

DISTRICT IRRIGATION PLAN



Chirang, Assam

District Irrigation Plan, 2016-2020

Chirang, Assam



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CONTENTS

Executive Summary	1
Introduction.....	4
i. Background.....	4
ii. Vision.....	10
iii. Objective.....	10
iv. Strategy/approach	11
v. Programme Components.....	12
vi. Rationale/ Justification Statement	13
vii. Methodology.....	14
Chapter 1: General Information of the District.....	15
1.1 District Profile.....	15
1.2 Demography	17
1.3 Biomass and Livestock.....	17
1.4 Agro Ecology, Climate, Hydrology and Topography.....	20
1.5 Soil Profile.....	23
1.7 Land Use Pattern	24
Chapter 2: District water profile	27
2.1 Area-wise, Crop-wise Irrigation status.....	27
2.2 Production and Productivity of major crops	32
2.3 Irrigation based classification.....	36
Chapter 3: Water Availability.....	39
3.1 Status of Water Availability	39
3.2 Status of Ground Water Availability.....	39
3.3 Status of Command Area	43
3.4 Existing type of irrigation	56

Chapter 4: Water Requirement/Demand	57
4.1 Domestic Water Demand	57
4.2 Crop water Requirement	59
4.3 Livestock water Requirement.....	61
4.4 Industrial Water Demand	62
4.5 Water Demand for Power Generation.....	62
4.6 Total Water Demand of the district for various sectors	62
4.7 Water Budget.....	64
Chapter 5: Strategic Action Plan for Irrigation in District under PMKSY.....	65
5.1 Block/ Sub-District Wise Area Covered:	65
5.2 Block-Wise planned outlay under PMKSY	65
5.3 Component wise Area Covered:	66
5.4 Component wise planned outlay	67
5.5 Department-wise planned outlay.....	68
5.6 Block-wise Plan.....	68
5.6.1 Sidli-Chirang Development Block.....	68
5.6.2 Borobazar Block	70
Annexure I	73

LIST OF TABLES

Table 1.1: District at a glance	16
Table 1.2: Population of District.....	17
Table 1.3: Number of small animals in Chirang.....	18
Table 1.4: Number of large animals in Chirang	19
Table 1.5: Agro ecology of the district	21
Table 1.6: Average Weekly Temperature in district.....	22
Table 1.7: Rainfall in district	22
Table 1.8: Soil Profile	23
Table 1.9: Major Soils in district	24
Table 1.10: Land Use Pattern in the district	25
Table 1.11: Block-wise land use pattern.....	25
Table 2.1: Area-wise, crop-wise irrigation status	27
Table 2.2: Borobazar Block Area-wise, Crop-wise Irrigation status.....	28
Table 2.3: Sidli Block Area-wise Crop-wise Irrigation status.....	29
Table 2.4: Irrigated and unirrigated area in Kharif season	29
Table 2.5: Irrigated and unirrigated area in Rabi season	30
Table 2.6: Production and Productivity of major crops of Chirang District.....	32
Table 2.7: Production and productivity of major crops: Sidli Block.....	33
Table 2.8: Production and Productivity of major crops: Borobazar block	34
Table 2.9: Irrigated and rainfed area in Chirang.....	36
Table 2.10: Block-wise irrigated and rainfed area.....	36
Table 3.1: Status of command area in Sidli-Chirang Development Block	43
Table 3.2: Status of command area in Borobazar Development Block.....	52
Table 3.3: Status of command area in Dangtol development block	53
Table 3.4: Existing type of irrigation.....	56
Table 4.1: Average Domestic water consumption in an Indian city.....	57
Table 4.2: Domestic water demand	58
Table 4.3: Area sown and water requirement for major crops in Chirang	60

Table 4.4: Crop water requirement in Chirang	60
Table 4.5: Growth rates for livestock in Assam in 2007-12	61
Table 4.6: Water requirement range and daily water use for livestock	61
Table 4.7: Livestock water requirement	61
Table 4.8: Present water demand of the district from various components	62
Table 4.9: Projected water demand(2020) of the district for various sectors	63
Table 5.1: Component-wise planned outlay	67
Table 5.2: Department-wise planned outlay	68
Table 5.3: Component-wise area covered in Sidli-Chirang Development block	69
Table 5.4: Component wise planned outlay in Sidli-Chirang.....	70
Table 5.5: Component wise area covered in Borobazar block	70
Table 5.6: Component-wise planned outlay for Borobazar block	71

LIST OF FIGURES

Figure 1.1: Location map of Chirang district.....	16
Figure 1.2: Number of different small animals.....	18
Figure 1.3: Number of large animals	19
Figure 1.4: Mean Annual Rainfall of Chirang District	23
Figure 1.5: Block-wise land use pattern	26
Figure 2.1: Crop wise Irrigation Status in Rabi and Kharif seasons in Chirang.....	27
Figure 2.2: Crop wise Irrigated and Rainfed area in Chirang	28
Figure 2.3: Irrigation gap in Kharif season	30
Figure 2.4: Irrigation Gap in Rabi season	31
Figure 2.5: Seasons wise productivity	33
Figure 2.6: Irrigation based classification.....	37
Figure 2.7: Status of irrigation in blocks of Chirang	37
Figure 3.1: Hydroecological Map of Chirang District.....	42
Figure 3.2: Pre-monsoon water level of Chirang District.....	42
Figure 3.3: Post-monsoon water level of Chirang District	43
Figure 3.4: Status of command area in Chirang district	55
Figure 4.1: Use of water.....	58
Figure 4.2: Block-wise increase in population	59
Figure 4.3: Water demand and gap	59
Figure 4.4: Present water demand of the district for various sectors.....	63
Figure 4.5: Projected water demand(2020) of the dsitRICT for various sectors.....	63
Figure 5.1: Block-wise plan under PMKSY in Chirang District.....	65
Figure 5.2: Block-wise share under PMKSY	66
Figure 5.3: Component wise area covered.....	67
Figure 5.4: Componet-wise share in planned outlay	67
Figure 5.5: Department-wise share in planned outlay	68
Figure 5.6: Component-wise share in area covered in Sidli-Chirang Development block	69
Figure 5.7: Component-wise share in planned outlay of Sidli-Chirang block	70
Figure 5.8: Component-wise share in area covered under PMKSY in Borobazar block	71
Figure 5.9: Component-wise share in planned outlay for Borobazar block	72

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 judicious 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 overextraction 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 Profile and Demography The district is situated in North-West side of Assam surrounded by international boundary of Bhutan in North, Bongaigaon district and a little portion of Kokrajhar district in South, Kokrajhar district in West and Baksa district in East. The geographical area of the district is 1089.94 sq. km. The district is located between 26.28 N and 26.54 N longitudes and 89.42 E and 90.06 E latitudes. Rivers like Champawati, Aie and Manash are flowing through the district. The district has a total population of 4,82,162 with 2,37,302 being males and 73,215 being females respectively. The distinguishing factor among the demography in both the blocks in the district is the proportion of general and obc population and SC and ST population. In Sidli the block is dominated by SC and ST population while in Borobazar almost half the population belongs to general and obc category.

Agriculture in Chirang: It has been observed from records that the Gross Cropped Area is 81,361.1 hectare out of which 33,536 hectare and 47285.1 hectare i.e. around 41% and 58% of the area falls in Sidli and Borobazar blocks respectively. Sidli and Borobazar blocks also records for net sown area of 24,951 hectare and 26,449 hectares i.e. around 48% and 51% of the net sown area of the district. The cropping intensity in Borobazar block is 180% while that of Sidli block is 134%.

The total irrigated area in the district is 8,261 hectare which covers only around 10% of the gross cropped area i.e. 81,361.1 ha. The total cropped area during Rabi is 38910 ha, of which only 4.75% is irrigated and remaining is under rainfed cultivation. A total of 6235 hectare is utilized for cultivation of Horticultural and Plantation crops, out of this irrigated area is to the extent of 20% of the total area covered under this category of crops.

The major proportion of land in the district is used for cultivation of cereals. Considering all the blocks, cereals occupy 31% of the gross cropped area under agriculture. Paddy, Wheat and Maize are the three major crops among cereals in Chirang district. The other food crops which are grown in the district are Mustard, Jute and vegetables. Among the horticulture crops, the most significant ones are banana, pineapple and oranges.

District Water Profile: The facility of irrigation through canal is available in the district with 16,170 hectares of land under the command area of canals. There has been no assessment of availability of ground water in Chirang district by Central Ground Water Board and hence the potential/ availability of ground water in the district cannot be commented upon. Among the ground water sources, 3090 shallow tube wells are available in the district.

Introduction

i. 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 preparation of a draft development plan for the whole district.

The decentralized planning process was strengthened further 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. Planning commission issued guidelines in August 2006 on the preparation of the district plans. The guideline defines 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 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 will introduce 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 will involve 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 will, on request, 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 will 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) are:

To prepare a Comprehensive District Agriculture Plan (C-DAP) through participatory process involving various organisations and stakeholders.

To enable optimum utilization 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 wanted 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) the local needs / crops / feed and fodder / animal husbandry / dairying / fisheries / priorities are reflected in the plan; (iii)the 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 state to receive funds from the program. The present District Irrigation Plan (DIP) 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, making water available to multiple uses, planning and management of water resources and 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, the near constant supply of water resources in the face of increasing demand will strain the water supply-demand balance.

The per capita water availability which stood at 5177 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 a shortage of water in the medium term¹. Further, the all India water balance estimates does not reflect the variations in water balance 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 an abundant surface and ground water supply in the first five decades since independence, more than 80 percent of the total available water resources were earmarked for irrigation purposes and the rest for meeting domestic and industrial demands. A recent study² 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 but also because of dynamics of irrigation

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

² Amarasinghe, U.A., Shah T., Turrall, 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.

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 states where the availability of land and water are serious constraints for further expansion of irrigation. Further, as per the estimates of the then planning commission, out of a total of 141 million hectares of net sown area in the country, 114 million hectares (81%) is Irrigation Potential Created (IPC) and 88 million hectares (62%) is Irrigation Potential Utilized (IPU), leaving almost 20% of irrigated potential unutilized as on March 2012. This leaves 40 percent of the net sown area in the country dependent on rainfall which makes farming a high risk activity.

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 resources³ under an Integrated Water Resource Management framework. The main objectives of water resource management as delineated in National Water Policy 2012 are:

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.

Principle of equity and social justice must inform use and allocation of water.

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.

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.

Water is essential for sustenance of eco-system, and therefore, minimum ecological needs should be given due consideration.

³Ministry of Water Resources, National Water Policy, 2012, Government of India, New Delhi.

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.

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.

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.

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.

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.

