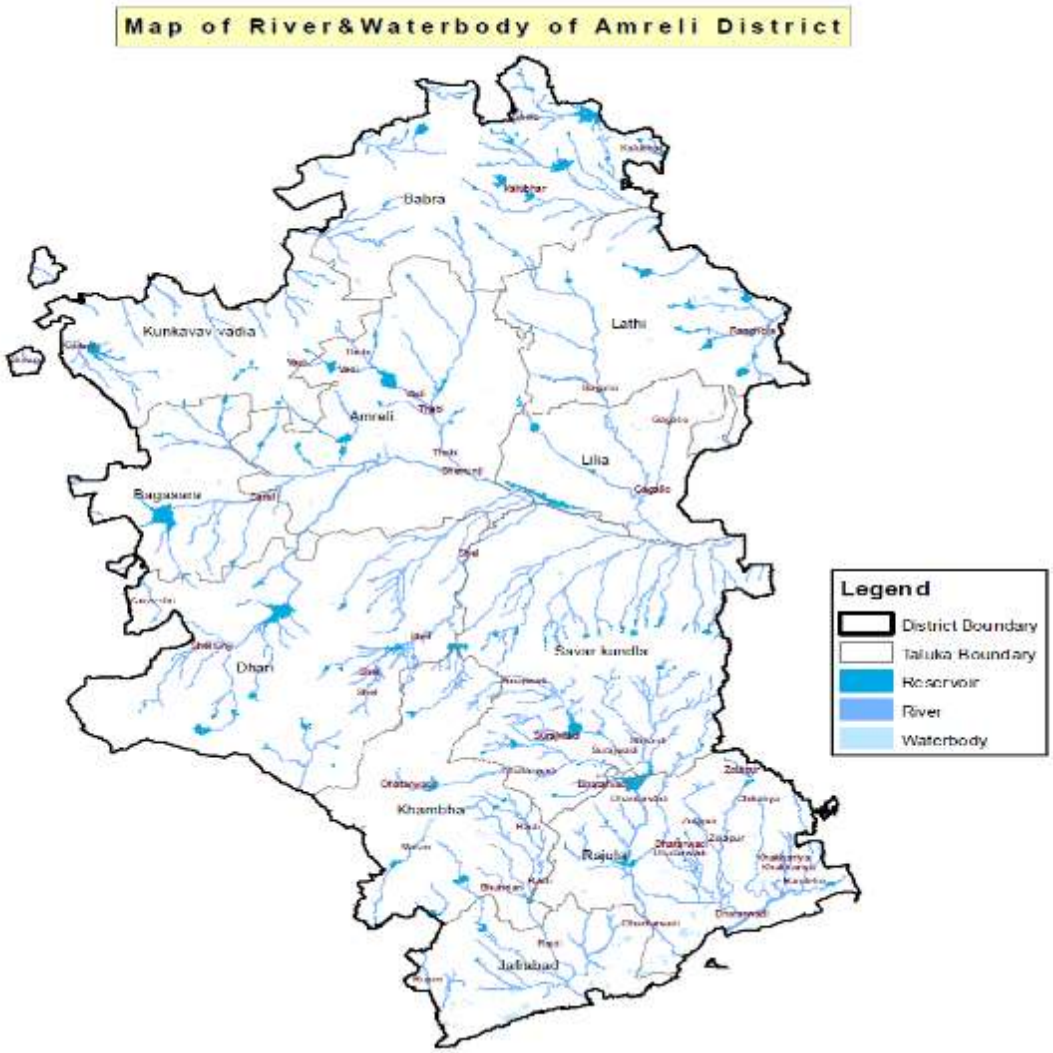
The glance at the intra-district variations reveals that Dhari taluka has the highest water availability (50.13 mcm). Area under irrigation is the highest in Savarkundla taluka which has the third highest water availability with 35.76 mcm (15%). The least water for crops is available in Liliya taluka (1%).

Table 3.2: Blockwise status of Surfacer water availability in Amreli(MCM)

Taluka	Kharif	Rabi	Summer	Total
Amreli	7.62	10.41	0.00	18.03
Babara	13.19	36.94	0.00	50.13
Bagasara	3.06	13.60	0.00	16.66

Dhari	6.20	43.43	0.00	49.63
Jafarabad	4.97	5.09	0.00	10.06
Khambha	24.42	11.34	0.00	35.76
Kukavav	12.64	10.38	0.00	23.02
Lathi	4.24	1.31	0.00	5.55
Liliya	1.41	0.00	0.00	1.41
Rajula	9.50	0.60	0.00	10.10
Savarkundala	12.03	7.00	0.00	19.03
Total	99.28	140.10	0.00	239.38

Map 5 Water and River Body Map of Amreli District



3.2 Status of Ground Water Availability

The annual ground water recharge (excludingnatural discharge for non –monsoon period) varies from 112.14 mcm in Dhari Taluka to 32.97mcm in Jafrabadtaluka and total gross recharge for the district is 767.96 mcm.

Table 3.3: Blockwise status of ground water availability in Amreli(MCM)

Taluka	Khariff	Rabi	Total
Amreli	87.74	11.12	93.93
Babara	79.33	10.49	82.75
Bagasara	48.19	4.47	52.26
Dhari	103.44	16.85	112.14
jafarabad	32.11	3.59	32.97
Khambha	46.85	6.5	49.29
Kukavav	63.56	9.72	66.42
Lathi	57.1	10.67	60.44
Liliya	36.67	4.67	38.14
Rajula	57.98	11.48	75.79
Savarkundala	100.25	6.3	103.83
Total	713.22	95.86	767.96

The following table provides the details of ground water recharge and quality as per the Ground Water Resources Estimation (GWRE), 2011 across the Talukas of Amreli district.

Table 3.4: Status of block as per central ground water board notification

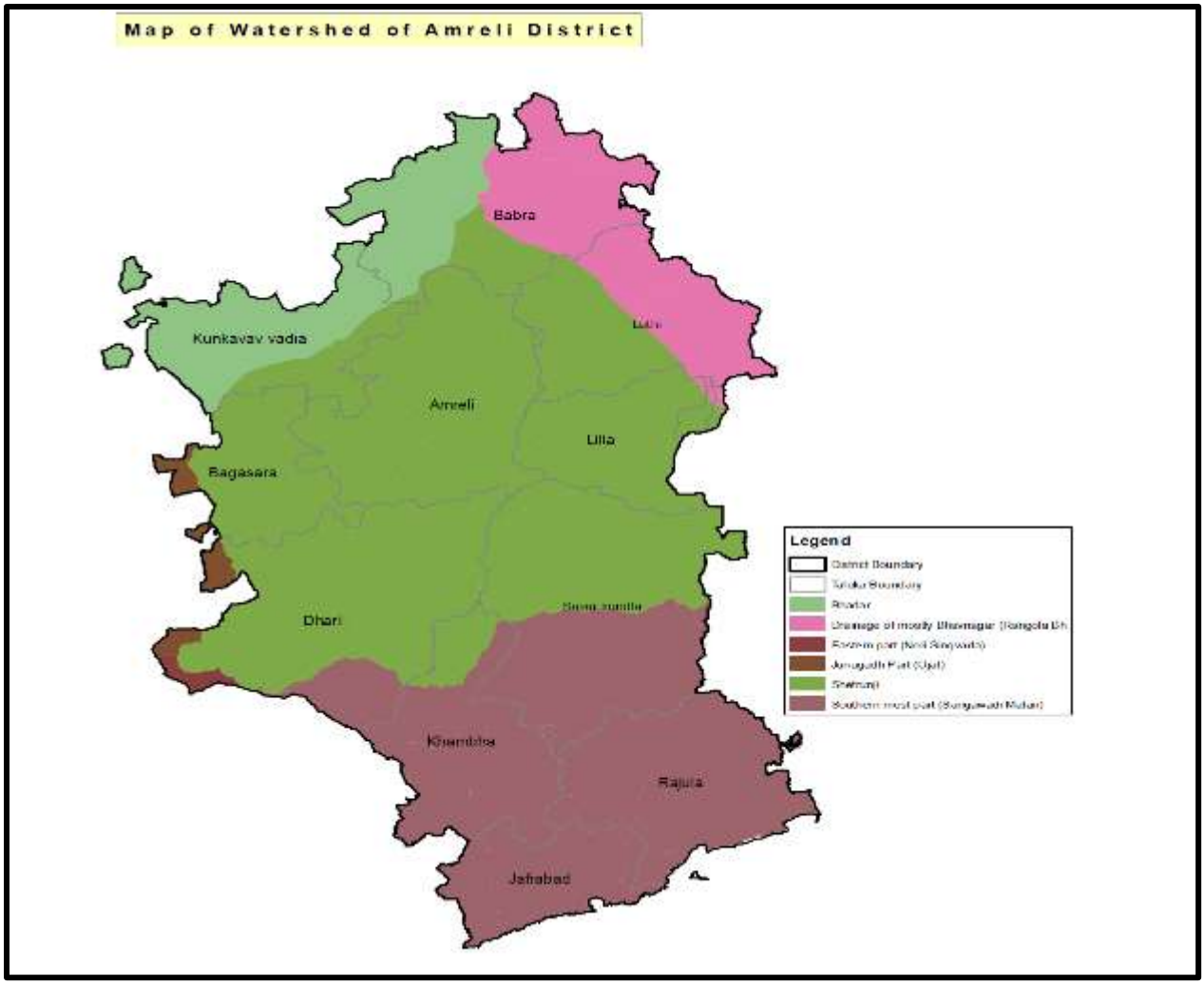
Sr No	Taluka/ Block	Status of block as per central ground water board notification					Ground water (BCM)		
		OE	Critical	Semi-Critical	Safe	Saline	Draft	Recharge	Gap
1	**Amreli**				**Safe**		**0.0594**	**0.0968**	**-0.0373**
2	**Babra**				**Safe**		**0.0555**	**0.0828**	**-0.0273**
3	**Bagasara**				**Safe**		**0.0358**	**0.0523**	**-0.0165**

4	**Dhari**	**Safe**	**0.0753**	**0.1121**	**-0.0369**
5	**Jafrabad**	**Safe**	**0.0196**	**0.0330**	**-0.0134**
6	**Khambha**	**Semi critical**	**0.0368**	**0.0493**	**-0.0125**
7	**Kuknavav**	**Safe**	**0.0422**	**0.0664**	**-0.0242**
8	**Lathi**	**Safe**	**0.0422**	**0.0608**	**-0.0187**
9	**Liliya**	**Safe**	**0.0238**	**0.0381**	**-0.0143**
10	**Rajula**	**Safe**	**0.0417**	**0.0758**	**-0.0341**

Source: GWRE 2011

All the talukas of the district have been categorized as "Safe"except Khambha taluka as per the GWRE 2011. Khambha Taluka has been declared as semi critical as the gap between draft and recharge has narrowed to 12 MCM. The overall category of the district is also "Safe."

Map 6 Watershed map of Amreli District



3.3 Status of Command Area

Total area developed through canal command is 36623 Ha in the district. Dhari block has the maximum area with12898 hectares of land which is irrigated through canal command.Of the total area 53% of the area has been developed with canal commandwhile 47% is developed through other service command as specified in the table below.

Table 3.5: Status of Command Area

Blocks	Information of Canal Command			Information on the other Services Command		
	Total Area	Developed Area	Undeveloped Area	Total Area	Developed Area	Undeveloped Area
Amreli	3592	3592	0	2018	2018	0
Babara	797	797	0	1844	1844	0
Bagasara	3481	3481	0	726	726	0
Dhari	4608	4608	0	1060	1060	0
jafarabad	12898	12898	0	3660	3660	0
Khambha	5500	5500	0	8718	8718	0
Kukavav	3100	3100	0	2970	2970	0
Lathi	1250	1250	0	5818	5818	0
Liliya	808	808	0	4146	4146	0
Rajula	235	235	0	703	703	0
Savarkundala	354	354	0	1006	1006	0
Total	36623	36623	0	32669	32669	0

Source: State irrigation department

3.4 Existing Type of Irrigation

Savarkundla block has the maximum number of canal and reservoir structures (30%) while covering a command area of 9449 hectares (14%). The highest command area is covered in Dhari block (19661 ha).Bagasara block has the minimum number of canal and reservoir structures (3%)while the least command area is in the Liliya block with 938 hectares(1%) under canal irrigation in the district. Amreli block has the least command area covered by surface irrigation.

Table 3.6: Existing type of irrigation – Govt. Canal

Sr. No	Taluka	No. of structure	Govt. Canal / Command Area (ha)
1	Amreli	222	6410
2	Dhari	440	19661

3	Savarkundla	985	9449
4	Bagasara	99	2426
5	Rajula	131	6220
6	Khambha	281	5483
7	Jafrabad	146	1360
8	Babara	238	7068
9	Liliya	101	938
10	Lathi	421	4954
11	Kukavav	220	2719
	Total	**3284**	**66688**

CHAPTER 4. WATER REQUIREMENT /DEMAND

The earlier Chapters deals with the general profile, water profile and water availability of Amreli district. The present chapter deals with the current (2015) and projected (2020) demand of water for various sectors. The demand for water has been assessed on the basis of data obtained from different departments.