The National Water Policy 2012 drives the water resource management program planning and management in the country. Government of India launched Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) to address the constraints to 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 16thLok 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 KhetKOPani’. 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 popularized 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, and 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), Member of Parliament Local Area Development Scheme (MPLAD), Member of Legislative Assembly Local Area Development Scheme (MPLALAD), Local body funds (LBF), Working Plan of State Forest Department (WPSFD) etc.

The PMKSY will be implemented in an area development mode by adopting a decentralized state level planning and project based 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 (HarKhetKoPani), PMKSY (Per drop more crop) and PMKSY (watershed development) will be decided by the respective program ministry/department.

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 will be 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, State will be given additional weightage for levying charges on water and electricity for irrigation purposes, so as to ensure sustainability of the programme. Thirdly, inter state allocation of PMKSY fund will be decided based on (i) share of percentage of unirrigated area in the state vis-à-vis national average including prominence of areas classified under Dessert Development Programme (DDP) and Drought Prone Area Development Programme (DPAP) and (ii) 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 (iv) improvement in irrigation efficiency in the state.

ii. Vision

The overarching 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.

iii. Objective

The objective of the PMKSY program 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 (HarKhetkoPani),
- 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.

iv. 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 farmer 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.

v. Programme Components

PMKSY has the following four programme components

1 Accelerated Irrigation Benefit Programme (AIBP) a) To focus on faster completion of ongoing Major and Medium Irrigation including National Projects.

2 PMKSY (Har Khet ko Pani) 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 (HarKhet 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 pump sets including water carriage pipes, underground piping system. g) Extension activities for promotion of scientific moisture conservation and

agronomic measures including cropping alignment to maximize use of available water including rainfall and minimize irrigation requirement (Jal sarankchan); 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

vi. Rationale/ Justification Statement

In reference to the status and need of irrigation, the water resource management including irrigation related priorities was identified for Chirang 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 Chirang district including the (i) protection of crops from abiotic stress factors including flashfloods; (ii) 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. and (vii) land improvement measures.

vii. Methodology

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

Collection of primary and secondary data from multiple sources including Season and Crop Reports, Statistical Handbook, District Census Handbook and other published documents and websites of different departments.

Meetings with state government departments and related institutions were held and meeting through VC was also held with state level authorities.

Discussions and interviews were held with officers of agriculture department, horticulture department, sub division soil conservation office, Agriculture Technology Management Agency (ATMA), District Watershed Development Agency (DWDA) of District Rural Development Agency (DRDA), Animal Husbandry department, Irrigation and Public Health department to identify the key issues and key focus areas of the region.

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.

Chapter 1: General Information of the District

1.1 District Profile

Chirang district is one of the 27 districts of Assam. As per the 2011 census it is the second least populous district in the state, after Dima Hasao. Chirang district is generally divided into five blocks i.e. Sidli, Dingtal (part), Borobajar, Manikpur(part) and Kokrajar(part). The main inhabitants of this region are the Boro people. Other communities living in the region are Assamese, Muslim, Rabha, Santali, Nepali, Kuki, Rajbangsi, Bengali, Bihari, etc. Chirang is one of the major districts of Assam situated at the Northern part of Brahmaputra river under lower Brahmaputra valley zone of Assam. Chirang is one of the four districts of Bodoland Territorial Area District (BTAD) created within Assam under clauses 6 of article 332 by the 90th Amendment Act 2003 of constitution of India. The district was carved out of existing district of Kokrajhar, Bongaigaon and Barpeta. The district has two sub-divisions namely Kajalgaon and Bijni with Kajalgaon being the district headquarters. The district is situated in North-West side of Assam surrounded by international boundary of Bhutan in North, Bongaigaon district and a little portion of Kokrajhar district in South, Kokrajhar district in West and Baksa district in East. The geographical area of the district is 1089.94 sq. km. The district is located between 26.28 N and 26.54 N longitudes and 89.42 E and 90.06 E latitudes. Rivers like Champawati, Aie and Manash are flowing through the district.

Location map of Chirang district in Assam

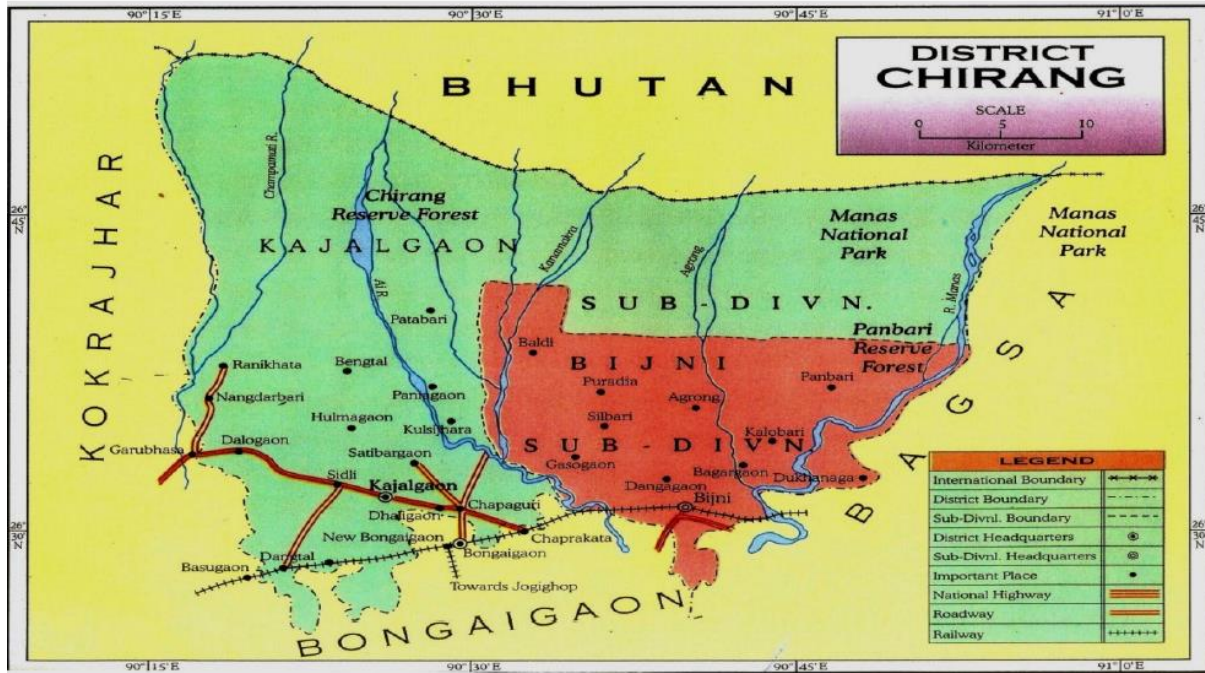


Figure 1.1: Location map of Chirang district

District at a glance

Table 1.1: District at a glance

State	Assam
Headquarters	Kajalgaon
Area	1923 km ²
Population	4,81,818
Literates	Total: 55.28%, Male: 55.96%, Female: 44.06%
Major languages spoken in the district	Bodo, Assamese, Nepali, Bengali, Hindi

Brief History

Chirang is one of the new districts in Assam created. It is one of the four newly created districts after Census, 2001. The district has been carved out from Bongaigaon, Kokrajhar and Barpeta districts in 2004 vide notification No.GAG (B)137/2002/Pt/117 dated 30.10.2003.

Administrative Setup

The Deputy Commissioner is the person responsible for the administration of the district. He is assisted by other officers like Additional Deputy Commissioners, Sub-Divisional Officers, Extra Assistant Commissioners and others. The Deputy Commissioner performs a range of

administrative activities acting as Collector, District Magistrate, District Election Officer, Principal Census Officer and others as the situation requires.

The entire district for administrative purposes is divided into two sub-divisions: Bijni and Kajalgaon. There are six revenue circles into which these sub-divisions are further divided: Kokrajhar(part), Bengtol, Sidli(part), Bongaigaon(part), Bijni(part) and Barnagar(part). These revenue circles are further divided into Mouzas which in turn consists of revenue villages. There are total 508 villages in Chirang District, 2 statutory towns and 1 census town in the district.

1.2 Demography

Table 1.2: Population of District

District	Male	Female	Children	SC	ST	GEN/OBC	TOTAL
Chirang	244,860	237,302	73,215	35,135	178,688	268,339	482,162

Source: Census, 2011

Males comprise almost 50% of the population in both the blocks. The distinguishing factor among the demography in both the blocks in the district is the proportion of general and obc population and SC and ST population. In Sidli the block is dominated by SC and ST population while in Borobazar almost half the population belongs to general and obc category. Looking at the overall district 7.29%, 37.06% and 55.65% of the population in the district belongs to SC, ST and general and obc category respectively.

1.3 Biomass and Livestock

Agriculture and livestock rearing are culturally and traditionally bonded and act as back bone of the rural economy. Important livestock of the district are cattle, goat, pig, sheep, poultry, ducks etc. Rearing of improved breed of livestock is not a common practice and majority of livestock species are indigenous and Non-descriptive type. Therefore, it is noticed that the productivity level of the livestock population often goes to sub optimum level which contributes to far below per capita availability of livestock produces as compared to the ICMR recommendation. This might be due to low genetic potential, improper utilization of available resources, non-adoption of scientific rearing of livestock and lack of awareness about scientific advancement. Dairy is an important allied activity in the district. The sector is characterized by a large population of non-descript animals. The per capita milk availability of milk is very low

as compared to that at the state level. Poultry is still taken up as a traditional backyard activity on small scale and commercialization is yet to take place in the district. With the increasing demand for poultry meat and egg, there is a good scope for commercialization. Duckery is popular as an integrated component of other activities among the rural population. Since commercial farms are very few in the district, there is substantial scope for development of this sector through bank credit. Piggery and goatery are other popular activities under animal husbandry. Sheep rearing is a low profile activity and goatery is more popular among the rural masses.