4.1 Domestic Water Demand

Data of Census 2011 and 2001 has been considered to arrive at the growth rate of population of the district. As per Census 2011, the district has shown an annual growth rate of 0.863%. Current population (in 2015) has been calculated by assuming a growth rate of 3.452% (0.863% × 4 Years) over a period of four years (from 2011-2015). Projected population has been calculated in similar way by assuming a growth rate of 4.315% (0.863% × 5 Years) over the period of five years (from 2015-2020).

It has been assumed that per capita daily water requirement of people residing in urban areas of the district is 140litres and for population in rural areas, the daily per capita daily water requirement is 100litres.Using the same norms, block-wise domestic water supply demand has been worked out and is given in table 4.1 below.

Table 4.1: Domestic Water Demand (MCM)

Blocks	Rural /urban	2011 CP	Population in 2015	Present Water Requirement (MCM)	Projected Population in 2020	Water Requirement in 2020 (MCM)
Amreli	Rural	123312	133177	4.86	146495	5.35
	Urban	117967	127404	6.51	140145	7.16
Savar Kundla	Rural	160918	173791	6.34	191171	6.98
	Urban	78354	84622	4.32	93085	4.76
Rajula	Rural	137204	148180	5.41	162998	5.95
	Urban	38489	41568	2.12	45725	2.34
Babra	Rural	115251	124471	4.54	136918	5.00

	Urban	25270	27292	1.39	30021	1.53
Dhari	Rural	123086	132933	4.85	146226	5.34
	Urban	16721	18059	0.92	19865	1.02
Lathi	Rural	95127	102737	3.75	113011	4.12
	Urban	37787	40810	2.09	44891	2.29
Jafrabad	Rural	80835	87302	3.19	96032	3.51
	Urban	27167	29340	1.50	32274	1.65
Kunkavav	Rural	99794	107778	3.93	118555	4.33
Vadia	Urban	0	0	0.00	0	0.00
Khambha	Rural	93431	100905	3.68	110996	4.05
	Urban	0	0	0.00	0	0.00
Bagasara	Rural	48533	52416	1.91	57657	2.10
	Urban	34521	37283	1.91	41011	2.10
Lilia	Rural	50064	54069	1.97	59476	2.17
	Urban	10359	11188	0.57	12306	0.63
Total		1514190	1635325	65.79	1798858	72.36

It can be inferred from the table that considering the growth rate of population of the district, the quantity of water required in 2020 for domestic consumption shall be approximately 72.36 MCM which is 6.58MCM more than the present water requirement.

4.2 Crop water Requirement

Crop water requirement for the blocks and district have been calculated based upon the cropping pattern followed in the various blocks of the district. Cropping pattern under irrigated and rainfed system is different in the district. Oilseeds and cotton based cropping system is followed under unirrigated conditions in all the blocks. Under irrigated conditions, in almost all the blocks vegetable based cropping system is followed. However, under irrigated system, wheat, cotton and horticulture based cropping systems are also being followed.

Area under different crops has been discussed in Chapter 2 (Table 2.2). Taking into account, the water requirement (Table 4.2), requirement of water for different crops have been worked out (Table 4.3). Existing water potential available (being utilized) has been assumed as the water used in irrigated land.

The crop wise water requirement has been taken based upon discussion with Agriculture Universities and department officials as per practice prevailing in the State which is as under:

Table 4.2 Crop wise Water Requirement

Season	Crops	MCM/Ha	Season	Crops	MCM/Ha		Crops	MCM/Ha
kharif	Paddy	0.005	Rabi	WHEAT	0.0052	Horticulture	Banana	0.025
	JOWAR	0.0035		JOWAR	0.007		Fruits	0.012
	BAJRI	0.0035		MAIZE	0.007		Vegetables	0.006167
	MAIZE	0.0035		GRAM	0.003		Chilies	0.009
	RAGI	0.002		RAPESEED & MUSTARD	0.0035		Fennel	0.007
	MUNG	0.0024		SUGARCANE	0.018		Cumin	0.0032
	MATH	0.0024		ISABGUL	0.0032		Fenugreek	0.0059
	UDID	0.0024		FENNEL	0.007		Other Spices	0.0032
	TUR	0.0024		TOBACCO	0.0063		Flower	0.006
	GROUNDNUT	0.003	Summer	GROUNDNUT	0.0075			
	CASTOR	0.005		BAJRA	0.0065			
	SESAMUM	0.002		PADDY	0.017			
	COTTON	0.005		MAIZE	0.0098			
	TOBACCO	0.0042		MUNG	0.007			
	GUAR SEED	0.0035		UDID	0.007			
	SOYABEAN	0.0024		SESAMUM	0.0035			

Table 4.3: Crop Water Requirement in Million Cubic Meter

Block	Irrigated area (ha)	Total Area sown (Ha)	Crop Water Demand	Existing Water Potential	Water Potential to be created

Amreli	1994	66293	285	14	271
Babara	4574	60448	259	25	234
Bagasara	12893	33404	125	63	61
Dhari	16355	76886	292	106	187
jafarabad	4968	22047	92	28	64
Khambha	18604	40543	164	98	66
Kukavav	19484	51124	190	96	95
Lathi	7609	53258	233	40	193
Liliya	7208	29373	116	36	79
Rajula	22143	50350	217	119	98
Savarkundala	41195	85000	379	222	158
Total	157026	568724	2351	847	1506

From the table it can be observed that Savarkundla block has the highest crop water demand of 379 MCM, while Amreli Taluka has the highest gap for creation of irrigation structures to fulfill this demand of 271 mcm. Bagasara has the least requirement for creation of irrigation structures to fulfill its demand gap.

4.3 Livestock

The requirement of water for livestock of the district has been derived from the Department of Animal Husbandry. The table below represents the total water requirement of the district for livestock.

The block wise water estimation for livestock is as follows;

Table 4.4: Livestock water demand (in MCM)

Block	Total number of livestock (2015)	Present water demand (MCM)	Water Demand in 2020 (MCM)	Existing water potential (MCM)*	Water potential to be created (MCM)
Kukavav	62202	1.08	1.24	1.08	0.16
Babra	118753	1.96	2.26	1.96	0.29
Lathi	67966	1.19	1.37	1.19	0.18

Lilia	31056	0.53	0.61	0.53	0.08
Amreli	86040	1.44	1.66	1.44	0.22
Bagsara	42208	0.68	0.78	0.68	0.10
Dhari	99789	1.73	1.99	1.73	0.26
Savarkundla	151693	2.40	2.76	2.40	0.36
Khambha	91778	1.54	1.78	1.54	0.23
Jafrabad	44150	0.81	0.94	0.81	0.12
Rajula	97443	1.55	1.79	1.55	0.23
Total	893078	14.92	17.16	14.92	2.24
* it is assumed that present water requirement of animal is met from existing water usage and hence existing potential is equal to existing demand.					

Based on the projected water requirement for livestock in 2020, the gap has been assessed. The total potential which has to be created for livestock in 2020 is 2.24MCM. This has been assessed on the terms of the following:

- Per capita daily water requirement for cows/buffaloes 60 litres, sheep/goats/pigs 6 litres and Poultry 0.3 liters.
- For projecting the water demand of livestock, growth rate as deduced from census has been considered during calculations, a growth rate of 3% per annum growth has been assumed. It is assumed that present water requirement of livestock is met from existing water usage and hence existing potential is equal to existing demand.

4.4 Industrial Water Requirement

All the industries in the district were reported to be situated in the district headquarters of Amreli taluka. There were 26 major industries which had a total allocation of 6.78 MLD of water. Therefore the total annual water requirement for industries in Amreli may be calculated to approximately 2.47 mcm.

4.5 Water Demand for Power Generation

The district is not having any thermal or nuclear power plant where water may be consumed. Therefore, demand of water for power generation has been taken as nil.

4.6 Water demand

This section presents the total water demand of the district and has been calculated by summing up all major sectors consuming water. The current water demand has been indicated in Table 4.5and the projected water demand has been depicted in Table 4.6.

Table 4.5: Present Water Demand of the district for various sectors (2015)

Blocks	Demand from components (MCM)					Total
	Domestic	Crop	Livestock	Industrial	Power Generation	
Amreli	11.37	285	1.44	2.47	0.00	300.32
Savar Kundla	10.67	259	2.40	0.00	0.00	271.72
Rajula	7.53	125	1.55	0.00	0.00	133.76
Babra	5.94	292	1.96	0.00	0.00	299.61
Dhari	5.77	92	1.73	0.00	0.00	99.92
Lathi	5.84	164	1.19	0.00	0.00	170.78
Jafrabad	4.69	190	0.81	0.00	0.00	195.91
Kunkavav Vadia	3.93	233	1.08	0.00	0.00	237.51
Khambha	3.68	116	1.54	0.00	0.00	120.78
Bagasara	3.82	217	0.68	0.00	0.00	221.11
Lilia	2.55	379	0.53	0.00	0.00	382.39
Total	65.79	2351	14.92	2.47	0.00	2433.83

The present water demand of the district has been assessed at2433.83 MCM annually, with Lilia being the block with maximum water requirement of 382.39 MCM. Amreli and Babra blocks stand at 2nd and 3rd position with approximately

Table 4.6: Total Water Demand of the district for various sectors (Projected for 2020)

Blocks	Demand from components (MCM)					Total
	Domestic	Crop	Livestock	Industrial	Power Generation	
Amreli	12.51	269.10	1.66	2.47	0.00	301.67

Savar Kundla	11.73	391.29	2.76	0.00	0.00	273.15
Rajula	8.29	238.61	1.79	0.00	0.00	134.75
Babra	6.53	249.37	2.26	0.00	0.00	300.50
Dhari	6.35	400.91	1.99	0.00	0.00	100.76
Lathi	6.42	209.03	1.37	0.00	0.00	171.54
Jafrabad	5.15	100.57	0.94	0.00	0.00	196.50
Kunkavav Vadia	4.33	239.35	1.24	0.00	0.00	238.07
Khambha	4.05	186.66	1.78	0.00	0.00	121.38
Bagasara	4.20	169.22	0.78	0.00	0.00	221.60
Lilia	2.80	117.92	0.61	0.00	0.00	382.73
Total	72.36	2572.00	17.16	2.47	0.00	2442.65

During 2020, total water requirement of the district has been assessed at 2442.65 MCM. The projected requirement of the blocks is almost in the similar proportion to present requirement

4.7 Water Budget

A water budget reflects the relationship between input and output of water through a region. The water balance in table 4.7 shows the existing water usage and the current and potential water demand. Thus we have a direct comparison of supply of water and the natural demand for water. It is possible to identify the gaps in the supply and demand, thereby planning to invest in irrigation structures to support the blocks and villages and fulfill the water needs.

Table 4.7: Water Budget (Volume in MCM)

Name of Blocks	Existing water availability/ Usage (MCM)	Total (MCM)	Water Demand (MCM)	Water Gap (MCM)

	Surface Water	Ground Water		Present	Projected (2020)	Present	Projected (2020)
Amreli	18.03	93.93	111.96	300.32	301.67	188.36	189.71
Savar Kundla	35.76	103.83	139.59	271.72	273.15	132.13	133.56
Rajula	49.63	75.79	125.42	133.76	134.75	8.34	9.33
Babra	19.03	82.75	101.78	299.61	300.5	197.83	198.72
Dhari	50.13	112.14	162.27	99.92	100.76	-62.35	-61.51
Lathi	10.10	60.44	70.54	170.78	171.54	100.24	101.00
Jafrabad	5.55	32.97	38.52	195.91	196.5	157.39	157.98
Kunkavav Vadia	10.06	66.42	76.48	237.51	238.07	161.03	161.59
Khambha	23.02	49.29	72.31	120.78	121.38	48.47	49.07
Bagasara	16.66	52.26	68.92	221.11	221.6	152.19	152.68
Lilia	1.41	38.14	39.55	382.39	382.73	342.84	343.18
Total	239.38	767.96	1,007.34	2433.83	2442.65	1,426.49	1,435.31

The total water gap for the district is currently 1426.49 MCM and has been estimated at 1435.31 MCM during 2020, i.e. the supply of water is insufficient to meet the current and future demand of the district. It was observed that all the blocks except Dhari faced the issue of supply shortage, i.e. they have their demand greater than the available supply.

CHAPTER 5. STRATEGIC ACTION PLAN FOR IRRIGATION IN DISTRICT UNDER PMKSY

5.1 Year wise total Plan of the district:

Total plan for four years works out to be Rs. 45121.60 lakh (Table5.1). Maximum share of Rs. 7300.93 lakh (16.18%) is for Savarkundla block followed by Lathi with Rs. 5179.28 lakh (11.48%) and Dhari with Rs.5104.84 lakh (11.31%).