Table 1.3: Number of small animals in Chirang

Small Animals			
Poultry	Pigs	Goats	Sheep
2,22,833	44,685	81,694	13,913

Source: Livestock Census of India, 2012

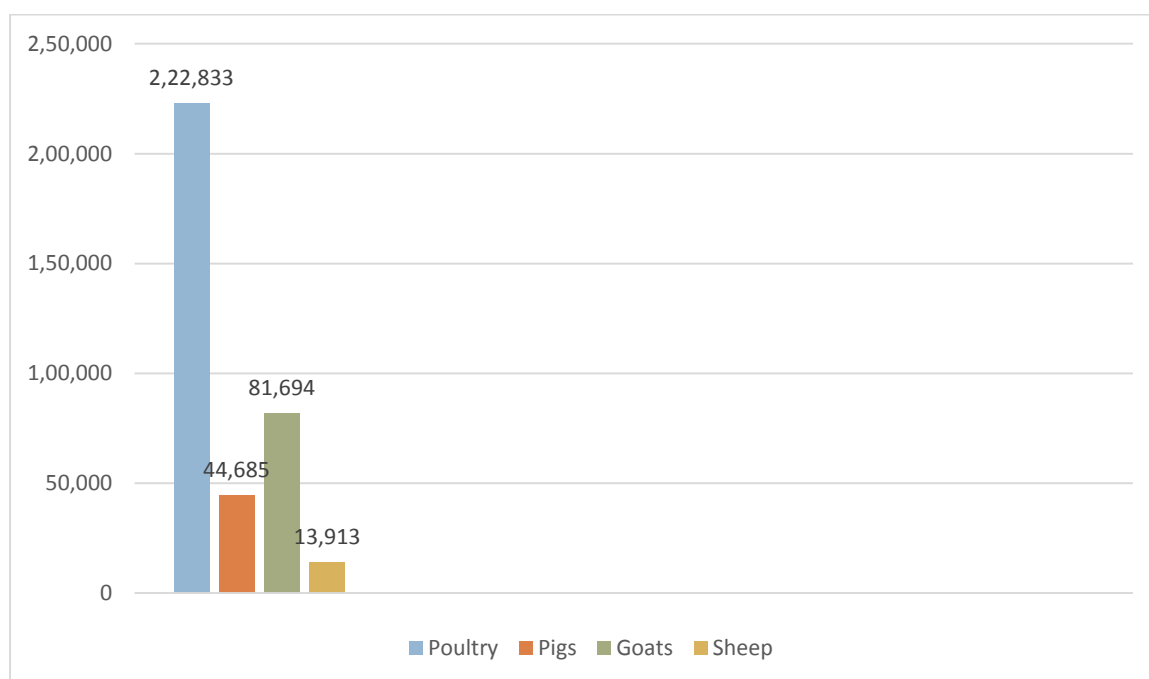


Figure 1.2: Number of different small animals

Among small animals poultry is the most common livestock in the district with 61.36% of the total livestock population among small animals being poultry. Looking at the entire district which has 75,542 households, then on average each household has 2.94 or nearly 3 poultry. Goats are the second most common livestock after poultry with 22.5% of small animals being goats followed thereafter by pigs (12.3%) and sheep (3.8%).

Though the district has a conducive climate for poultry farming, the activity has not made any significant progress due to the lack of knowledge, understanding and also non-availability of critical inputs. Poultry & duck rearing is a traditional activity in the district while commercial poultry farming is considered to be a relatively new introduction. Though there is good demand for eggs in the district, there is no organized layer farm in the district. Layer farming is generally practiced in the district as backyard farming. The district has vast potential for poultry as almost 90% population is non-vegetarian.

Piggery and Goatery are popular activities in the district. The activity is closely related to the tribal population and small and marginal farmers. Sheep, goat and piggery farming is an integral part of rural economy with huge self-employment potential. The small ruminants provide livelihood support to the poor underprivileged landless, and marginal farm households.

Table 1.4: Number of large animals in Chirang

Large Animal		
Indigenous Cow	Hybrid Cow	In Descriptive Buffalo
1,30,272	1483	3935

Source: Agriculture Department, Chirang

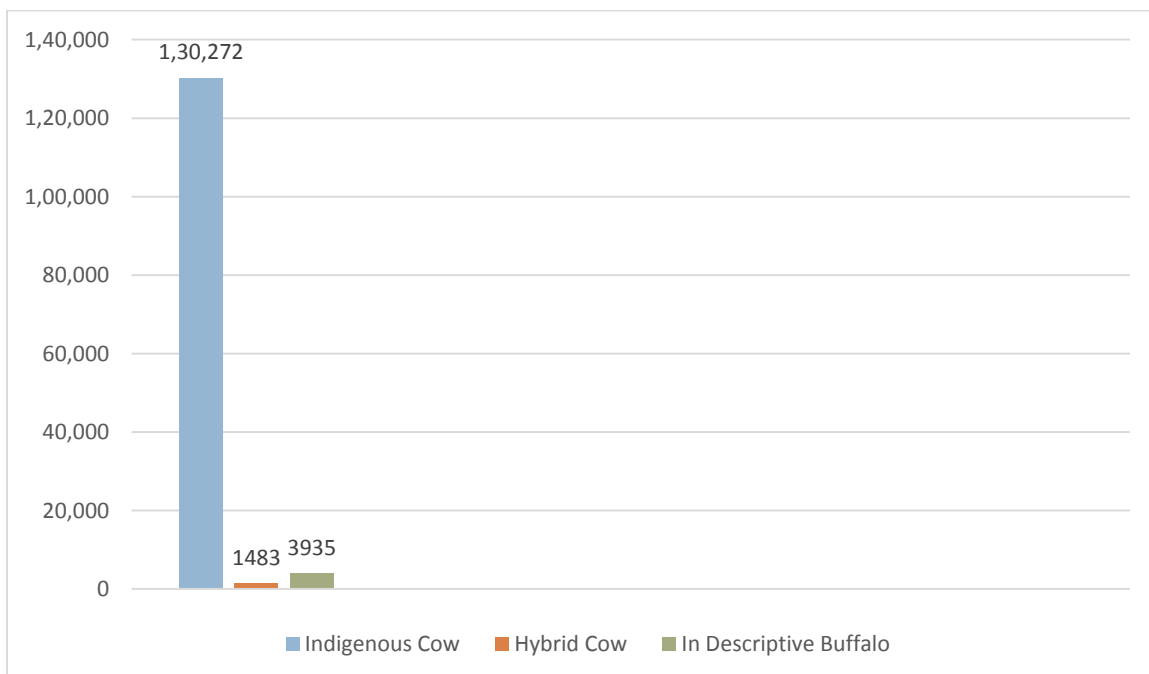


Figure 1.3: Number of large animals

Source: Agriculture Department, Chirang

The number of indigenous cows in the district is 1,30,272 while that of hybrid cows is only 1483. This shows that commercialisation of dairy farming is yet to take place in the district and most of the cattle is still used only for subsistence purposes.

Dairy farming is one of the major preferred activities in the district providing employment opportunities to the rural poor. It is a subsidiary occupation for a large section of farmers in the district due to availability of sufficient grazing land of 1371 Ha which is 1.25% of total geographical area in the district.

According to the Livestock survey, the cattle population constitutes the largest group with more than 277399 followed by goat and pig.

1.4 Agro Ecology, Climate, Hydrology and Topography

Agro ecology is an ecological approach to agriculture that views agricultural areas as ecosystems and is concerned with the ecological impact of agricultural practices. It refers to the study of agricultural ecosystems and their components as they function in themselves as a part of the larger ecosystem. Agro ecology involves examining climate, water, soil, flora and fauna of the concerned area. A systematic study of agro ecology is important for planning appropriate land use. Study of agro-ecological regions is necessary to determine yield potentialities of different crops, and crop combinations in the agro-ecological regions in the future.

On the basis of information on physiography, soils, farming systems, crop and cropping systems and hydrological information, the district Chirang has been classified in to 5(five) agro-ecological situations, which are as follows –

- i) Foot hills old mountain valley
- ii) Flood free riverine old alluvial plain
- iii) Flood prone riverine alluvial plain
- iv) Beels
- v) Char land

Table 1.5: Agro ecology of the district

Sl No.	Agro ecological situation	Characteristics
i.	Foot hill old mountain valley alluvial plain	The northern part of the district comprising this situation contains old Mountain valley alluvial soils (Alfisol & Ultisol). It is build up of alluvial materials washed down from the hill slops. The surface soil is light yellow to pale brown, compact, sticky and plastic. Generally, medium to heavy in soil texture. The elevation is higher towards foot hills which gradually slop towards south.
ii.	Flood prone recent riverine alluvial plain	Recent riverine alluvial (Entisol), sandy to sandy loam in soil texture. This situation is represented by an almost flat topography which often experiences flood hazard. Apart from some natural depressions, some Riverine islands are also in existence.
iii.	Flood free riverine alluvial plain	Old riverine alluvial type (Inceptisol). The texture of the surface soils ranges from sandy loam to loam, silty clay loam, silty clay and clay. The topography is almost plain.
iv.	Char land	New alluvial plains, neutral in reaction, sandy-silty-clayee, sandy-silty and sandy in soil texture (Entisol). Chronically flood affected areas except the stable chars.
v.	Beels	Entisols, usually peaty in nature and texturally these are silty and clay. Low lying waste land areas.

Source: KVK, Chirang

Climate and rainfall

The climate of the district is sub-tropical in nature with warm and humid summer followed by dry and cool winter. The average annual rainfall is about 1951 mm per annum of which 75% is received during monsoon month (June –September). The monsoon months are wet and winter is dry. Both pre and post monsoon months have unpredicted and erratic rainfall. The

mean maximum and minimum temperature varies from 33° to 38 °C and 9° to 10 °C. The average radiation is highest during March to April, while overcast sky reduces the solar radiation to the least during July.

The maximum temperature is generally experienced in June, July and August every year. January is the coldest month and July/August is the warmest months. The winter temperature drops to 10° C and summer temperature goes up to 35° C. South West monsoon activates from June and continues up to September-October. South West monsoon activates from May and continues up to September - October. Most of the rainfall is received during monsoon season.

Table 1.6: Average Weekly Temperature in district

Average Weekly Temperature(April 2014- March 2015)					
Period					
Summer(Apr-May)		Winter (Oct-Mar)		Rainy (Jun-Sep)	
Min	Max	Min	Max	Min	Max
17.2	36.9	9.83	31.53	23.025	36.675

Source: Chirang District, Inventory of Agriculture 2015

Table 1.7: Rainfall in district

Rainfall	Average (mm)	Normal Onset (week and month)	Normal Cessation (week and month)
SW monsoon (June-Sep'2013)	1961.4	1st week of June	4th week of September
NE Monsoon (Oct-Dec'2013)	171.6		
Winter (Jan-Feb'2013)	34.6		
Summer (March-May'2014)	670.5	1st week of April	4th week of May