Table 5.1: Summary of PMKSY plan District Amreli, Gujarat. (in Rs. Lakh)

Taluka/Department	Sum of Fund 2016-17	Sum of Fund 2017-18	Sum of Fund 2018-19	Sum of Fund 2019-20	Total Fund
Amreli	1553.56	1038.49	1078.38	1118.82	4789.25
ATMA	33.41	35.53	37.07	38.31	144.33
GGRC	761.03	570.77	570.77	570.77	2473.34
GSLDC	71.24	71.24	71.24	71.24	284.96
GSWMA PMKSY Watershed*	359.72				359.72
GSWMA MGNREGA	44.66	52.45	35.80		132.91
GWRDC	8.50	8.50	8.50	8.50	34.00
PANCHAYAT IRRIGATION DIVISION	135.00	145.00	140.00	150.00	570.00
Rajkot Irrigation Circle	140.00	155.00	215.00	280.00	790.00
Babara	1683.38	1211.17	804.49	809.49	4508.54
GGRC	717.67	538.25	538.25	538.25	2332.42
GSLDC	71.24	71.24	71.24	71.24	284.96
GSWMA PMKSY Watershed*	644.48	411.68			1056.16
PANCHAYAT IRRIGATION DIVISION	250.00	190.00	195.00	200.00	835.00
Bagsara	646.93	573.01	583.01	608.01	2410.97

GGRC	395.69	296.77	296.77	296.77	1286.01
GSLDC	71.24	71.24	71.24	71.24	284.96
PANCHAYAT IRRIGATION DIVISION	115.00	125.00	130.00	140.00	510.00
Rajkot Irrigation Circle	65.00	80.00	85.00	100.00	330.00
Dhari	1484.68	1283.63	1181.92	1154.61	5104.84
GGRC	769.91	577.43	577.43	577.43	2502.21
GSLDC	71.24	71.24	71.24	71.24	284.96
GSWMA PMKSY Watershed*	336.53	307.96	186.24	133.94	964.68
GWRDC	17.00	17.00	17.00	17.00	68.00
PANCHAYAT IRRIGATION DIVISION	195.00	195.00	200.00	210.00	800.00
Rajkot Irrigation Circle	95.00	115.00	130.00	145.00	485.00
Jafrabad	394.45	349.90	359.90	364.90	1469.16
GGRC	198.21	148.66	148.66	148.66	644.20
GSLDC	71.24	71.24	71.24	71.24	284.96
GWRDC	20.00	20.00	20.00	20.00	80.00
PANCHAYAT IRRIGATION DIVISION	105.00	110.00	120.00	125.00	460.00
Kambha	1166.77	1076.64	1031.64	895.64	4170.69
GGRC	680.53	510.40	510.40	510.40	2211.73
GSLDC	71.24	71.24	71.24	71.24	284.96
PANCHAYAT IRRIGATION DIVISION	320.00	295.00	245.00	200.00	1060.00
Rajkot Irrigation Circle	95.00	200.00	205.00	114.00	614.00
Kukavav	1192.19	867.18	877.18	867.18	3803.74
GGRC	761.26	570.94	570.94	570.94	2474.08
GSLDC	71.24	71.24	71.24	71.24	284.96
GSWMA PMKSY Watershed*	119.70				119.70

PANCHAYAT IRRIGATION DIVISION	225.00	205.00	210.00	195.00	835.00
Rajkot Irrigation Circle	15.00	20.00	25.00	30.00	90.00
Lathi	2056.20	1414.10	1002.26	706.72	5179.28
GGRC	620.64	465.48	465.48	465.48	2017.08
GSLDC	71.24	71.24	71.24	71.24	284.96
GSWMA PMKSY Watershed*	1214.32	717.38	300.54	0.00	2232.24
PANCHAYAT IRRIGATION DIVISION	150.00	160.00	165.00	170.00	645.00
Liliya	1037.96	395.22	405.22	415.22	2253.63
GGRC	262.64	196.98	196.98	196.98	853.59
GSLDC	71.24	71.24	71.24	71.24	284.96
GSWMA PMKSY Watershed*	582.08				582.08
GWRDC	17.00	17.00	17.00	17.00	68.00
PANCHAYAT IRRIGATION DIVISION	105.00	110.00	120.00	130.00	465.00
Rajula	1127.20	984.46	1009.46	1009.46	4130.57
GGRC	710.96	533.22	533.22	533.22	2310.61
GSLDC	71.24	71.24	71.24	71.24	284.96
GWRDC	20.00	20.00	20.00	20.00	80.00
PANCHAYAT IRRIGATION DIVISION	125.00	155.00	165.00	160.00	605.00
Rajkot Irrigation Circle	200.00	205.00	220.00	225.00	850.00
Savarkundla	2195.07	1798.28	1697.08	1610.49	7300.93
GGRC	977.23	732.92	732.92	732.92	3175.99
GSLDC	71.24	71.24	71.24	71.24	284.96
GSWMA PMKSY Watershed*	370.61	434.12	277.92	251.34	1333.98
PANCHAYAT IRRIGATION	711.00	485.00	525.00	450.00	2171.00

DIVISION					
Rajkot Irrigation Circle	65.00	75.00	90.00	105.00	335.00
Grand Total	14538.40	10992.10	10030.54	9560.56	45121.60

**GSWMA department has two components namely PMKSY Watershed and Convergence with MGNREGA. The amount mentioned in the table under PMKSY Watershed also have block wise distribution of other component cost, however it is mentioned for overall district according to the department which is proportionately distributed.*

5.2 Department wise plan

Analysis of PMKSY plan (Table5.2) for the period from 2016-17 to 2019-20 indicates that Gujarat Green Revolution Company Ltd (GGRC)has the maximum share of Rs 22281.26 lakh (49.64%).

Table 5.2: Department-wise plan

Departments	2016-17	2017-18	2018-19	2019-20	Total
ATMA	33.41	35.53	37.07	38.31	144.33
GGRC	6855.77	5141.83	5141.83	5141.83	22281.26
GSLDC	783.64	783.64	783.64	783.64	3134.56
GSWMA PMKSY Watershed	3627.42	1871.15	764.70	385.28	6648.55
GSWMA MGNREGA	44.66	52.45	35.80	-	132.91
GWRDC	82.50	82.50	82.50	82.50	330.00
PANCHAYAT IRRIGATION DIVISION	2436.00	2175.00	2215.00	2130.00	8956.00
Rajkot Irrigation Circle	675.00	850.00	970.00	999.00	3494.00
Grand Total	14538.40	10992.10	10030.54	9560.56	45121.60

5.3 Component wise plan

As discussed above about various components of PMKSY, the plan is prepared accordingly. Table 5.3 shows component wise plan for 4 years starting from 2016-17 to 2019-20. The highest allocation of funds is proposed for per drop more crop component i.e. Rs. 22281.26 lakh (49.38%), which is to be executed by Gujarat Green Revolution Company Ltd (GGRC). This component has two sub components namely micro irrigation through Drip and Sprinkler. Har khet ko pani component has the second highest allocation with Rs. 13459.56 lakh (29.83%) will be executed mainly by State and panchayat irrigation departments, GSLDC and GWRDC. A total of Rs.144.33 lakh (0.32%) has been proposed for extension and training purpose, which shall be undertaken by ATMA. Gujarat State Watershed Management Agency (GSWMA) has proposed a plan of Rs. 6781.46 lakh (15.03%) under various component of PMKSY - Watershed.

PMKSY-Watershed Component (erstwhile named as Integrated Watershed Management Programme) is one of the flagship program of Govt. of India. The main objectives of this is to restore the ecological balance by harnessing, conserving and developing degraded natural resources such as soil, vegetative cover and water. Gujarat is one of the largest States in context of land area treatment under PMKSY-Watershed project. The important activities carried out under this projects are Soil moisture conservation, Water harvesting, Vegetative cover and Plantation, Agricultural production and Productivity improvement, Dairy development, Agro processing, Livelihood and Income Generating Activities etc. In Gujarat PMKSY-Watershed component is implemented through a State Level Nodal Agency constituted as Gujarat State Watershed Management Agency (GSWMA), an autonomous society supported under the Rural Development Department (RDD) of Government of Gujarat. GSWMA has vision of “Enhancing the quality of rural population through Sustainable, Equitable and Participatory Natural resources Management” and also has Mission of “Creating sustainable rural livelihoods through scientific and Integrated Watershed Development Approach”. GSWMA works in all the 33 districts of Gujarat. GSWMA planned to cover all the micro-watersheds (at village level) of the state in the next 18 years. Thus it will

cover all the talukas of the state. Total 610 no. of PMKSY-Watershed Component projects under six batches covering 31.04 lakh hectors of land are currently under implementation.

GSWMA has its own structural arrangements (GSWMA, District Watershed Development Unit, PIA, and Watershed Committee) from state to village level for implementation of program and has system of internal monitoring of project activities through different means. GSWMA has its own web based monitoring system as Soil Water Resource Management System (SWaRSys). The said system is online and helps not only for the monitoring/documentation of all the main project activities but also facilitates to collect and collate monthly and quarterly data from District level offices. For preparation of DIP, the watershed component information is collected from various levels and incorporated in this document for the years 2016-20.

However all the stakeholders need to have coordination among themselves to have the maximum irrigation efficiency and to avoid duplicity.Table. 5.3 represents the various components of PMKSY, year wise plan and share

Table 5.3: Component wise plan

PMKSY component	Amount (Rs. In lakh)				
	2016-17	2017-18	2018-19	2019-20	Total
AIBP	500.00	555.00	650.00	750.00	2455.00
Har khet ko pani	3477.14	3336.14	3401.14	3245.14	13459.56
Per Drop more crop	6855.77	5141.83	5141.83	5141.83	22281.26
PMKSY - Convergence with MGNREGA	44.66	52.45	35.80		132.91
PMKSY - Watershed	3627.42	1871.15	764.70	385.28	6648.55
Training	33.41	35.53	37.07	38.31	144.33
Grand Total	14538.40	10992.10	10030.54	9560.56	45121.60

5.4 Block wise Plan

There are eleven blocks in Amreli district. Total PMKSY plan for four years is Rs. 45121.60lakh. Block wise year wise plan is given in Table 5.3. Fig. 5.1 shows the share of blocks in the plan.

Table 5.4: Block wise year wise PMKSY Plan of Amreli District

Name of Block	2016-17	2017-18	2018-19	2019-20	Total
Amreli	1553.56	1038.49	1078.38	1118.82	4789.25
Babara	1683.38	1211.17	804.49	809.49	4508.54
Bagsara	646.93	573.01	583.01	608.01	2410.97
Dhari	1484.68	1283.63	1181.92	1154.61	5104.84
Jafrabad	394.45	349.90	359.90	364.90	1469.16
Kambha	1166.77	1076.64	1031.64	895.64	4170.69
Kunkavav(Vadia)	1192.19	867.18	877.18	867.18	3803.74
Lathi	2056.20	1414.10	1002.26	706.72	5179.28
Liliya	1037.96	395.22	405.22	415.22	2253.63
Rajula	1127.20	984.46	1009.46	1009.46	4130.57
Savarkundla	2195.07	1798.28	1697.08	1610.49	7300.93
Grand Total	14538.40	10992.10	10030.54	9560.56	45121.60

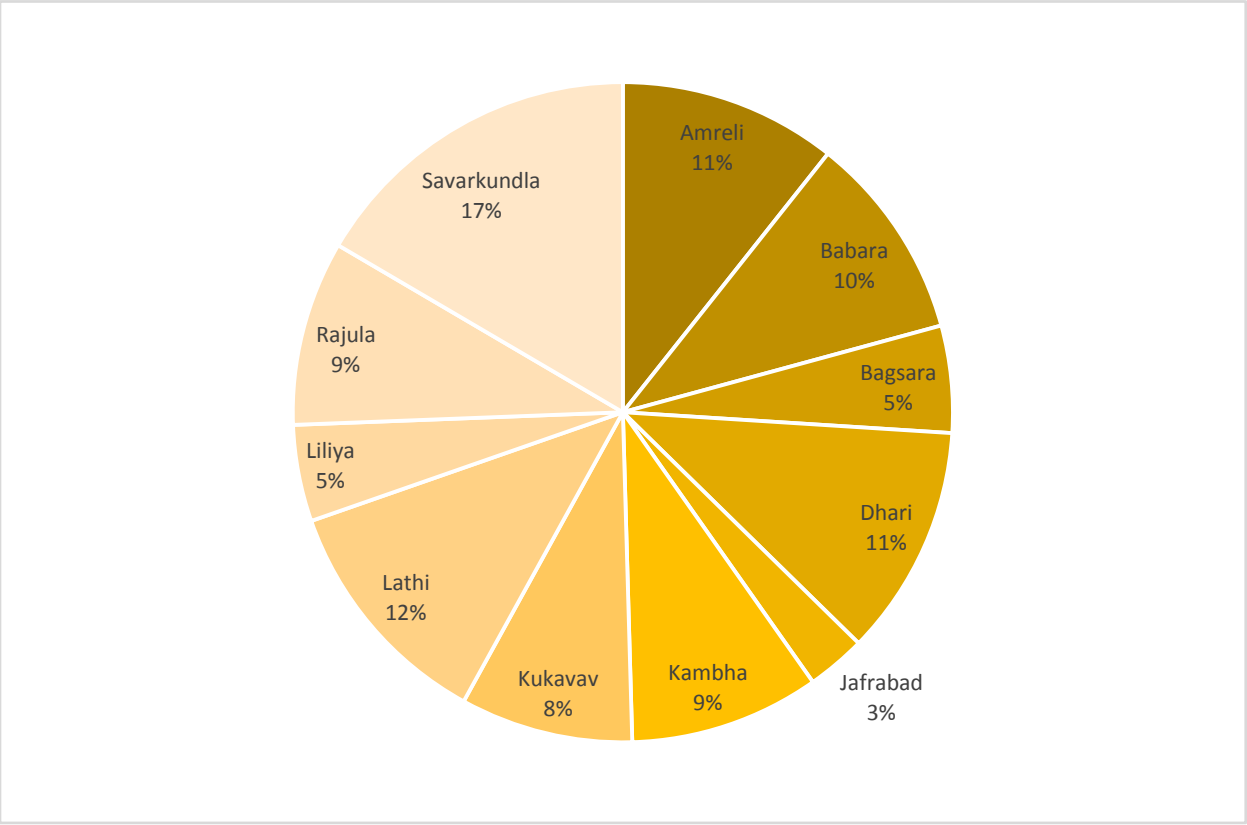


Figure 5.1: Block wise share in PMKSY Plan of Amreli District

5.5 Additional area under irrigation

One of the major objective of PMKSY is to bring additional area under irrigation and in the district of Amreli, the plan for four year plans to bring an additional 15489.55 ha under irrigation. The blockwise distribution is provided in table 5.5. Amreli taluka has the highest area planned to be brought under irrigation by this plan (2317 ha), while Kambha has the least (696 ha)

Table 5.5: Block wise year wise plan for bringing additional area under irrigation in Amreli District

Talukas	2016-17	2017-18	2018-19	2019-20	Total
Amreli	861.00	467.00	492.00	497.00	2317.00
Babara	433.00	174.00	174.00	174.00	955.00
Bagsara	232.00	229.00	234.00	232.00	927.00

Dhari	617.50	642.90	520.50	467.00	2247.90
Jafrabad	216.00	216.00	233.00	234.00	899.00
Kambha	174.00	174.00	174.00	174.00	696.00
Kukavav	208.00	214.00	209.00	206.00	837.00
Lathi	798.50	465.50	283.00	230.90	1777.90
Liliya	368.75	195.00	209.00	211.00	983.75
Rajula	474.00	462.00	474.00	464.00	1874.00
Savarkundla	458.00	461.00	478.50	577.50	1975.00
Grand Total	4840.75	3700.40	3481.00	3467.40	15489.55

The table5.5 represents the additional area planned to be brought under irrigation by the interventions of State Irrigation Department, Panchayat irrigation Department, GWSMA, GWRDC and GLDC. The per drop more crop component of the programme plans to bring additional area under micro irrigation, which is mainly undertaken in Gujarat by Gujarat Green Revolution Company (GGRC). Due to the intervention of GGRC, there is a potential saving of 28% to 48% of water requirement for crops in the district. The table below provides the additional area planned to be brought under micro irrigation:

Table 5.6: Block wise year wise plan for bringing additional area under micro irrigation in Amreli District

Taluka	2016-17	2017-18	2018-19	2019-20	Total
Amreli	1698.72	1274.04	1274.04	1274.04	5520.85
Babara	1601.94	1201.45	1201.45	1201.45	5206.30
Bagsara	883.25	662.44	662.44	662.44	2870.55
Dhari	1718.55	1288.91	1288.91	1288.91	5585.28
Jafrabad	442.44	331.83	331.83	331.83	1437.94
Kambha	1519.04	1139.28	1139.28	1139.28	4936.90
Kukavav	1699.23	1274.43	1274.43	1274.43	5522.51
Lathi	1385.36	1039.02	1039.02	1039.02	4502.42
Liliya	586.26	439.69	439.69	439.69	1905.34

Rajula	1586.96	1190.22	1190.22	1190.22	5157.61
Savarkundla	2181.31	1635.98	1635.98	1635.98	7089.26
Grand Total	**15303.06**	**11477.30**	**11477.30**	**11477.30**	**49734.95**

5.6 Employment

Another important outcome expected from PMKSY is the increase in employment in the district. The potential employment generation is calculated based on an average estimation of 20% of total fund of all the departments except GSWMA shall be used to hire labour while 40% of total fund for GSWMA is used for hiring labour. The labour rate in Gujarat is considered to be Rs. 178 per man day. Thereby the following table (Table 5.6) is derived.

Table 5.7: Block wise year wise employment generation potential in Amreli District (in man days)

Taluka	2016-17	2017-18	2018-19	2019-20	Total
Amreli	279939	166187	175716	188566	810407
Babara	287843	197512	135588	136431	757375
Bagsara	109034	96575	98260	102474	406343
Dhari	243603	181883	195453	193633	814572
Jafrabad	66481	58972	60657	61500	247611
Kambha	196647	181456	173872	150950	702925
Kukavav	226561	146154	147840	146154	666710
Lathi	343510	224546	168758	119110	855924
Liliya	200568	66611	68296	69981	405456
Rajula	189977	165920	170133	170133	696163
Savarkundla	363332	285712	282278	270467	1201789
Grand Total	2507494	1771527	1676852	1609401	7565274

It can be observed that highest employment potential is in Savarkundla (15.89%), while Jafrabad has the least (3.27%). The PMKSY interventions are also likely to generate an additional income of Rs. 11311.60 lakh to the farmers of the district. This is based on the

assumption of at least 60% of potential utilised and Rs. 42,000 per ha incremental income from rainfed to irrigated farming and 11559 jobs on recurring basis (in 26932 ha additional area brought under irrigation at the rate of 2.33 ha average land holding by farmers).

5.7 Monitoring and Evaluation

The Strategic Action Plan of PMKSY will be monitored by the respective departments through the regular reporting system and component wise progress will be monitored by the District Level Irrigation Committee. Further, the activities, outputs and outcomes will be reported in web based MIS of PMKSY for review at state and national level. Some of the key indicators that will be used to monitor and evaluate the progress of PMKSY include:

- Annual irrigation water supply per unit irrigated area measured as the ratio of total volume of irrigation water supplied at intake divided by total area irrigated in all seasons
- Potential created and utilized measured as the ratio of total potential utilized (measured crop area) to irrigation potential created
- Output (agricultural production) per unit irrigated area measured as the ratio of total value of agriculture production divided by the total irrigated area.
- Output (agricultural production) per unit irrigation water supply measured as the ratio of total value of agriculture production divided by the total volume of irrigated water supplied.
- Total Operations & Maintenance (O&M) cost per unit irrigated area measured as the total Management, Operation and Maintenance (MOM) costs for the system divided by total area irrigated (potential utilized).
- Total Operations & Maintenance (O&M) cost per unit volume of water supplied measured as total Management, Operation and Maintenance (MOM) costs for the system divided Total volume of water supplied (all uses)
- Equity performance measured as actual area irrigated in head, middle and tail divided by Command area in head, middle and tail.

GSWMA has its own structural arrangements (GSWMA, District Watershed Development Unit, PIA, and Watershed Committee) from state to village level for implementation of program and has system of internal monitoring of project activities through different means. GSWMA has its own web based monitoring system as Soil Water Resource Management System (SWaRSys). The said system is online and helps not only for the monitoring/documentation of all the main project activities but also facilitates to collect and collate monthly and quarterly data from District level offices. For preparation of DIP, the watershed component information is collected from various levels and incorporated in this document for the years 2016-20.

5.8 Suggestions

For successful implementation of PMKSY plan it is suggested that:

- All the stakeholders should convene meeting of Panchayat samities and then finalise the village plan and prepare DPR.
- There should not be duplicity of project.
- The Department should supplement each other so that the maximum irrigation efficiency is achieved.
- Agriculture and Horticulture Department should take micro irrigation projects in the command of minor irrigation projects completed or likely to be completed in near future.
- All the irrigation projects should have a component of water conveyance so that the each drop of water is judiciously utilized.
- Where ever feasible solar pump sets should be installed.
- All the structures planned should be geo tagged and marked on map, so that social monitoring of the projects can be conducted. This will also avoid the duplicity.
- Priority should be given to projects minimize the gap in potential created and potential utilized.
- Execution of the scheme should be expeditiously completed.
- There should be smooth fund flow to timely complete the project**.**

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Strategic Action Plan

Concerned Ministry/ Department	Component	Activity	Total Number/ Capacity (M.Cum)	Command Area/Irrigation Potential (Ha)	Period of Implementation (5/7 yrs)	Estimated Cost (Rs. in Lacs)
MoWR	AIBP	Major Irrigation	0.00	0.00	0	0.00
MoWR		Medium Irrigation	2.00	2,060.00	4 years	2455
MoWR	Har khet ko pani	Surface Minor Irrigation	1.00	221.00	4 years	1,379.00
MoWR		Lift Irrigation	15.00	950.00	4 years	3,845.00
MoWR		Ground Water Development	8.00	100.00	4 years	4,331.00
MoWR		RRR of Water Bodies	9.00	500.00	4 years	440.00
MoWR		New tubewell with drip by GWRDC	4	60	4	170
MoWR		Recharge Tubewell by GWRDC	16	80	4	160
MoWR		GLDC Farm pond	880	1267.2	4	985.6
MoWR		GLDC Sim pond	176	739.2	4	880
MoWR		GLDC Village pond	132	3801.6	4	924
MoWR		GLDC WHS	308	1848	4	344.96
MoWR	Per drop more crop (Micro Irrigation)	DPAP Drip	18651	29841	4	20053
MoWR		DPAP Sprinkler	12434	19894	4	2228
DoLR-MoRD	PMKSY Watershed	Existing/Old Water Harvesting Structure Maintance (Renovation & Repair)	119	511	4	400
DoLR-MoRD		Ground Water	407	0	4	437

		Recharging Structures				
DoLR-MoRD		Administration cost	0	0	4	660
DoLR-MoRD		AGRICULTURE ACTIVITIES	43441	0	4	806
DoLR-MoRD		AGRO PROCESSING ACTIVITIES	151	0	4	63
DoLR-MoRD		Animal Husbandry	896	0	4	578
DoLR-MoRD		Capasity building, Monitoring & Evaluation	0	0	4	663
DoLR-MoRD		Cosolidation Phase	0	0	4	464
DoLR-MoRD		EPA	243	28	4	72
DoLR-MoRD		Establishing linkages	0	0	4	0
DoLR-MoRD		Land development	294129	0	4	212
DoLR-MoRD		Local traditional handicraft	65	0	4	59
DoLR-MoRD		Minor Activities	438	0	4	214
DoLR-MoRD		Non-conventional Energy Sources	625	0	4	109
DoLR-MoRD		Soil and moisture conservation	41752	141	4	772
DoLR-MoRD		Water harvesting structure	344	1518	4	1140
DoRD-MoRD	Convergence with MGNREGA	Causeway cum checkdam			4	133
Irrigation Scheme of StateAgriculture	Capacity Building by ATMA	Training Programmes	1346 Trainings	17556 Trainees	4	144.33

District wise summary

Name of the blocks / Sub district	Concerned Ministry/ Department	Component	Activity	Fund 2016-17	Fund 2017-18	Fund 2018-19	Fund 2019-20
Dhari	Rajkot Irrigation Circle	AIBP	Medium Irrigation	95	115	130	145
Bagsara	Rajkot Irrigation Circle	AIBP	Medium Irrigation	65	80	85	100
Rajula	Rajkot Irrigation Circle	AIBP	Medium Irrigation	200	205	220	225
Amreli	Rajkot Irrigation Circle	AIBP	Medium Irrigation	140	155	215	280
Kukavav	Rajkot Irrigation Circle	Har khet ko pani	Surface Minor Irrigation	15	20	25	30
Savarkundla	Rajkot Irrigation Circle	Har khet ko pani	Surface Minor Irrigation	65	75	90	105
Kambha	Rajkot Irrigation Circle	Har khet ko pani	Surface Minor Irrigation	95	200	205	114
Amreli	PANCHAYAT IRRIGATION DIVISION AMRELI	Har khet ko pani	Surface Minor Irrigation	20	20	10	10
Babara	PANCHAYAT	Har khet ko pani	Surface Minor	100	20	20	20