Source: <http://www.agriassam.in/rainfall/districtwise-rainfall-during-2012.pdf>

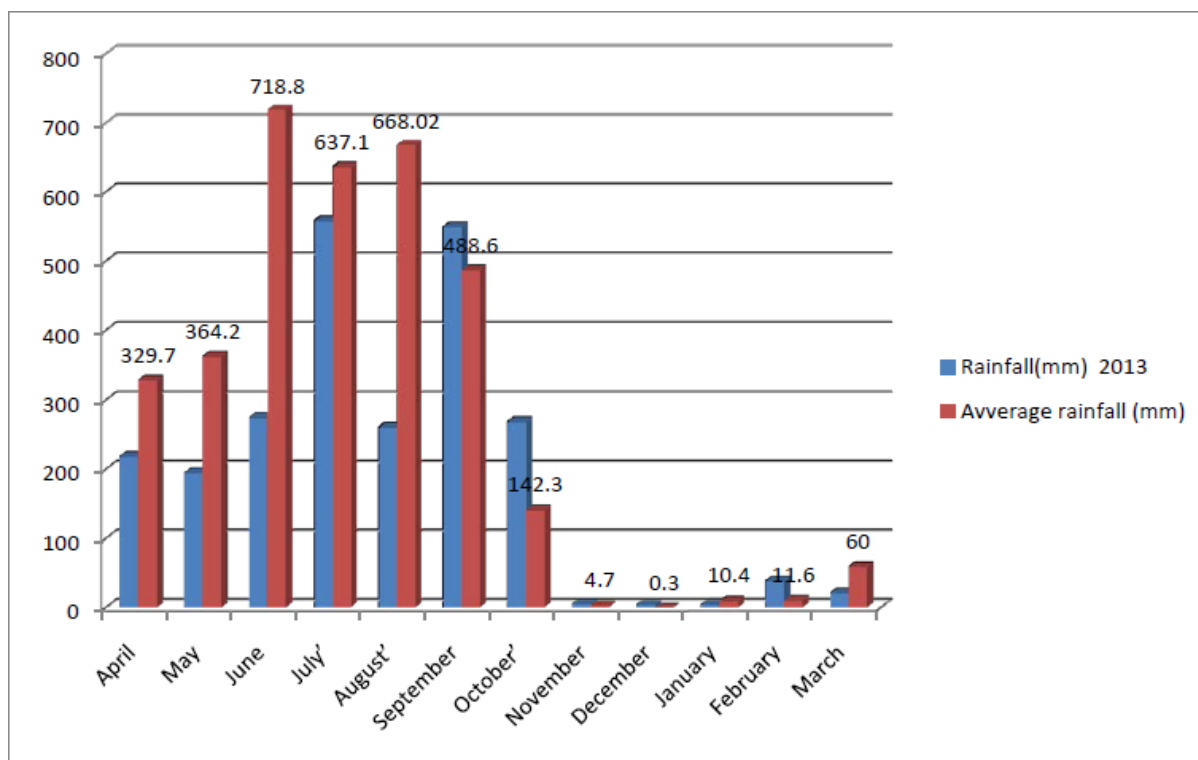


Figure 1.4: Mean Annual Rainfall of Chirang District

1.5 Soil Profile

Table 1.8: Soil Profile

Block	Soil Type Major Soil Classes	Area (Ha)	Land Slope			
			0-3% (Ha)	3-8% (ha)	8-25% (ha)	>25% (ha)
Borobazar	Entisols(recent alluvium)	13140.4	13140.4	0	0	0
	Inceptisols(old alluvium)	9855.3	9855.3	0	0	0
	Alfisols(Mountain valley)	6570.2	6570.2	0	0	0
	Utisols(Laterised red)	3285.1	3285.1	0	0	0
Sidli	Entisols(recent alluvium)	21527.6	21527.6	0	0	0
	Inceptisols(old alluvium)	16145.7	16145.7	0	0	0
	Alfisols(Mountain valley)	10763.8	10763.8	0	0	0
	Utisols(Laterised red)	5381.9	5381.9	0	0	0
Dangtol	Entisols(recent alluvium)	1457.6	1457.6	0	0	0
	Inceptisols(old alluvium)	1093.2	1093.2	0	0	0

	Alfisols(Mountain valley)	728.8	728.8	0	0	0
	Utisols(Laterised red)	364.4	364.4	0	0	0

Source: Agriculture Department, Chirang

The land slope in the entire district falls in the range of 0-3%. The major soil classes in the district are entisols, inceptisols, alfisols and utisols.

Soil in greater parts of the district is sandy and silty loam, or clayey loam. The soils of the alluvium are partly new or recent and partly old. The variation in composition is mainly a result of the varying composition of the river borne materials deposited at different times and under different conditions. The younger alluvial soil has a high phosphorous content whereas in Older Alluvial soils, the content is very low. In general, the soil is acidic to slightly alkaline in nature and is moderately permeable and characterised by the presence of low organic carbon and low soluble salts. Soils restricted to inselberg areas are more clayey, lateritic and less permeable and are highly acidic in nature. From agricultural point of view, the soils in major part of the district are suitable for all sorts of crops.

Table 1.9: Major Soils in district

Major Soils	Soil Description	Total area (*000 ha)	Percent(%) of total
Light grey soil	Sandy loam to silty loam in texture	39.35	11.79
Red soil(mixed)	High in Fe & Al oxides and well drained	12.61	36.79
Sandy soil	Light textured soils	9.57	8.95
Sandy loam soil	Medium textured soils	34.65	32.39
Clay loam soil	Heavy textured soil & poor external as well as internal drainage	7.74	7.24
Problem Soil			
Soil erosion	Severe soil erosion problems	0.14	0.13
Water logging condition	Severe water logging condition	0.11	0.10
Others(specify):	-	2.80	2.61

Source: Agriculture Contingency Plan: Chirang District (2015)

1.7 Land Use Pattern

Table 1.10: Land Use Pattern in the district

No.of VCDC	No.of Villages	Total Geographical Area	Area under Agriculture				Area under Forest	Area under Wasteland	Area under other uses
			Gross Cropped Area (1)	Net Sown Area (2)	Area sown more than once (1-2)	Cropping Intensity (%)			
63	519	99705.61	81361.1	51400	40465	152.62%	6927	3066	6927

Source: Agriculture Department, Chirang

Table 1.11: Block-wise land use pattern

Block	Total Geographical Area	Area under Agriculture				Area under Forest	Area under Wasteland	Area under other uses
		Gross Cropped Area (1)	Net Sown Area (2)	Area sown more than once (1-2)	Cropping Intensity (%)			
Sidli	47971	33536	24951	8320	134%	2195	2456	2195
Borobazar	51734.6	47825.1	26449	32145	180%	4732	610	4732

Source: Agriculture Department, Chirang

The level of cropping intensity in Sidli and Borobazar is 134% and 180% respectively. The level of cropping intensity is influenced by several factors. The most important being the availability of water from natural (rainfall) or man-made resources (irrigation). However scope for year around farming activities is severely constrained by the seasonal distribution of rainfall. To overcome these natural constraints irrigation facilities need to be developed. It can therefore be reasonable to hypothesise that majority of inter-state or inter regional disparity in cropping intensity could be due to disparity in irrigation facilities present in the respective region. In general it has been seen that the level of cropping intensity is higher in areas with higher percentage of net sown irrigated land. This fact can also be seen here, where net sown area and cropping intensity for Borobazar is more than Sidli. Another crucial factor affecting

level of cropping intensity is the availability of labour, but it is more or less for same in both the blocks.

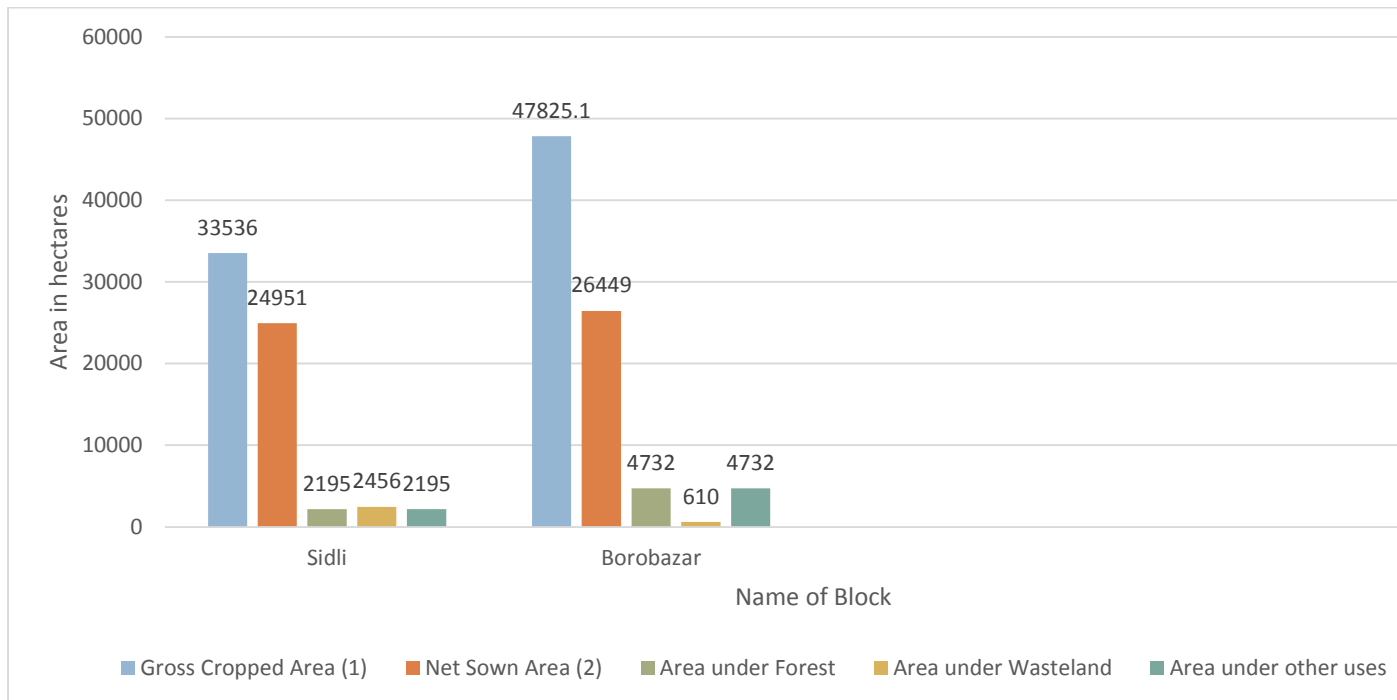


Figure 1.5: Block-wise land use pattern

Other major differences between the blocks is in the area under forests and wasteland. In Sidli the area under forests is 2195 hectares while in Borobazar it is 4732 hectares. The area under wasteland in Borobazar is only 610 hectares while in Sidli it is 2456 hectares.