	IRRIGATION DIVISION AMRELI		Irrigation				
Dhari	PANCHAYAT IRRIGATION DIVISION AMRELI	Har khet ko pani	Surface Minor Irrigation	20	10	10	10
Kambha	PANCHAYAT IRRIGATION DIVISION AMRELI	Har khet ko pani	Lift Irrigation	85	95	105	115
Rajula	PANCHAYAT IRRIGATION DIVISION AMRELI	Har khet ko pani	Surface Minor Irrigation	20	20	20	10
Dhari	PANCHAYAT IRRIGATION DIVISION AMRELI	Har khet ko pani	Lift Irrigation	90	100	105	115
Bagsara	PANCHAYAT IRRIGATION DIVISION AMRELI	Har khet ko pani	Lift Irrigation	80	90	95	105
Rajula	PANCHAYAT IRRIGATION DIVISION AMRELI	Har khet ko pani	Lift Irrigation	60	90	100	105
Amreli	PANCHAYAT IRRIGATION DIVISION AMRELI	Har khet ko pani	Lift Irrigation	80	90	95	105
Savarkundla	PANCHAYAT	Har khet ko pani	Lift Irrigation	70	80	85	95

	IRRIGATION DIVISION AMRELI						
Kambha	PANCHAYAT IRRIGATION DIVISION AMRELI	Har khet ko pani	Ground Water Development	10	10	10	10
Lathi	PANCHAYAT IRRIGATION DIVISION AMRELI	Har khet ko pani	Lift Irrigation	85	95	100	105
Liliya	PANCHAYAT IRRIGATION DIVISION AMRELI	Har khet ko pani	Lift Irrigation	60	65	75	85
Babara	PANCHAYAT IRRIGATION DIVISION AMRELI	Har khet ko pani	Lift Irrigation	65	85	90	95
Jafrabad	PANCHAYAT IRRIGATION DIVISION AMRELI	Har khet ko pani	Lift Irrigation	60	65	75	80
Amreli	PANCHAYAT IRRIGATION DIVISION AMRELI	Har khet ko pani	Ground Water Development	10	10	10	10
Babara	PANCHAYAT IRRIGATION DIVISION AMRELI	Har khet ko pani	Ground Water Development	10	10	10	10
Dhari	PANCHAYAT	Har khet ko pani	Ground Water	10	10	10	10

	IRRIGATION DIVISION AMRELI		Development				
Bagsara	PANCHAYAT IRRIGATION DIVISION AMRELI	Har khet ko pani	Ground Water Development	10	10	10	10
Kukavav	PANCHAYAT IRRIGATION DIVISION AMRELI	Har khet ko pani	Lift Irrigation	70	75	85	95
Kambha	PANCHAYAT IRRIGATION DIVISION AMRELI	Har khet ko pani	RRR of Water Bodies	225	190	130	75
Jafrabad	PANCHAYAT IRRIGATION DIVISION AMRELI	Har khet ko pani	Ground Water Development	10	10	10	10
Lathi	PANCHAYAT IRRIGATION DIVISION AMRELI	Har khet ko pani	Ground Water Development	10	10	10	10
Liliya	PANCHAYAT IRRIGATION DIVISION AMRELI	Har khet ko pani	Ground Water Development	10	10	10	10
Rajula	PANCHAYAT IRRIGATION DIVISION AMRELI	Har khet ko pani	Ground Water Development	10	10	10	10
Savarkundla	PANCHAYAT	Har khet ko pani	Ground Water	10	10	10	10

	IRRIGATION DIVISION AMRELI		Development				
Amreli	PANCHAYAT IRRIGATION DIVISION AMRELI	Har khet ko pani	RRR of Water Bodies	25	25	25	25
Babara	PANCHAYAT IRRIGATION DIVISION AMRELI	Har khet ko pani	RRR of Water Bodies	75	75	75	75
Dhari	PANCHAYAT IRRIGATION DIVISION AMRELI	Har khet ko pani	RRR of Water Bodies	75	75	75	75
Bagsara	PANCHAYAT IRRIGATION DIVISION AMRELI	Har khet ko pani	RRR of Water Bodies	25	25	25	25
Kukavav	PANCHAYAT IRRIGATION DIVISION AMRELI	Har khet ko pani	Ground Water Development	10	10	10	10
Jafrabad	PANCHAYAT IRRIGATION DIVISION AMRELI	Har khet ko pani	RRR of Water Bodies	35	35	35	35
Lathi	PANCHAYAT IRRIGATION DIVISION AMRELI	Har khet ko pani	RRR of Water Bodies	55	55	55	55
Liliya	PANCHAYAT	Har khet ko pani	RRR of Water	35	35	35	35

	IRRIGATION DIVISION AMRELI		Bodies				
Rajula	PANCHAYAT IRRIGATION DIVISION AMRELI	Har khet ko pani	RRR of Water Bodies	35	35	35	35
Savarkundla	PANCHAYAT IRRIGATION DIVISION AMRELI	Har khet ko pani	RRR of Water Bodies	631	395	430	345
Kukavav	PANCHAYAT IRRIGATION DIVISION AMRELI	Har khet ko pani	RRR of Water Bodies	145	120	115	90
Amreli	GSLDC	Har Khet ko Pani	Farm pond	22.40	22.40	22.40	22.40
Amreli	GSLDC	Har Khet ko Pani	Sim pond	20.00	20.00	20.00	20.00
Amreli	GSLDC	Har Khet ko Pani	Village pond	21.00	21.00	21.00	21.00
Amreli	GSLDC	Har Khet ko Pani	WHS	7.84	7.84	7.84	7.84
Kukavav	GSLDC	Har Khet ko Pani	Farm pond	22.40	22.40	22.40	22.40
Kukavav	GSLDC	Har Khet ko Pani	Sim pond	20.00	20.00	20.00	20.00
Kukavav	GSLDC	Har Khet ko Pani	Village pond	21.00	21.00	21.00	21.00
Kukavav	GSLDC	Har Khet ko Pani	WHS	7.84	7.84	7.84	7.84
Kambha	GSLDC	Har Khet ko Pani	Farm pond	22.40	22.40	22.40	22.40
Kambha	GSLDC	Har Khet ko Pani	Sim pond	20.00	20.00	20.00	20.00
Kambha	GSLDC	Har Khet ko Pani	Village pond	21.00	21.00	21.00	21.00
Kambha	GSLDC	Har Khet ko Pani	WHS	7.84	7.84	7.84	7.84
Jafrabad	GSLDC	Har Khet ko Pani	Farm pond	22.40	22.40	22.40	22.40

Jafrabad	GSLDC	Har Khet ko Pani	Sim pond	20.00	20.00	20.00	20.00
Jafrabad	GSLDC	Har Khet ko Pani	Village pond	21.00	21.00	21.00	21.00
Jafrabad	GSLDC	Har Khet ko Pani	WHS	7.84	7.84	7.84	7.84
Dhari	GSLDC	Har Khet ko Pani	Farm pond	22.40	22.40	22.40	22.40
Dhari	GSLDC	Har Khet ko Pani	Sim pond	20.00	20.00	20.00	20.00
Dhari	GSLDC	Har Khet ko Pani	Village pond	21.00	21.00	21.00	21.00
Dhari	GSLDC	Har Khet ko Pani	WHS	7.84	7.84	7.84	7.84
Bagsara	GSLDC	Har Khet ko Pani	Farm pond	22.40	22.40	22.40	22.40
Bagsara	GSLDC	Har Khet ko Pani	Sim pond	20.00	20.00	20.00	20.00
Bagsara	GSLDC	Har Khet ko Pani	Village pond	21.00	21.00	21.00	21.00
Bagsara	GSLDC	Har Khet ko Pani	WHS	7.84	7.84	7.84	7.84
Babara	GSLDC	Har Khet ko Pani	Farm pond	22.40	22.40	22.40	22.40
Babara	GSLDC	Har Khet ko Pani	Sim pond	20.00	20.00	20.00	20.00
Babara	GSLDC	Har Khet ko Pani	Village pond	21.00	21.00	21.00	21.00
Babara	GSLDC	Har Khet ko Pani	WHS	7.84	7.84	7.84	7.84
Rajula	GSLDC	Har Khet ko Pani	Farm pond	22.40	22.40	22.40	22.40
Rajula	GSLDC	Har Khet ko Pani	Sim pond	20.00	20.00	20.00	20.00
Rajula	GSLDC	Har Khet ko Pani	Village pond	21.00	21.00	21.00	21.00
Rajula	GSLDC	Har Khet ko Pani	WHS	7.84	7.84	7.84	7.84
Lathi	GSLDC	Har Khet ko Pani	Farm pond	22.40	22.40	22.40	22.40
Lathi	GSLDC	Har Khet ko Pani	Sim pond	20.00	20.00	20.00	20.00
Lathi	GSLDC	Har Khet ko Pani	Village pond	21.00	21.00	21.00	21.00
Lathi	GSLDC	Har Khet ko Pani	WHS	7.84	7.84	7.84	7.84

Liliya	GSLDC	Har Khet ko Pani	Farm pond	22.40	22.40	22.40	22.40
Liliya	GSLDC	Har Khet ko Pani	Sim pond	20.00	20.00	20.00	20.00
Liliya	GSLDC	Har Khet ko Pani	Village pond	21.00	21.00	21.00	21.00
Liliya	GSLDC	Har Khet ko Pani	WHS	7.84	7.84	7.84	7.84
Savarkundla	GSLDC	Har Khet ko Pani	Farm pond	22.40	22.40	22.40	22.40
Savarkundla	GSLDC	Har Khet ko Pani	Sim pond	20.00	20.00	20.00	20.00
Savarkundla	GSLDC	Har Khet ko Pani	Village pond	21.00	21.00	21.00	21.00
Savarkundla	GSLDC	Har Khet ko Pani	WHS	7.84	7.84	7.84	7.84
Amreli	GWRDC	Har khet ko pani	New Tubewell with Drip	8.50	8.50	8.50	8.50
Dhari	GWRDC	Har khet ko pani	New Tubewell with Drip	17.00	17.00	17.00	17.00
Jafrabad	GWRDC	Har Khet ko Pani	Recharge Structure	20.00	20.00	20.00	20.00
Liliya	GWRDC	Har khet ko pani	New Tubewell with Drip	17.00	17.00	17.00	17.00
Rajula	GWRDC	Har Khet ko Pani	Recharge Structure	20.00	20.00	20.00	20.00
Amreli	GGRC	Per Drop more crop	Drip Irrigation System (DIS)	684.92	513.69	513.69	513.69
Babara	GGRC	Per Drop more crop	Drip Irrigation System (DIS)	645.90	484.43	484.43	484.43
Bagsara	GGRC	Per Drop more crop	Drip Irrigation System (DIS)	356.13	267.09	267.09	267.09
Dhari	GGRC	Per Drop more crop	Drip Irrigation System (DIS)	692.92	519.69	519.69	519.69

Jafrabad	GGRC	Per Drop more crop	Drip Irrigation System (DIS)	178.39	133.79	133.79	133.79
Kambha	GGRC	Per Drop more crop	Drip Irrigation System (DIS)	612.48	459.36	459.36	459.36
Kukavav	GGRC	Per Drop more crop	Drip Irrigation System (DIS)	685.13	513.85	513.85	513.85
Lathi	GGRC	Per Drop more crop	Drip Irrigation System (DIS)	558.58	418.93	418.93	418.93
Liliya	GGRC	Per Drop more crop	Drip Irrigation System (DIS)	236.38	177.28	177.28	177.28
Rajula	GGRC	Per Drop more crop	Drip Irrigation System (DIS)	639.86	479.90	479.90	479.90
Savarkundla	GGRC	Per Drop more crop	Drip Irrigation System (DIS)	879.50	659.63	659.63	659.63
Amreli	GGRC	Per Drop more crop	Sprinkler Irrigation System (SIS)	76.10	57.08	57.08	57.08
Babara	GGRC	Per Drop more crop	Sprinkler Irrigation System (SIS)	71.77	53.83	53.83	53.83
Bagsara	GGRC	Per Drop more crop	Sprinkler Irrigation System (SIS)	39.57	29.68	29.68	29.68
Dhari	GGRC	Per Drop more crop	Sprinkler Irrigation System (SIS)	76.99	57.74	57.74	57.74
Jafrabad	GGRC	Per Drop more crop	Sprinkler Irrigation System (SIS)	19.82	14.87	14.87	14.87

Kambha	GGRC	Per Drop more crop	Sprinkler Irrigation System (SIS)	68.05	51.04	51.04	51.04
Kukavav	GGRC	Per Drop more crop	Sprinkler Irrigation System (SIS)	76.13	57.09	57.09	57.09
Lathi	GGRC	Per Drop more crop	Sprinkler Irrigation System (SIS)	62.06	46.55	46.55	46.55
Liliya	GGRC	Per Drop more crop	Sprinkler Irrigation System (SIS)	26.26	19.70	19.70	19.70
Rajula	GGRC	Per Drop more crop	Sprinkler Irrigation System (SIS)	71.10	53.32	53.32	53.32
Savarkundla	GGRC	Per Drop more crop	Sprinkler Irrigation System (SIS)	97.72	73.29	73.29	73.29
Amreli	ATMA	Training	Training	33.41	35.53	37.07	38.31
Amreli	GSWMA total	PMKSY - Watershed	Total	359.72			
Dhari	GSWMA total	PMKSY - Watershed	Total	336.53	307.96	186.24	133.94
Lathi	GSWMA total	PMKSY - Watershed	Total	1214.32	717.38	300.54	0.00
Babara	GSWMA total	PMKSY - Watershed	Total	644.48	411.68		
Kukavav	GSWMA total	PMKSY - Watershed	Total	119.70			
Liliya	GSWMA total	PMKSY - Watershed	Total	582.08			
Savarkundla	GSWMA total	PMKSY - Watershed	Total	370.61	434.12	277.92	251.34
Amreli	GSWMA Convergence	PMKSY - Convergence with MGNREGA	Total	44.66	52.45	35.80	

GSWMA:

Sr.No	Activity	Unit	Physical Target for FY (2016-17)							
			Unit	Command Area/ Irrigation Potential (Ha.)	Cost (In Lakhs)	Storage Volumes (Cubic Meter)	Person days/ Mandays Planned	Convergence		
								Unit	Amount (In Lakhs)	Name of Schemes
1	Animal camp	No.	1	0.00	0.40	0	899	0.00	0	0
2	Animal water trough (Havada)	No.	4	0.00	4.22	0	3748	0.00	0	0
3	Causeway on connecting roads	No.	11	27.50	30.22	0	48017	0.00	0	0
4	Check / Protection wall	No.	2	0.00	5.13	0	11569	0.00	0	0
5	Demonstration for Agricultural / Animal Husbandry Productivity Enhancement	No.	0	0.00	0.00	0	0	0.00	0	0
6	Drainage line correction (To prevent flooding of Gamtal)	rmt	0	0.00	0.00	0	0	0.00	0	0
7	Drinking water facility	No.	7	0.00	14.97	0	26899	1.00	40	0
8	Fencing for protection from wild animals	rmt.	0	0.00	0.00	0	0	0.00	0	0
9	Grassland/Gauchar Development	Ha.	0	0.00	0.00	0	0	0.00	0	0
10	Improvised and energy efficient smashan gruh (Cemetery)	No.	0	0.00	0.00	0	0	0.00	0	0
12	Panchayat Well Repair & Pump Room	No.	0	0.00	0.00	0	0	0.00	0	0
13	Rain water harvesting system	No.	0	0.00	0.00	0	0	0.00	0	0
14	Recharge / Repair of open wells	No.	0	0.00	0.00	0	0	0.00	0	0
15	Repair / development of artificial water bodies	No.	0	0.00	0.00	0	0	0.00	0	0
16	Revival of natural water bodies with recharge activities	No.	0	0.00	0.00	0	0	0.00	0	0
17	Sanitation facilities/Sewerage line	rmt	0	0.00	0.00	0	0	0.00	0	0
18	Use solar power for productive activities	No.	0	0.00	0.00	0	0	0.00	0	0
19	Wind energy development	No.	0	0.00	0.00	0	0	0.00	0	0
20	OTHERS (Specifiy activities)		0	0.00	0.00	0	0	0.00	0	0
21	Otta		218	0.00	17.54	18750	3049	0.00	1	0
22	Pond		0	0.00	0.00	0	0	0.00	0	0

23			0	0.00	0.00	0	0	0.00	0	0
24			0	0.00	0.00	0	0	0.00	0	0
	Land Development		0	0.00	0.00	0	0	0.00	0	0
1	**Farm Bunding**	**rmt.**	105700	0.00	64.58	0	50150	0.00	9	0
2	**Afforestation**	**Ha.**	5022	0.00	29.45	0	3501	2.00	1	Forest
3	**Agriculture Demo**	**No.**	12	0.00	2.02	0	0	0.00	0	0
4	**Agro Forestry**	**Ha.**	500	0.00	1.05	0	0	22800.00	5	0
5	**Horticulture**	**Ha.**	0	0.00	0.00	0	0	0.00	0	0
6	**Land leveling**	**Ha.**	1	0.00	2.00	0	449	0.00	0	0
7	**Pasture**	**Ha.**	9	0.00	11.92	0	2905	0.00	0	0
8	**OTHERS (Specifiy activities)**		0	0.00	0.00	0	0	0.00	0	0
9	**Green Manuring**		20	0.00	4.10	0	673	16200.00	1	0
10	**Boder Plantation**		21415	0.00	4.49	0	933	500.00	0	0
11	**Gypsum Treatment**		18	0.00	2.10	0	223	0.00	0	0
12	**Gram Vatika**		1	0.00	0.75	0	35	0.00	0	0
	Soil & Moisture Conservation		0	0.00	0.00	0	0	0.00	0	0
1	**Check wall**	**No.**	70	70.00	122.75	278712	16760	0.00	0	0
2	**Earthen bund**	**No.**	0	0.00	0.00	0	0	0.00	0	0
3	**Protection Wall**	**No.**	3	0.00	8.13	0	873	7.00	11	0
4	**Waste weir**	**No.**	35	17.50	122.92	236213	29314	0.00	0	0
5	**Bench Terracing**	**cumec**	0	0.00	0.00	0	0	0.00	0	0
6	**Bori bandh**	**No.**	0	0.00	0.00	0	0	0.00	0	0
7	**Brushwood Checks**	**No.**	0	0.00	0.00	0	0	0.00	0	0
8	**Countour Bunding**	**rmt.**	0	0.00	0.00	0	0	0.00	0	0
9	**Countour Trenches**	**rmt.**	40088	0.00	8.27	0	8094	0.00	0	0
10	**Earthern Dam**	**rmt.**	0	0.00	0.00	0	0	0.00	0	0
11	**Field Outlet**	**No.**	1167	0.00	183.73	8	47306	35.00	7	0
12	**Gabion structure**	**No.**	0	0.00	0.00	0	0	0.00	0	0
13	**Graded Bunding**	**rmt.**	0	0.00	0.00	0	0	0.00	0	0
14	**Gully plug**	**No.**	0	0.00	0.00	0	0	0.00	0	0
15	**Loose Boulder Checks**	**No.**	0	0.00	0.00	0	0	0.00	0	0
16	**Nala Plug**	**No.**	12	3.00	22.19	53636	3831	0.00	0	0
17	**Stone bunding**	**rmt.**	0	0.00	0.00	0	0	0.00	0	0
18	**Straggred Contour trenching(Terrace Talavadi)**		0	0.00	0.00	0	0	0.00	0	0
19	**OTHERS (Specifiy activities)**		0	0.00	0.00	0	0	0.00	0	0
20			0	0.00	0.00	0	0	0.00	0	0
21			0	0.00	0.00	0	0	0.00	0	0

22			0	0.00	0.00	0	0	0.00	0	0
23			0	0.00	0.00	0	0	0.00	0	0
	Water Harvesting Structure		0	0.00	0.00	0	0	0.00	0	0
1	Cause way cum Chek dam	No.	5	22.50	18.65	0	2162	0.00	0	0
2	Check dam	No.	106	530.00	333.57	925835	57216	5.00	9	0
3	Village/Community Pond	No.	72	324.00	231.68	494089	60727	19.00	53	0
4	Farm Pond	No.	2	2.00	1.00	0	408	1.00	4	0
5	Percolation Tank	No.	0	0.00	0.00	0	0	0.00	0	0
6	Pond Inlet	No.	0	0.00	0.00	0	0	0.00	0	0
7	Pond Outlet	No.	4	0.00	8.14	50789	18292	0.00	0	0
8	OTHERS (Specifiy activities)	No.	0	0.00	0.00	0	0	0.00	0	0
9	Drop Inlet		3	0.00	3.00	0	0	0.00	0	0
10			0	0.00	0.00	0	0	0.00	0	0
11			0	0.00	0.00	0	0	0.00	0	0
12			0	0.00	0.00	0	0	0.00	0	0
	Existing/Old Water Harvesting Structure Maintance (Renovation & Repair)		0	0.00	0.00	0	0	0.00	0	0
1	Deepening/Desiltation Of Pond	No.	38	152.00	134.14	0	44528	25.00	61	GLDC
2	Deepening Of Percolation Tank	No.	0	0.00	0.00	0	0	0.00	0	0
3	De-siltation of Checkdam	No.	0	0.00	0.00	0	0	27.00	67	0
4	Repairing of Checkdam	No.	41	184.50	131.91	0	29320	9.00	25	GLDC
	Ground Water Recharging Structures		0	0.00	0.00	0	0	0.00	0	0
1	Dugwell Recharge	No.	75	0.00	12.50	0	566	0.00	0	0
2	Farm Recharge Filter	No.	5	0.00	0.50	0	61	0.00	0	0
3	Holiya in farm/Field	No.	0	0.00	0.00	0	0	0.00	0	0
4	Pond Recharge structure	No.	0	0.00	0.00	0	0	0.00	0	0
5	OTHERS	No.	0	0.00	0.00	0	0	0.00	0	
6	Percolation Well		173	0.00	253.06	86571	44476	4.00	7	0
7			40	0.00	12.00	0	26966	0.00	0	0
8			0	0.00	0.00	0	0	0.00	0	0
9			0	0.00	0.00	0	0	0.00	0	0
S.No	Sub Activity Name		0	0.00	0.00	0	0	0.00	0	0
1	AGRICULTURE ACTIVITIES	No.	41595	0.00	575.56	0	197630	602.00	440	GGRC
2	AGRO PROCESSING ACTIVITIES	No.	7	0.00	5.45	0	22	1.00	3	0

3	Animal Husbandry	No.	422	0.00	285.31	0	66246	172.00	30	AH DEPT
4	Establishing linkages	No.	0	0.00	0.00	0	30	0.00	0	0
5	Local traditional handicraft	No.	37	0.00	38.60	0	1706	0.00	0	0
6	Minor Activities	No.	224	0.00	116.16	0	416	4.00	3	0
7	Non-conventional Energy Sources	No.	502	0.00	81.59	0	74	192.00	27	0
	Capacity Building, Monitoring & Evaluation				296.68					
	Administration				272.48					
	Consolidation				152.51					
	Total		**217665.70**	**1333.00**	**3627.42**	**2144603**	**810074**	**40606.00**	**800.88**	**0.00**

Sr.No	Activity	Unit	Physical Target for FY (2017-18)							
			Unit	Command Area/ Irrigation Potential (Ha.)	Cost (In Lakhs)	Storage Volumes (Cubic Meter)	Person days/ Mandays Planned	Convergence		
								Unit	Amount (In Lakhs)	Name of Schemes
1	Animal camp	No.	0	0.00	0.00	0	0	0.00	0	0
2	Animal water trough (Havada)	No.	0	0.00	0.00	0	0	0.00	0	0
3	Causeway on connecting roads	No.	0	0.00	0.00	0	0	0.00	0	0
4	Check / Protection wall	No.	0	0.00	0.00	0	0	0.00	0	0
5	Demonstration for Agricultural / Animal Husbandry Productivity Enhancement	No.	0	0.00	0.00	0	0	0.00	0	0
6	Drainage line correction (To prevent flooding of Gamtal)	rmt	0	0.00	0.00	0	0	0.00	0	0
7	Drinking water facility	No.	0	0.00	0.00	0	0	0.00	0	0
8	Fencing for protection from wild animals	rmt.	0	0.00	0.00	0	0	0.00	0	0
9	Grassland/Gauchar Development	Ha.	0	0.00	0.00	0	0	0.00	0	0
10	Improvised and energy efficient smashan gruh (Cemetery)	No.	0	0.00	0.00	0	0	0.00	0	0
12	Panchayat Well Repair & Pump Room	No.	0	0.00	0.00	0	0	0.00	0	0