Chapter 2: District water profile

2.1 Area-wise, Crop-wise Irrigation status

Table 2.1: Area-wise, crop-wise irrigation status in Chirang

Crop Type	Kharif (Area in ha)			Rabi (Area in ha)			Summer Crop (Area in ha)			Total (Area in ha)		
	Irrigated	Rainfed	Total	Irrigated	Rainfed	Total	Irrigated	Rainfed	Total	Irrigated	Rainfed	Total
A.cereals	1850	37060	38910	0	0	0	6411	3461	9872	8261	40321	48782
B.Coarse Cereals	0	0	0	0	0	0	0	0	0	0	0	0
C.Pulses	0	0	0	0	10000	10000	0	3450	0	0	13450	13450
D.Oil Seeds	0	0	0	1000	9344	10344	0	0	0	0	10344	10344
E.Fibre	0	0	0	0	1786	1786	0	0	0	0	1786	1786
F.Any other Crops	0	0	0	0	0	0	0	0	0	0	0	0

Source: Agriculture Department, Chirang

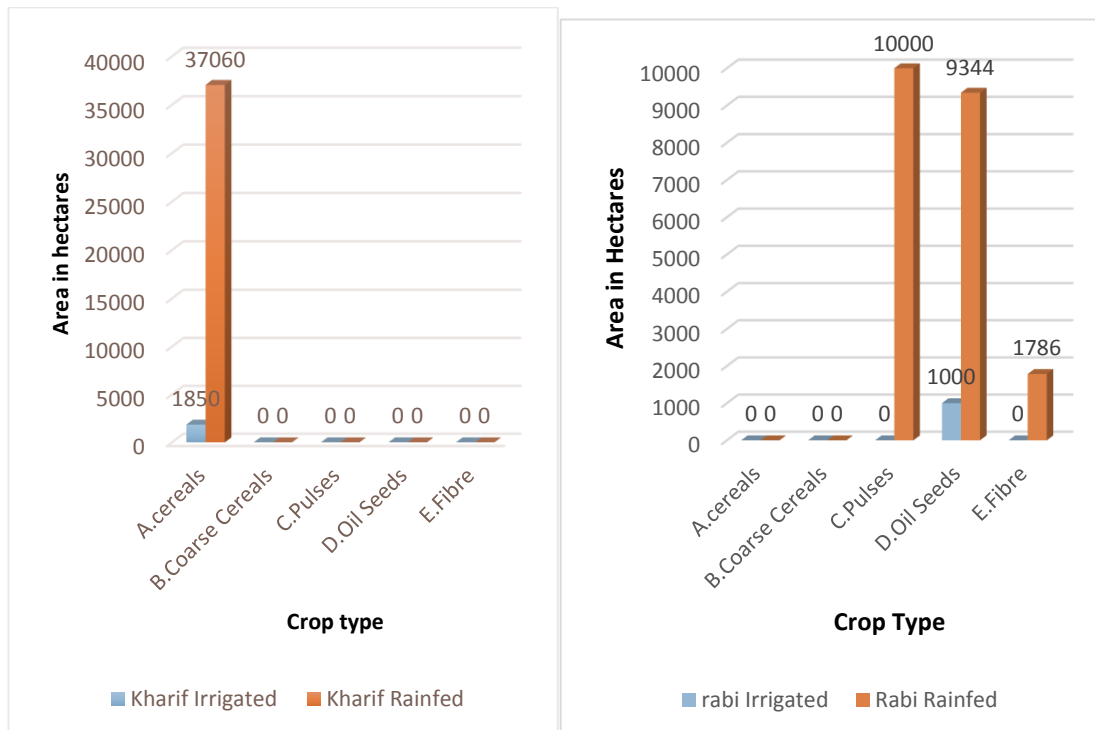


Figure 2.1: Crop wise Irrigation Status in Rabi and Kharif seasons in Chirang

In the kharif season only cereals are grown in the district in 38,910 hectares of land out of which 1850 hectares (4.75%) is irrigated and the rest is unirrigated or rainfed. In the Rabi season, pulses, oil seeds and fibres are grown in the district with irrigated land only present for oil seeds with 1000 hectares (9.66%) being irrigated out of 10,344 hectares used for the cultivation of oil seeds. There are no coarse cereals produced in the district. Pulses and fibres are grown only in the Rabi season.

Analysing block-wise data, the area under cereals is nearly same in both blocks with Sidli and Borobazar having 19824 and 19086 hectares. However area under pulses and oilseeds in Borobazar block is substantially more than in Sidli block with Borobazar having 8071 and 7552 ha of land compared to 1929 and 2792 ha of land in Sidli block for pulses and oilseeds respectively.

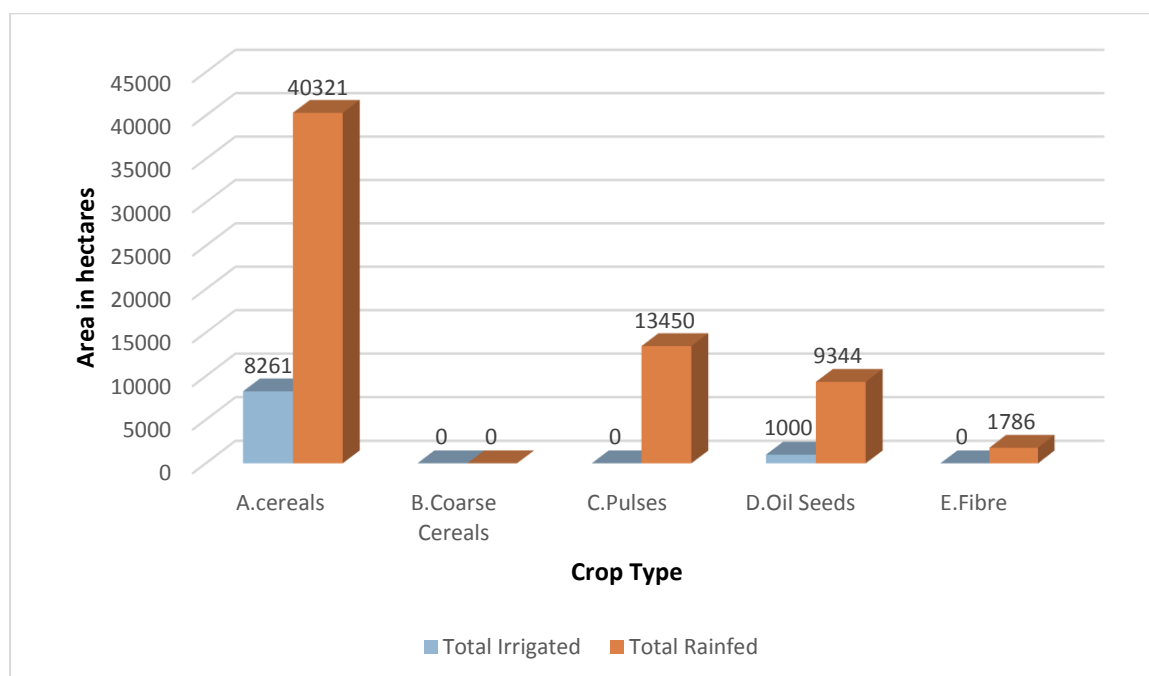


Figure 2.2: Crop wise Irrigated and Rainfed area in Chirang

Table 2.2: Borobazar Block Area-wise, Crop-wise Irrigation status

Crop Type	Kharif (Area in Ha)			Rabi (Area in Ha.)			Summer Crop (Area in Ha)			Total (Area in Ha)		
	Irrigated	Rainfed	Total	Irrigated	Rainfed	Total	Irrigated	Rainfed	Total	Irrigated	Rainfed	Total
A.Cereals	1100	17986	19086	0	0	0	4400	2000	6400	5500	19986	25486
B.Coarse Cereals	0	0	0	0	0	0	0	0	0	0	0	0
C.Pulses	0	0	0	0	8071	8071	0	2200	2200	0	10271	10271
D.Oil Seeds	0	0	0	600	6952	7552	0	0	0	600	6952	7552
E.Fibre	0	0	0	0	1000	1000	0	0	0	0	1000	1000

F.Any other Crops	0	0	0	0	0	0	0	0	0	0	0	0
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Source: Agriculture Department, Chirang

Table 2.3: Sidli Block Area-wise Crop-wise Irrigation status

Crop Type	Kharif (Area in Ha)			Rabi (Area in Ha.)			Summer Crop (Area in Ha)			Total (Area in Ha)		
	Irrigated	Rainfed	Total	Irrigated	Rainfed	Total	Irrigated	Rainfed	Total	Irrigated	Rainfed	Total
A.cereals	750	19074	19824	0	0	0	2011	1461	3472	2761	20535	23296
B.Coarse Cereals	0	0	0	0	0	0	0	0	0	0	0	0
C.Pulses	0	0	0	0	1929	1929	0	1250	1250	0	3179	3179
D.Oil Seeds	0	0	0	400	2392	2792	0	0	0	400	2392	2792
E.Fibre	0	0	0	0	786	786	0	0	0	0	786	786
F.Any other Crops	0	0	0	0	0	0	0	0	0	0	0	0

Source: Agriculture Department, Chirang

Table 2.4: Irrigated and unirrigated area in Kharif season

Sl. No	Block name	Total area sown	Irrigated Area		Partially/ Totally Rainfed	
1	Borobazar	19086	1100	5.76%	17986	94.23%
2	Sidli	19824	750	3.78%	19074	96.21%
	DISTRICT	38910	1850	4.75%	37060	95.24%

Source: Agriculture Department, Chirang

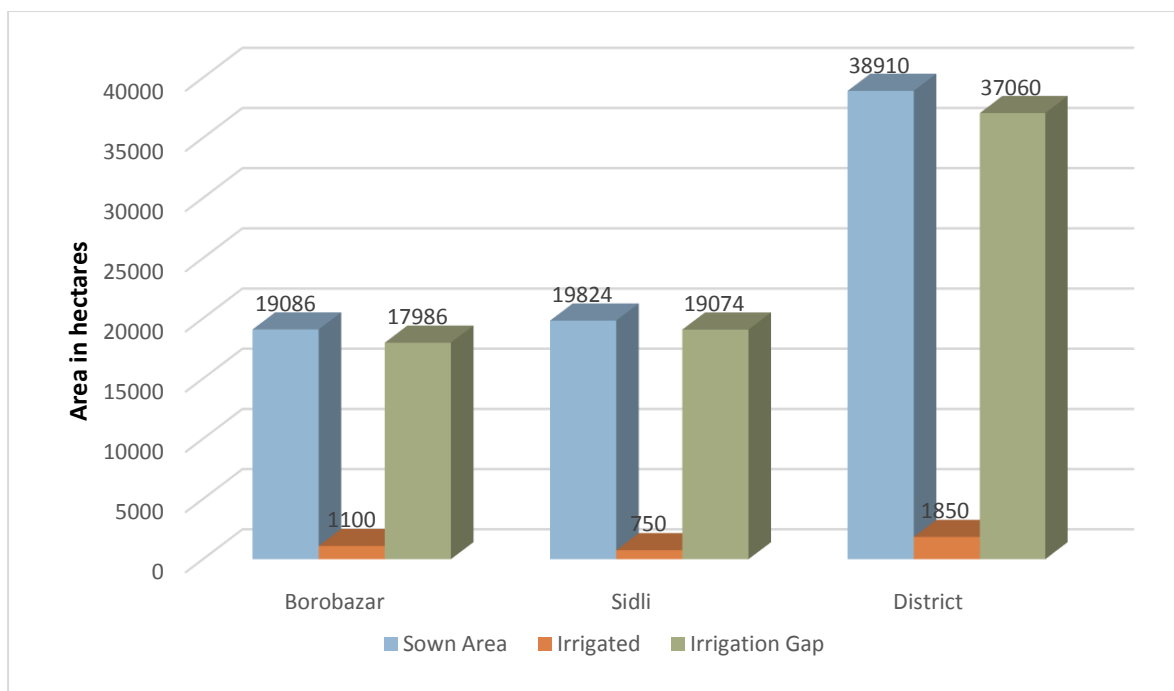


Figure 2.3: Irrigation gap in Kharif season

Table 2.5: Irrigated and unirrigated area in Rabi season

Sl. No	Block name	Total area sown	Irrigated Area		Partially/ Totally Rainfed	
			Area (ha)	Percentage (%)	Area (ha)	Percentage (%)
1	Borobazar	16623	600	3.6%	16023	96.39%
2	Sidli	5507	400	7.26%	5107	92.73%
	DISTRICT	22130	1000	4.51%	21130	95.48%