13	**Rain water harvesting system**	**No.**	0	0.00	0.00	0	0	0.00	0	0
14	**Recharge / Repair of open wells**	**No.**	0	0.00	0.00	0	0	0.00	0	0
15	**Repair / development of artificial water bodies**	**No.**	0	0.00	0.00	0	0	0.00	0	0
16	**Revival of natural water bodies with recharge activities**	**No.**	0	0.00	0.00	0	0	0.00	0	0
17	**Sanitation facilities/Sewerage line**	**rmt**	0	0.00	0.00	0	0	0.00	0	0
18	**Use solar power for productive activities**	**No.**	0	0.00	0.00	0	0	0.00	0	0
19	**Wind energy development**	**No.**	0	0.00	0.00	0	0	0.00	0	0
20	**OTHERS (Specifiy activities)**		0	0.00	0.00	0	0	0.00	0	0
21	**Otta**		0	0.00	0.00	0	0	0.00	0	0
22	**Pond**		0	0.00	0.00	0	0	0.00	0	0
23			0	0.00	0.00	0	0	0.00	0	0
24			0	0.00	0.00	0	0	0.00	0	0
	Land Development		0	0.00	0.00	0	0	0.00	0	0
1	**Farm Bunding**	**rmt.**	161276	0.00	61.93	0	139169	1081.00	20	0
2	**Afforestation**	**Ha.**	1	0.00	0.75	0	95	0.25	0	Forest
3	**Agriculture Demo**	**No.**	0	0.00	0.00	0	0	0.00	0	0
4	**Agro Forestry**	**Ha.**	0	0.00	0.00	0	0	0.00	0	0
5	**Horticulture**	**Ha.**	0	0.00	0.00	0	0	0.00	0	0
6	**Land leveling**	**Ha.**	0	0.00	0.00	0	0	0.00	0	0
7	**Pasture**	**Ha.**	5	0.00	6.88	0	823	0.00	0	0
8	**OTHERS (Specifiy activities)**		0	0.00	0.00	0	0	0.00	0	0
9	**Green Manuring**		45	0.00	5.88	0	648	0.00	0	0
10	**Boder Plantation**		0	0.00	0.00	0	0	0.00	0	0
11	**Gypsum Treatment**		105	0.00	13.00	0	1458	0.00	0	0
12	**Gram Vatika**		0	0.00	0.00	0	0	0.00	0	0
	Soil & Moisture Conservation		0	0.00	0.00	0	0	0.00	0	0
1	**Check wall**	**No.**	14	14.00	45.78	27758	90638	0.00	0	0
2	**Earthen bund**	**No.**	0	0.00	0.00	0	0	0.00	0	0
3	**Protection Wall**	**No.**	2	0.00	1.20	0	163	0.00	0	0
4	**Waste weir**	**No.**	10	5.00	36.71	85191	41533	0.00	0	0
5	**Bench Terracing**	**cumec**	0	0.00	0.00	0	0	0.00	0	0
6	**Bori bandh**	**No.**	0	0.00	0.00	0	0	0.00	0	0
7	**Brushwood Checks**	**No.**	0	0.00	0.00	0	0	0.00	0	0
8	**Countour Bunding**	**rmt.**	0	0.00	0.00	0	0	0.00	0	0
9	**Countour Trenches**	**rmt.**	0	0.00	0.00	0	0	0.00	0	0
10	**Earthern Dam**	**rmt.**	0	0.00	0.00	0	0	0.00	0	0

11	Field Outlet	No.	147	0.00	22.05	0	3390	0.00	0	0
12	Gabion structure	No.	0	0.00	0.00	0	0	0.00	0	0
13	Graded Bunding	rmt.	0	0.00	0.00	0	0	0.00	0	0
14	Gully plug	No.	4	0.00	7.00	21875	735	0.00	0	0
15	Loose Boulder Checks	No.	0	0.00	0.00	0	0	0.00	0	0
16	Nala Plug	No.	22	5.50	39.32	91300	43985	0.00	0	0
17	Stone bunding	rmt.	0	0.00	0.00	0	0	0.00	0	0
18	Straggred Contour trenching(Terrace Talavadi)		0	0.00	0.00	0	0	0.00	0	0
19	OTHERS (Specifiy activities)		0	0.00	0.00	0	0	0.00	0	0
20			0	0.00	0.00	0	0	0.00	0	0
21			0	0.00	0.00	0	0	0.00	0	0
22			0	0.00	0.00	0	0	0.00	0	0
23			0	0.00	0.00	0	0	0.00	0	0
	Water Harvesting Structure		0	0.00	0.00	0	0	0.00	0	0
1	Cause way cum Chek dam	No.	1	4.50	3.80	4751	390	0.00	0	0
2	Check dam	No.	7	35.00	25.16	43950	2743	0.00	0	0
3	Village/Community Pond	No.	55	247.50	191.34	646585	72803	16.00	55	0
4	Farm Pond	No.	0	0.00	0.00	0	0	0.00	0	0
5	Percolation Tank	No.	0	0.00	0.00	0	0	0.00	0	0
6	Pond Inlet	No.	1	0.00	1.00	2000	168	0.00	0	0
7	Pond Outlet	No.	8	0.00	32.00	142500	6291	0.00	0	0
8	OTHERS (Specifiy activities)	No.	0	0.00	0.00	0	0	0.00	0	0
9	Drop Inlet		1	0.00	3.94	6175	381	0.00	0	0
10			0	0.00	0.00	0	0	0.00	0	0
11			0	0.00	0.00	0	0	0.00	0	0
12			0	0.00	0.00	0	0	0.00	0	0
	Existing/Old Water Harvesting Structure Maintance (Renovation & Repair)		0	0.00	0.00	0	0	0.00	0	0
1	Deepening/Desiltation Of Pond	No.	7	28.00	28.19	68115	43346	33.00	89	GLDC
2	Deepening Of Percolation Tank	No.	0	0.00	0.00	0	0	0.00	0	0
3	De-siltation of Checkdam	No.	0	0.00	0.00	0	0	2.00	5	0
4	Repairing of Checkdam	No.	19	85.50	59.58	127341	25845	7.00	19	GLDC
	Ground Water Recharging Structures		0	0.00	0.00	0	0	0.00	0	0
1	Dugwell Recharge	No.	6	0.00	1.50	0	195	0.00	0	0
2	Farm Recharge Filter	No.	0	0.00	0.00	0	0	0.00	0	0

3	Holiya in farm/Field	No.	0	0.00	0.00	0	0	0.00	0	0
4	Pond Recharge structure	No.	0	0.00	0.00	0	0	0.00	0	0
5	OTHERS	No.	0	0.00	0.00	0	0	0.00	0	
6	Percolation Well		62	0.00	91.50	6717	45469	0.00	0	0
7			0	0.00	0.00	0	0	0.00	0	0
8			0	0.00	0.00	0	0	0.00	0	0
9			0	0.00	0.00	0	0	0.00	0	0
S.No	Sub Activity Name		0	0.00	0.00	0	0	0.00	0	0
1	AGRICULTURE ACTIVITIES	No.	1680	0.00	201.42	0	110097	231.00	212	GGRC
2	AGRO PROCESSING ACTIVITIES	No.	139	0.00	51.61	0	40103	6.00	17	0
3	Animal Husbandry	No.	175	0.00	184.41	0	613	64.00	14	AH DEPT
4	Establishing linkages	No.	0	0.00	0.00	0	0	0.00	0	0
5	Local traditional handicraft	No.	0	0.00	0.00	0	0	0.00	0	0
6	Minor Activities	No.	155	0.00	79.63	0	0	0.00	0	0
7	Non-conventional Energy Sources	No.	36	0.00	8.16	0	10	10.00	2	0
	Capacity Building, Monitoring & Evaluation				**239.87**					
	Administration				**228.01**					
	Consolidation				**199.53**					
	Total		**163982.50**	**425.00**	**1871.15**	**1274258**	**671091.00**	**1450.25**	**434.22**	**0.00**

Sr.No	Activity	Unit	Physical Target for FY (2018-19)							
			Unit	Command Area/ Irrigation Potential (Ha.)	Cost (In Lakhs)	Storage Volumes (Cubic Meter)	Person days/ Mandays Planned	Convergence		
								Unit	Amount (In Lakhs)	Name of Schemes
1	Animal camp	No.	0	0.00	0.00	0	0	0.00	0	0
2	Animal water trough (Havada)	No.	0	0.00	0.00	0	0	0.00	0	0
3	Causeway on connecting roads	No.	0	0.00	0.00	0	0	0.00	0	0

4	**Check / Protection wall**	**No.**	0	0.00	0.00	0	0	0.00	0	0
5	**Demonstration for Agricultural / Animal Husbandry Productivity Enhancement**	**No.**	0	0.00	0.00	0	0	0.00	0	0
6	**Drainage line correction (To prevent flooding of Gamtal)**	**rmt**	0	0.00	0.00	0	0	0.00	0	0
7	**Drinking water facility**	**No.**	0	0.00	0.00	0	0	0.00	0	0
8	**Fencing for protection from wild animals**	**rmt.**	0	0.00	0.00	0	0	0.00	0	0
9	**Grassland/Gauchar Development**	**Ha.**	0	0.00	0.00	0	0	0.00	0	0
10	**Improvised and energy efficient smashan gruh (Cemetery)**	**No.**	0	0.00	0.00	0	0	0.00	0	0
12	**Panchayat Well Repair & Pump Room**	**No.**	0	0.00	0.00	0	0	0.00	0	0
13	**Rain water harvesting system**	**No.**	0	0.00	0.00	0	0	0.00	0	0
14	**Recharge / Repair of open wells**	**No.**	0	0.00	0.00	0	0	0.00	0	0
15	**Repair / development of artificial water bodies**	**No.**	0	0.00	0.00	0	0	0.00	0	0
16	**Revival of natural water bodies with recharge activities**	**No.**	0	0.00	0.00	0	0	0.00	0	0
17	**Sanitation facilities/Sewerage line**	**rmt**	0	0.00	0.00	0	0	0.00	0	0
18	**Use solar power for productive activities**	**No.**	0	0.00	0.00	0	0	0.00	0	0
19	**Wind energy development**	**No.**	0	0.00	0.00	0	0	0.00	0	0
20	**OTHERS (Specifiy activities)**		0	0.00	0.00	0	0	0.00	0	0
21	**Otta**		0	0.00	0.00	0	0	0.00	0	0
22	**Pond**		0	0.00	0.00	0	0	0.00	0	0
23			0	0.00	0.00	0	0	0.00	0	0
24			0	0.00	0.00	0	0	0.00	0	0
	Land Development		0	0.00	0.00	0	0	0.00	0	0
1	**Farm Bunding**	**rmt.**	0	0.00	0.00	0	0	0.00	0	0
2	**Afforestation**	**Ha.**	0	0.00	0.00	0	0	5.00	8	Forest
3	**Agriculture Demo**	**No.**	0	0.00	0.00	0	0	0.00	0	0
4	**Agro Forestry**	**Ha.**	0	0.00	0.00	0	0	0.00	0	0
5	**Horticulture**	**Ha.**	0	0.00	0.00	0	0	0.00	0	0
6	**Land leveling**	**Ha.**	0	0.00	0.00	0	0	0.00	0	0
7	**Pasture**	**Ha.**	0	0.00	0.00	0	0	0.00	0	0
8	**OTHERS (Specifiy activities)**		0	0.00	0.00	0	0	0.00	0	0
9	**Green Manuring**		1	0.00	1.00	0	35	0.00	0	0
10	**Boder Plantation**		0	0.00	0.00	0	0	0.00	0	0
11	**Gypsum Treatment**		0	0.00	0.00	0	0	0.00	0	0
12	**Gram Vatika**		0	0.00	0.00	0	0	0.00	0	0
	Soil & Moisture Conservation		0	0.00	0.00	0	0	0.00	0	0

1	Check wall	No.	10	10.00	40.00	22158	89888	0.00	0	0
2	Earthen bund	No.	0	0.00	0.00	0	0	0.00	0	0
3	Protection Wall	No.	3	0.00	7.07	0	693	0.00	0	0
4	Waste weir	No.	12	6.00	43.06	140514	95865	0.00	0	0
5	Bench Terracing	cumec	0	0.00	0.00	0	0	0.00	0	0
6	Bori bandh	No.	0	0.00	0.00	0	0	0.00	0	0
7	Brushwood Checks	No.	0	0.00	0.00	0	0	0.00	0	0
8	Countour Bunding	rmt.	0	0.00	0.00	0	0	0.00	0	0
9	Countour Trenches	rmt.	0	0.00	0.00	0	0	0.00	0	0
10	Earthern Dam	rmt.	0	0.00	0.00	0	0	0.00	0	0
11	Field Outlet	No.	125	0.00	18.75	0	2907	0.00	0	0
12	Gabion structure	No.	0	0.00	0.00	0	0	0.00	0	0
13	Graded Bunding	rmt.	0	0.00	0.00	0	0	0.00	0	0
14	Gully plug	No.	0	0.00	0.00	0	0	0.00	0	0
15	Loose Boulder Checks	No.	0	0.00	0.00	0	0	0.00	0	0
16	Nala Plug	No.	0	0.00	0.41	0	0	0.00	0	0
17	Stone bunding	rmt.	0	0.00	0.00	0	0	0.00	0	0
18	Straggred Contour trenching(Terrace Talavadi)		0	0.00	0.00	0	0	0.00	0	0
19	OTHERS (Specifiy activities)		0	0.00	0.00	0	0	0.00	0	0
20			0	0.00	0.00	0	0	0.00	0	0
21			0	0.00	0.00	0	0	0.00	0	0
22			0	0.00	0.00	0	0	0.00	0	0
23			0	0.00	0.00	0	0	0.00	0	0
	Water Harvesting Structure		0	0.00	0.00	0	0	0.00	0	0
1	Cause way cum Chek dam	No.	2	9.00	5.73	95	573	0.00	0	0
2	Check dam	No.	11	55.00	39.82	153450	6178	0.00	0	0
3	Village/Community Pond	No.	28	126.00	99.76	349228	116929	5.00	15	0
4	Farm Pond	No.	0	0.00	0.00	0	0	0.00	0	0
5	Percolation Tank	No.	0	0.00	0.00	0	0	0.00	0	0
6	Pond Inlet	No.	0	0.00	0.00	0	0	0.00	0	0
7	Pond Outlet	No.	2	0.00	7.96	33750	1565	0.00	0	0
8	OTHERS (Specifiy activities)	No.	0	0.00	0.00	0	0	0.00	0	0
9	Drop Inlet		0	0.00	0.00	0	0	0.00	0	0
10			0	0.00	0.00	0	0	0.00	0	0
11			0	0.00	0.00	0	0	0.00	0	0
12			0	0.00	0.00	0	0	0.00	0	0