Source: Agriculture Department, Chirang

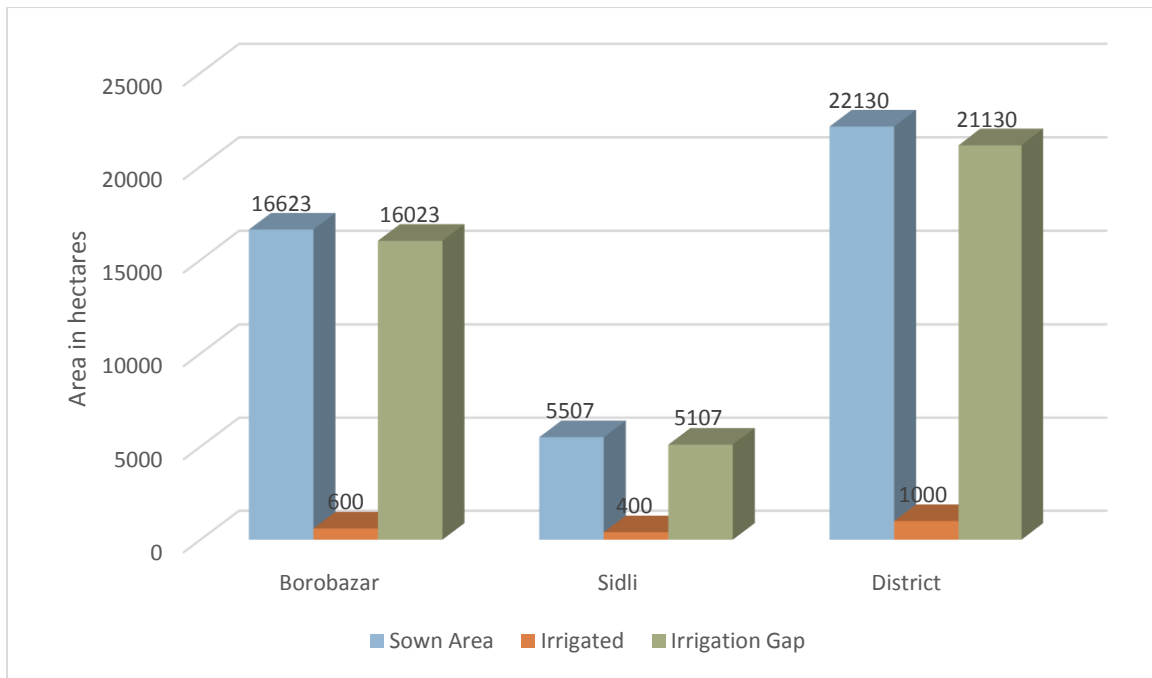


Figure 2.4: Irrigation Gap in Rabi season

2.2 Production and Productivity of major crops

Chirang is one of the major districts of Assam situated at the Northern part of Brahmaputra River under Lower Brahmaputra Valley Zone of Assam. Agriculture plays an important role in the economy of the district and about 70% of the rural population directly involve in agriculture as their livelihood. Rice is the main crop of the district and mono-cropping of rice is a common practice in most of the rice growing areas.

Rice occupies 57% and 43% of cropped area during Kharif and Rabi seasons, respectively. The other important crops of the district are wheat, rape & mustard, jute, black gram, green gram, sesame, sugar cane, Rabi & kharif vegetables, ginger, turmeric, coconut, areca nut, pineapple, banana, citrus etc. There is considerable scope of crop intensification by way of increased cropping intensity and planned productivity, diversification and modernization of various subjects of agriculture to increase the cropping intensity. Productivity enhancement in various crops is also an important issue. Crop diversification and productivity enhancement strategies will also look after food and nutritional security of the people of the district. The district has plentiful of natural resources, however, the process of harnessing and judicious utilization of these resources is not yet well defined. Therefore, there is need to design and formulate situation specific need based strategies by taking into account agronomic, climatic and socio-economic conditions as well as available resources worthiness of farmers.

Table 2.6: Production and Productivity of major crops of Chirang District

Season	Crop Sown					Rainfed			Irrigated		Total	
	Cereals (ha.)	Coarse Cereals	Pulses	Oil Seeds	Fibre	Area (ha)	Production (qtn/yr)	Productivity or Yield (Kgs/ha)	Production (qtn/yr)	Productivity or Yield (Kgs/ha)	Production (qtn/yr)	Productivity or Yield (Kgs/ha)
A. Kharif	38910	0	0	0	0	37060	148240 MT.	4000	1850	7826 MT.	56325	156066 MT.
B. Rabi	0	0	10000	0	0	10000	4400 MT.	440	0	0	-	4400 MT.
Summer	0	0	0	10344	0	10344	9469 MT.	915	0	0	-	9469 MT.

Horticulture & Plantation	0	0	0	0	1786	1786	3656 MT.	2047	0	0	-	3656 MT.
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Source: Agriculture Department, Chirang

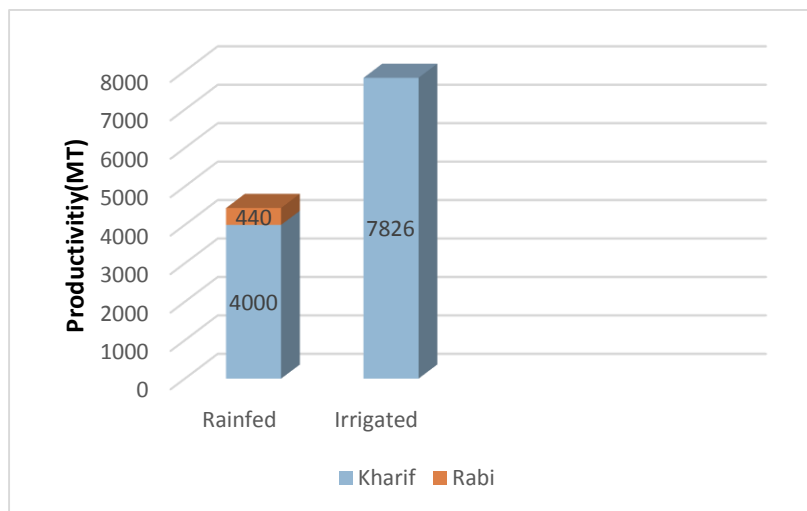


Figure 2.5: Seasons wise productivity

Table 2.7: Production and productivity of major crops: Sidli Block

Season	Crop Sown					Rainfed				Irrigated				Total	
	Cereals	Coarse Cereals	Pulses	Oil Seeds	Fibre	Area (Ha)	Production (Qntl/Yr)	Productivity or Yield (Kgs/Ha)	Cost of Cultivation (Rs/ Ha.)	Area (Ha)	Production (Qntl/Yr)	Productivity or Yield (Kgs/Ha)	Cost of Cultivation (Rs/ Ha.)	Production	

Kharif	19824	0	0	0	0	19074	762960	4000	55200/-	750	31725	4230	56325/-	1080210
Rabi	0	0	1329	0	0	1329	5316	400	29542/-	0	0	0	0	5316
Summer	0	0	0	2792	0	0	25546.8	915	34215/-	0	0	0	0	25546.8
Horticulture & plantation	0	0	0	0	720	720	14738.4	2047	-	0	0	0	0	14738.4

Source: Agriculture Department, Chirang

Table 2.8: Production and Productivity of major crops: Borobazar block

Season	Crop Sown					Rainfed				Irrigated				Total
	Cereals	Coarse Cereals	Pulses	Oil Seeds	Fibre	Area (Ha)	Production (Qntl/Yr)	Productivity or Yield (Kgs/Ha)	Cost of Cultivation (Rs/Ha.)	Area (Ha)	Production (Qntl/ Yr)	Productivity or Yield (Kgs/Ha)	Cost of Cultivation (Rs/ Ha.)	Production (Qntl/ Yr)
Kharif	19086.61	0	0	0	0	17986	719440	4000	55200/-	1100	46530	4230	56325	765970
Rabi	0	0	8671	0	0	8671	38152.4	440	-	0	0	0	0	38152.4
Summer	0	0	0	7552	0	2392	71886.8	915	-	400	3660	915	-	25546.8
Horticulture & Plantation	0	0	0	0	1066	1066	21821	2047	-	0	0	0	-	21821

Source: Agriculture Department, Chirang

The crops sown in the district are cereals, pulses, oil seeds and fibres. Productivity or yield is highest for cereals with 156066 MT per year followed by horticulture and plantation groups with 9469 MT per year. Overall production in the district is highest in the kharif season followed by summer season. Comparing the two blocks the total production in the Rabi season is a major differentiator. In Sidli block it is 5316 quintal/year while in Borobazar block it is 38512.4, quintal/year, a rather large difference. In all other seasons, total production in both the blocks is not much different.

2.3 Irrigation based classification

Table 2.9: Irrigated and rainfed area in Chirang

Irrigated (Area in ha)		Rainfed (Area in ha)	
Gross Irrigated Area	Net Irrigated Area	Partially Irrigated/Protective Irrigation	Un-Irrigated or Totally Rainfed
99,705.61	8,620	10,823	80,262.61

Source: Agriculture Department, Chirang

Table 2.10: Block-wise irrigated and rainfed area

Block	Irrigated (Area in ha)		Rainfed (Area in ha)	
	Gross Irrigated Area	Net Irrigated Area	Partially Irrigated/Protective Irrigation	Un-Irrigated or Totally Rain fed
Sidli	5865	3915	4330	32262
Borobazar	7605	4705	6493	48000.6

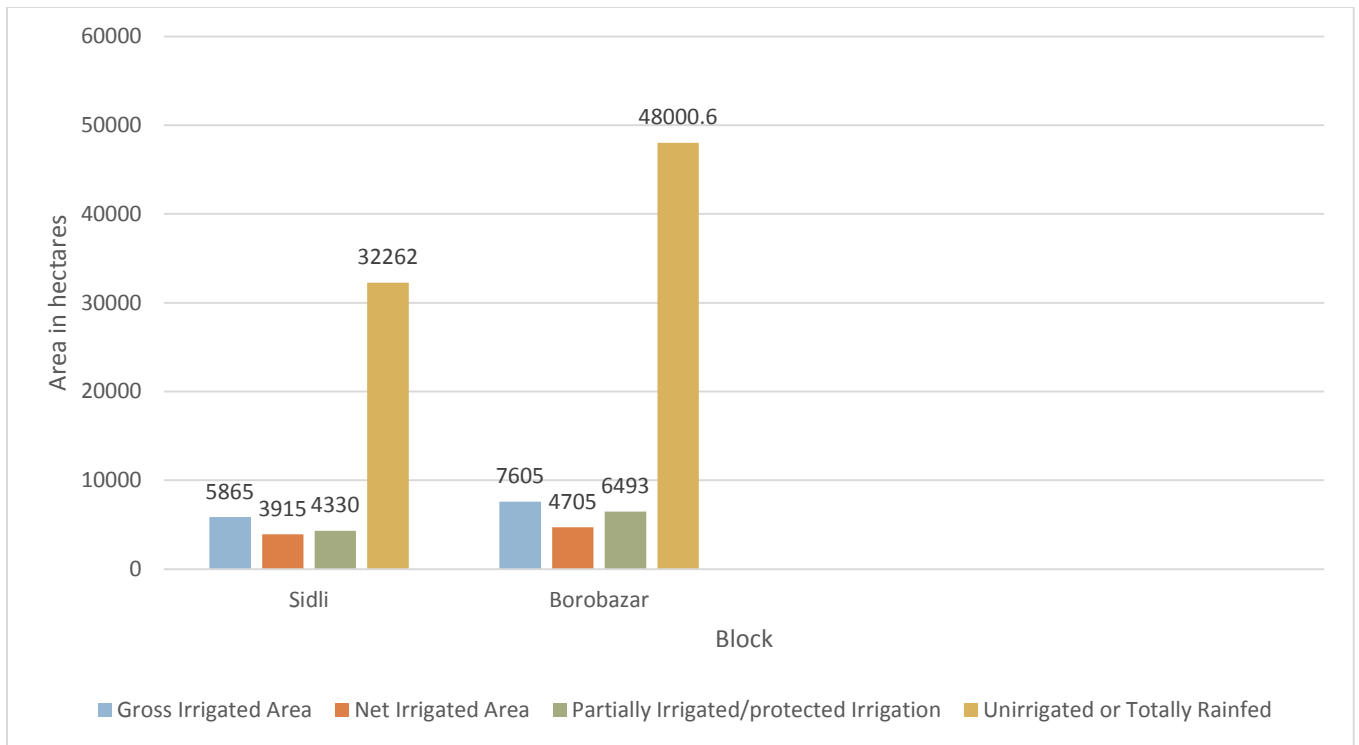


Figure 2.6: Irrigation based classification

The gross irrigated area in Sidli and Borobazar blocks is 5865 ha. and 7605 ha. respectively. Majority of the net irrigated area lies in Borobazar block with 7605 hectares that comprise 54.58% of the total net irrigated area in Chirang district. Rainfed area is also more in Borobazar with 48,000 ha. block compared to Sidli block that has 32,262 ha.

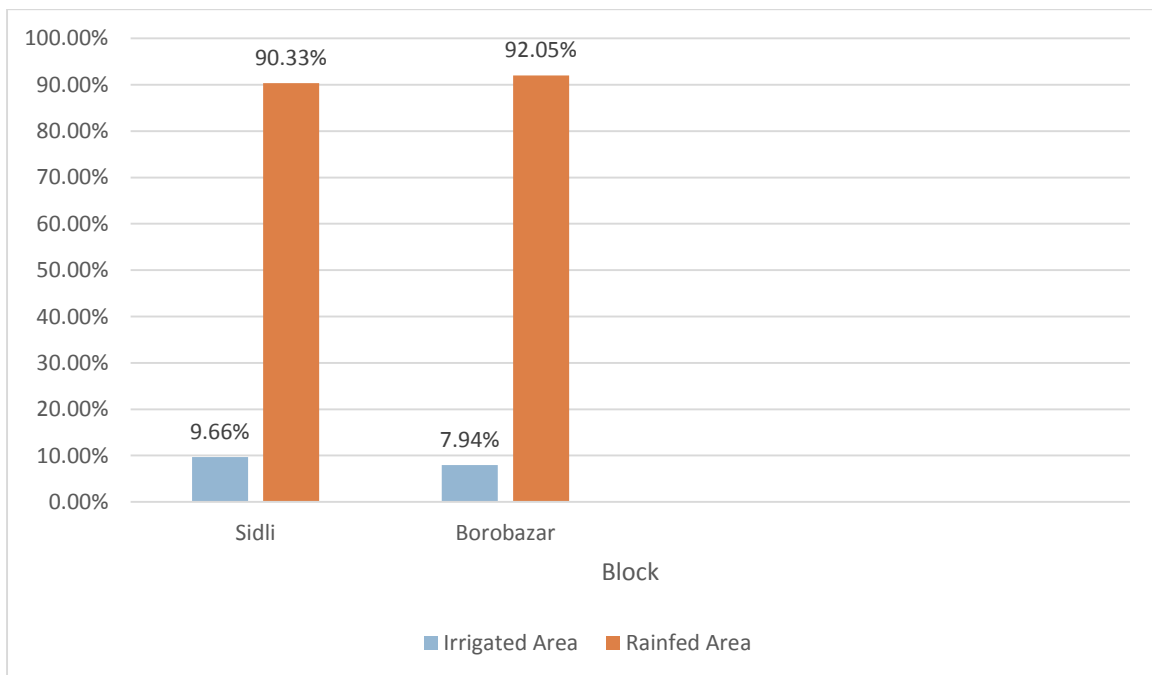


Figure 2.7: Status of irrigation in blocks of Chirang

9.66% of the total area sown in Sidli is irrigated and 90.33% is completely or partially irrigated or rainfed. Similarly, in Borobazar 7.94% of the total area sown is irrigated and 92.05% remains partially irrigated or rainfed. So in terms of irrigation status both blocks are nearly at the same position.

Chapter 3: Water Availability

3.1 Status of Water Availability

3.2 Status of Ground Water Availability

Hydrogeology

Ground water conditions in the district can be described under two distinct hydrogeological units, i.e. conditions prevailing in the consolidated formations and conditions prevailing in the unconsolidated formations.

i) Consolidated formations: Precambrian gneissic complex projecting abruptly above the vast stretch of alluvium as isolated hills, referred in here as 'inselbergs' form consolidated formations in the district. These rock formations have been subjected to faulting and fracturing at several places, through which water percolates to facilitate weathering.

Occurrence of ground water is limited in these formations and is confined to topographic lows and weathered residuum. The movement of ground water is controlled by the presence of fractures and fissures. Extractions of ground water in these zones are possible through large diameter dug wells and bore wells in hydrogeologically suitable places. Ground water occurs under water table conditions in the weathered zone. There are at present no borewells in the inselberg zone. However, yield of dugwells is adequate to meet the domestic needs.

ii) Unconsolidated formations: More than 80% of the district is underlain by unconsolidated formations, represented by the alluvial deposits of Recent age. It comprises the alluvial sediments of the foot hill belt (Bhabar) in the north and the valley covering the central and southern part. The behaviour of ground water in the piedmont sediments is naturally different from that in the alluvial areas further south.

Bhabar-Terai belt: This zone consists of the terrace deposits in the foot hill regions of the Himalayas composed of talus fans. The material is a heterogeneous admixture of boulders, pebbles, cobbles with the interstices filled by sand and silt. These sediments are highly permeable with very retentive capacity. Thus, the streams in this region are devoid of any appreciable surface flow, although there are evidences of sub-surface flow. Behaviour of ground water in the further south is less erratic. Here, ground water occurs under water table conditions. The depth to water level is high.

Older Alluvium: Ground water occurs under water table conditions in the elevated flat-topped areas of older alluvial sediments. These areas are usually forested. It comprises sand, gravel and silt with more proportion of clay. Ground water in this zone occurs under unconfined to confined conditions.

Newer Alluvium: The district is mostly covered by newer alluvium and the formation is comprised of sand, gravel and pebble with silt and clay. Ground water in this zone occurs under unconfined condition.

Based on the behaviour and occurrence of ground water, the regional ground water flow system of district has been described under following categories.

- i. Shallow aquifer group occurring within 50 m depth.
- ii. Deeper aquifer group beyond a depth of 50 m and down to 200 m bgl.

- i. **Shallow Aquifer Group:**

It constituted of a mixture of boulders, gravel, sand, silt and clay. The thickness of the aquifer varies from 15 to 40 m. Ground water in this aquifer generally occurs under water table to semi-confined conditions. The development of ground water from this aquifer for both domestic and irrigation purposes is by open wells and shallow tube wells.

The boulders are restricted mostly to the northern parts of the district. They occur between GL to 50 m bgl and thickness varies from 20 - 30 m. The thickness increases from south to north. The water level in the major part of the district generally lies between 2 to 4 m bgl. The northern most part occupied by the piedmont zones and the areas adjoining to the inselbergs are having deeper water level. The movement of ground water is southerly towards Brahmaputra River. The water table contour follows the topography of the area and lies more or less parallel to the Brahmaputra River. The hydraulic gradient becomes gentler towards the south.

- ii. **Deeper Aquifer Group**

It constituted of coarse to medium sand with intercalation of clay. Ground water occurs under water table to semi-confined conditions. Detailed hydrogeological surveys aided by exploratory drilling revealed the existence of two to three promising aquifer zones down to the depth of maximum 200 m bgl. Aquifer displays various degree of lateral and vertical variation of aquifer indicating various degree of depositional environment both in space and time. The piezometric surface is highly variable and the movement of ground water is towards the south.

Ground Water Quality

The ground water of the district is both slightly acidic and alkaline in nature with pH values ranging from 6.82 to 7.21. Ground water has low content of dissolved minerals. The iron

content is generally high for drinking purposes in some areas, the range being from 1.02 - 3.0 ppm. But, in most of the sources, it is within permissible limit as per BIS (1991) standard of 1.0 ppm and as such, it does not pose any serious health hazards. High iron concentration has been observed in and around Runikhata area. Except high iron content, the ground water of the district is suitable and safe for drinking and other uses. The water is soft and has low bicarbonate content.

The formation water of both shallow and deep aquifers is suitable for most of the irrigational and industrial purposes. Ground water is having a little higher concentration of iron but can be used after treatment.

Ground Water Related Issues and Problems

Floods devastate the district regularly during the monsoon season. Flood accompanied with soil erosion and sand deposition cause maximum damage to standing crops to the agricultural lands. Other than sporadic occurrence of high iron content, most of the chemical constituents in ground water are within permissible limit.