	Existing/Old Water Harvesting Structure Maintance (Renovation & Repair)		0	0.00	0.00	0	0	0.00	0	0
1	Deepening/Desiltation Of Pond	No.	0	0.00	0.00	0	0	5.00	13	GLDC
2	Deepening Of Percolation Tank	No.	0	0.00	0.00	0	0	0.00	0	0
3	De-siltation of Checkdam	No.	0	0.00	0.00	0	0	20.00	36	0
4	Repairing of Checkdam	No.	6	27.00	18.47	37050	1905	0.00	0	GLDC
	Ground Water Recharging Structures		2	0.00	7.29	25646	16382	2.00	5	0
1	Dugwell Recharge	No.	6	0.00	1.50	0	165	0.00	0	0
2	Farm Recharge Filter	No.	0	0.00	0.00	0	0	0.00	0	0
3	Holiya in farm/Field	No.	0	0.00	0.00	0	0	0.00	0	0
4	Pond Recharge structure	No.	0	0.00	0.00	0	0	0.00	0	0
5	OTHERS	No.	0	0.00	0.00	0	0	0.00	0	
6	Percolation Well		38	0.00	57.00	3999	19050	0.00	0	0
7			0	0.00	0.00	0	0	0.00	0	0
8			0	0.00	0.00	0	0	0.00	0	0
9			0	0.00	0.00	0	0	0.00	0	0
S.No	Sub Activity Name		0	0.00	0.00	0	0	0.00	0	0
1	AGRICULTURE ACTIVITIES	No.	120	0.00	19.25	0	134	116.00	19	GGRC
2	AGRO PROCESSING ACTIVITIES	No.	3	0.00	3.40	0	11	1.00	0	0
3	Animal Husbandry	No.	282	0.00	105.54	0	74532	59.00	38	AH DEPT
4	Establishing linkages	No.	0	0.00	0.00	0	0	0.00	0	0
5	Local traditional handicraft	No.	10	0.00	6.05	0	13596	0.00	6	0
6	Minor Activities	No.	40	0.00	13.50	0	21348	0.00	0	0
7	Non-conventional Energy Sources	No.	47	0.00	11.09	0	4	4.00	1	0
	Capacity Building, Monitoring & Evaluation				**89.28**					
	Administration				**109.46**					
	Consolidation				**59.32**					
	Total		**748.00**	**233.00**	**764.70**	**765890.04**	**461759.85**	**217.00**	**141.03**	**0.00**

Sr.No	Activity	Unit	Physical Target for FY (2019-20)					
			Unit	Comman	Cost (In	Storage	Person	Convergenc

				d Area/ Irrigation Potential (Ha.)	Lakhs)	Volumes (Cubic Meter)	days/Mandays Planned	e		
								Unit	Amount (In Lakhs)	Name of Schemes
1	Animal camp	No.	0	0.00	0.00	0	0	0.00	0	0
2	Animal water trough (Havada)	No.	0	0.00	0.00	0	0	0.00	0	0
3	Causeway on connecting roads	No.	0	0.00	0.00	0	0	0.00	0	0
4	Check / Protection wall	No.	0	0.00	0.00	0	0	0.00	0	0
5	Demonstration for Agricultural / Animal Husbandry Productivity Enhancement	No.	0	0.00	0.00	0	0	0.00	0	0
6	Drainage line correction (To prevent flooding of Gamtal)	rmt	0	0.00	0.00	0	0	0.00	0	0
7	Drinking water facility	No.	0	0.00	0.00	0	0	0.00	0	0
8	Fencing for protection from wild animals	rmt.	0	0.00	0.00	0	0	0.00	0	0
9	Grassland/Gauchar Development	Ha.	0	0.00	0.00	0	0	0.00	0	0
10	Improvised and energy efficient smashan gruh (Cemetery)	No.	0	0.00	0.00	0	0	0.00	0	0
12	Panchayat Well Repair & Pump Room	No.	0	0.00	0.00	0	0	0.00	0	0
13	Rain water harvesting system	No.	0	0.00	0.00	0	0	0.00	0	0
14	Recharge / Repair of open wells	No.	0	0.00	0.00	0	0	0.00	0	0
15	Repair / development of artificial water bodies	No.	0	0.00	0.00	0	0	0.00	0	0
16	Revival of natural water bodies with recharge activities	No.	0	0.00	0.00	0	0	0.00	0	0
17	Sanitation facilities/Sewerage line	rmt	0	0.00	0.00	0	0	0.00	0	0
18	Use solar power for productive activities	No.	0	0.00	0.00	0	0	0.00	0	0
19	Wind energy development	No.	0	0.00	0.00	0	0	0.00	0	0
20	OTHERS (Specifiy activities)		0	0.00	0.00	0	0	0.00	0	0
21	Otta		0	0.00	0.00	0	0	0.00	0	0
22	Pond		0	0.00	0.00	0	0	0.00	0	0
23			0	0.00	0.00	0	0	0.00	0	0
24			0	0.00	0.00	0	0	0.00	0	0
	Land Development		0	0.00	0.00	0	0	0.00	0	0
1	Farm Bunding	rmt.	0	0.00	0.00	0	0	0.00	0	0
2	Afforestation	Ha.	0	0.00	0.00	0	0	0.00	0	0

3	Agriculture Demo	No.	0	0.00	0.00	0	0	0.00	0	0
4	Agro Forestry	Ha.	0	0.00	0.00	0	0	0.00	0	0
5	Horticulture	Ha.	0	0.00	0.00	0	0	0.00	0	0
6	Land leveling	Ha.	0	0.00	0.00	0	0	0.00	0	0
7	Pasture	Ha.	0	0.00	0.00	0	0	0.00	0	0
8	OTHERS (Specifiy activities)		0	0.00	0.00	0	0	0.00	0	0
9	Green Manuring		0	0.00	0.00	0	0	0.00	0	0
10	Boder Plantation		0	0.00	0.00	0	0	0.00	0	0
11	Gypsum Treatment		0	0.00	0.00	0	0	0.00	0	0
12	Gram Vatika		0	0.00	0.00	0	0	0.00	0	0
	Soil & Moisture Conservation		0	0.00	0.00	0	0	0.00	0	0
1	Check wall	No.	8	8.00	20.85	12310	46854	0.00	0	0
2	Earthen bund	No.	0	0.00	0.00	0	0	0.00	0	0
3	Protection Wall	No.	0	0.00	0.00	0	0	0.00	0	0
4	Waste weir	No.	4	2.00	15.04	49424	33798	2.00	5	0
5	Bench Terracing	cumec	0	0.00	0.00	0	0	0.00	0	0
6	Bori bandh	No.	0	0.00	0.00	0	0	0.00	0	0
7	Brushwood Checks	No.	0	0.00	0.00	0	0	0.00	0	0
8	Countour Bunding	rmt.	0	0.00	0.00	0	0	0.00	0	0
9	Countour Trenches	rmt.	0	0.00	0.00	0	0	0.00	0	0
10	Earthern Dam	rmt.	0	0.00	0.00	0	0	0.00	0	0
11	Field Outlet	No.	16	0.00	6.40	0	1078	16.00	3	0
12	Gabion structure	No.	0	0.00	0.00	0	0	0.00	0	0
13	Graded Bunding	rmt.	0	0.00	0.00	0	0	0.00	0	0
14	Gully plug	No.	0	0.00	0.00	0	0	0.00	0	0
15	Loose Boulder Checks	No.	0	0.00	0.00	0	0	0.00	0	0
16	Nala Plug	No.	0	0.00	0.00	0	0	0.00	0	0
17	Stone bunding	rmt.	0	0.00	0.00	0	0	0.00	0	0
18	Straggred Contour trenching(Terrace Talavadi)		0	0.00	0.00	0	0	0.00	0	0
19	OTHERS (Specifiy activities)		0	0.00	0.00	0	0	0.00	0	0
20			0	0.00	0.00	0	0	0.00	0	0
21			0	0.00	0.00	0	0	0.00	0	0
22			0	0.00	0.00	0	0	0.00	0	0
23			0	0.00	0.00	0	0	0.00	0	0
	Water Harvesting Structure		0	0.00	0.00	0	0	0.00	0	0
1	Cause way cum Chek dam	No.	0	0.00	0.00	0	0	0.00	0	0
2	Check dam	No.	27	135.00	98.69	285312	221775	0.00	0	0

3	Village/Community Pond	No.	6	27.00	24.00	90000	4719	3.00	12	0
4	Farm Pond	No.	0	0.00	0.00	0	0	0.00	0	0
5	Percolation Tank	No.	0	0.00	0.00	0	0	0.00	0	0
6	Pond Inlet	No.	0	0.00	0.00	0	0	0.00	0	0
7	Pond Outlet	No.	3	0.00	11.00	55000	2162	0.00	0	0
8	OTHERS (Specifiy activities)	No.	0	0.00	0.00	0	0	0.00	0	0
9	Drop Inlet		0	0.00	0.00	0	0	0.00	0	0
10			0	0.00	0.00	0	0	0.00	0	0
11			0	0.00	0.00	0	0	0.00	0	0
12			0	0.00	0.00	0	0	0.00	0	0
	Existing/Old Water Harvesting Structure Maintance (Renovation & Repair)		0	0.00	0.00	0	0	0.00	0	0
1	Deepening/Desiltation Of Pond	No.	5	20.00	17.73	59440	39843	0.00	0	Nrega
2	Deepening Of Percolation Tank	No.	0	0.00	0.00	0	0	0.00	0	0
3	De-siltation of Checkdam	No.	0	0.00	0.00	0	0	0.00	0	Nrega
4	Repairing of Checkdam	No.	3	13.50	9.98	31702	22427	0.00	0	0
	Ground Water Recharging Structures		0	0.00	0.00	0	0	0.00	0	0
1	Dugwell Recharge	No.	0	0.00	0.00	0	0	0.00	0	0
2	Farm Recharge Filter	No.	0	0.00	0.00	0	0	0.00	0	0
3	Holiya in farm/Field	No.	0	0.00	0.00	0	0	0.00	0	0
4	Pond Recharge structure	No.	0	0.00	0.00	0	0	0.00	0	0
5	OTHERS	No.	0	0.00	0.00	0	0	0.00	0	0
6	Percolation Well		0	0.00	0.00	0	0	0.00	0	0
7			0	0.00	0.00	0	0	0.00	0	0
8			0	0.00	0.00	0	0	0.00	0	0
9			0	0.00	0.00	0	0	0.00	0	0
S.No	Sub Activity Name		0	0.00	0.00	0	0	0.00	0	0
1	AGRICULTURE ACTIVITIES	No.	46	0.00	9.92	0	46	46.00	30	GGRC
2	AGRO PROCESSING ACTIVITIES	No.	2	0.00	3.00	0	22	2.00	3	0
3	Animal Husbandry	No.	17	0.00	2.43	0	464	17.00	2	0
4	Establishing linkages	No.	0	0.00	0.00	0	0	0.00	0	0
5	Local traditional handicraft	No.	18	0.00	14.78	0	33213	0.00	15	0
6	Minor Activities	No.	19	0.00	4.75	0	10674	0.00	0	0
7	Non-conventional Energy Sources	No.	40	0.00	7.68	0	40	40.00	8	0
	Capacity Building, Monitoring &				**36.68**					

	Evaluation									
	Administration				**49.96**					
	Consolidation				**52.39**					
	Total		**214.00**	**205.50**	**385.28**	**583188.00**	**417115.00**	**126.00**	**78.35**	**0.00**

COTTON

WHEAT

GGRC

GUJARAT GREEN REVOLUTION COMPANY LIMITED

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