Ground Water Management Strategy

Shallow ground water structures are congenial for construction in the district, as water level and aquifer material are laterally persistent throughout the district. Dug wells and dug-cum-bore wells especially near the inselberg zone is very beneficial. Deep tube wells can be constructed preferably below the depth of 50 m tapping aquifer zone with an expected discharge of about 100 m³/hr.

Existing hydrogeological set up and availability of huge ground water resource indicate that there is much scope for the development of ground water abstraction structures in a planned and systematic way.

Iron treatment plants need to be installed with PHED water supply schemes before using for drinking purpose.

HYDROEKOLOGICAL MAP OF CHIRANG DISTRICT

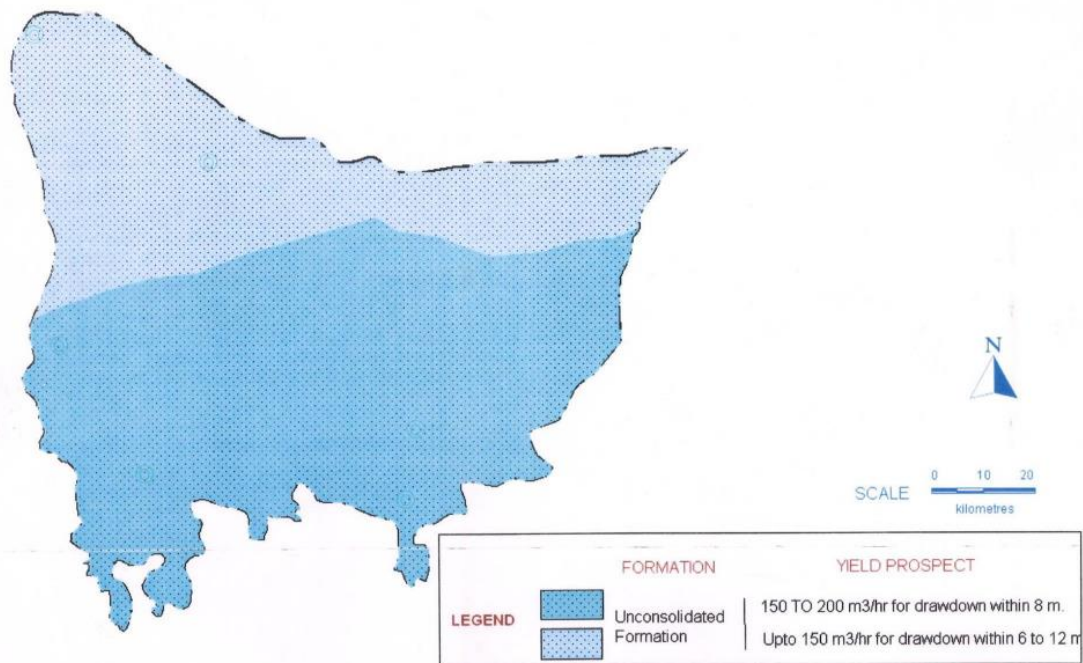


Figure 3.1: Hydroecological Map of Chirang District

Source: Ground Water Information Booklet Chirang, Assam

PRE-MONSOON WATER LEVEL OF CHIRANG DISTRICT

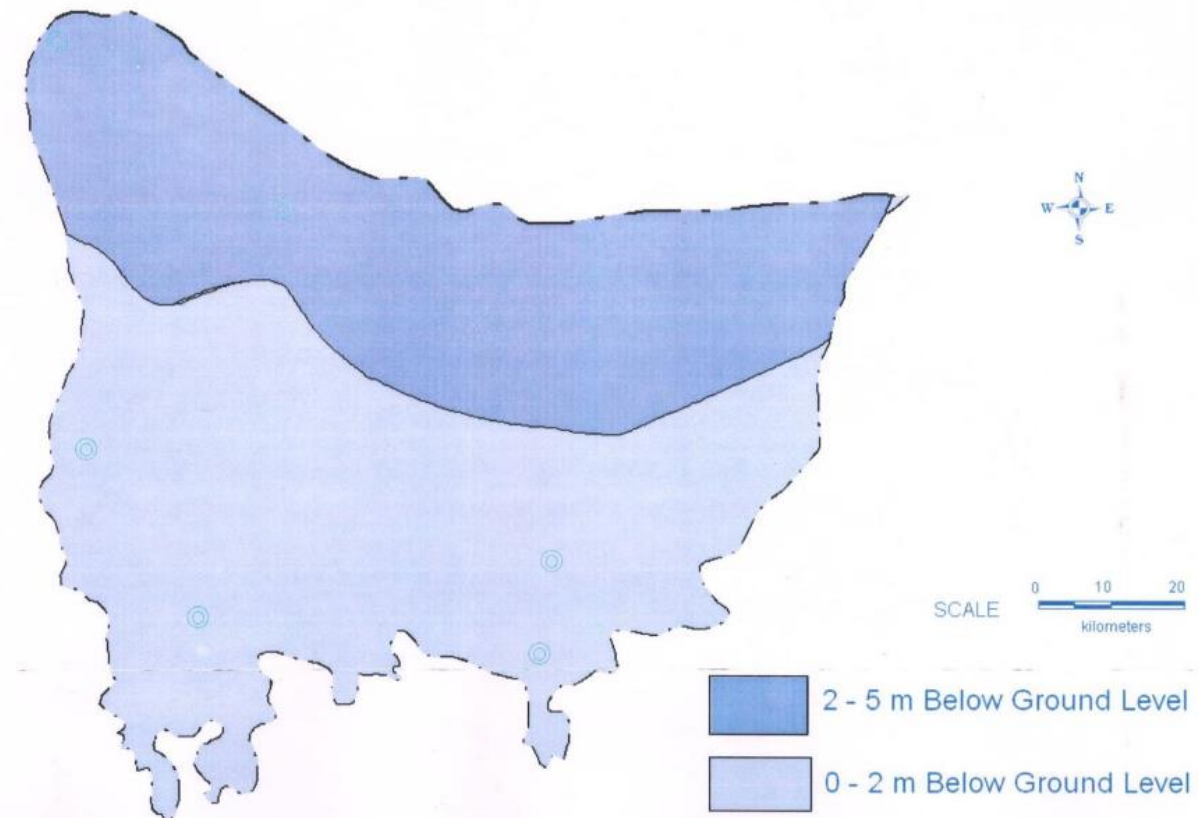


Figure 3.2: Pre-monsoon water level of Chirang District

Source: Ground Water Information Booklet Chirang, Assam

POST-MONSOON WATER LEVEL OF CHIRANG DISTRICT

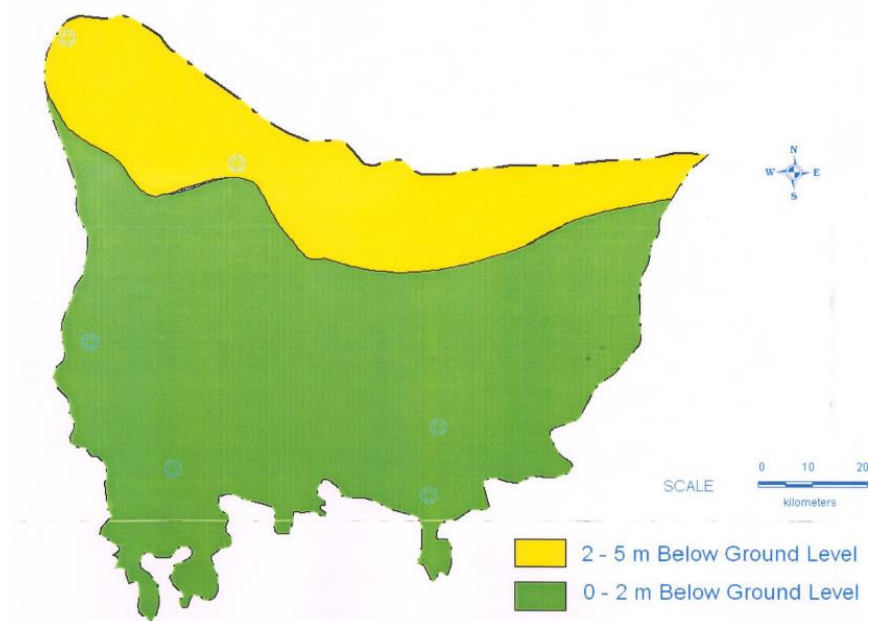


Figure 3.3: Post-monsoon water level of Chirang District

Source: Ground Water Information Booklet Chirang, Assam

3.3 Status of Command Area

Table 3.1: Status of command area in Sidli-Chirang Development Block

Name of the Block		Sidli- Chirang Development Block							
Sl. No.	Name of the Villages Covered	Information of Canal Command			Information of Other Services Command			Total Area	
		Total Area (in Ha)	Developed Area (in Ha)	Undeveloped Area (in Ha)	Total Area (in Ha)	Developed Area (in Ha)	Undeveloped Area (in Ha)	Developed Area (in Ha)	Undeveloped Area (in Ha)
1	Balapara	102.32	102.32	-	-	-	-	102.32	-
2	Tukrajhar	198.82	198.82	-	-	-	-	198.82	-
3	dewalguri	155.32	155.32	-	-	-	-	155.32	-
4	Kolobari	63.32	63.32	-	-	-	-	63.32	-
5	Nimagaon	87.78	87.78	-	-	-	-	87.78	-
6	Sidli patorgaon	45.25	45.25	-	-	-	-	45.25	-
7	Rajajan	32.02	32.02	-	-	-	-	32.02	-

8	Nalbari	42.08	42.08	-	-	-	-	42.08	-
9	Rangsaidham	67.78	67.78	-	-	-	-	67.78	-
10	Gossaigaon	42.16	42.16	-	-	-	-	42.16	-
11	Duligaon	41.08	41.08	-	-	-	-	41.08	-
12	Sundari	123.64	123.64	-	-	-	-	123.64	-
13	Namalpara	39.78	39.78	-	-	-	-	39.78	-
14	Laoripara	98.82	98.82	-	-	-	-	98.82	-
15	Goregaon	40.22	40.22	-	-	-	-	40.22	-
16	Amlaiguri	102.31	102.31	-	-	-	-	102.31	-
17	Shyamthaibari	112.65	112.65	-	-	-	-	112.65	-
18	Salbari	69.89	69.89	-	-	-	-	69.89	-
19	Santipur	207.03	207.03	-	-	-	-	207.03	-
20	Muzabari	64.27	64.27	-	-	-	-	64.27	-
21	Bardangi	91.34	91.34	-	-	-	-	91.34	-
22	North Thaikajhora	89.92	89.92	-	-	-	-	89.92	-
23	Simlabagan	86.21	86.21	-	-	-	-	86.21	-
24	Tharebari	90.12	90.12	-	-	-	-	90.12	-
25	Krishnapur	74.45	74.45	-	-	-	-	74.45	-
26	Polashguri	112.14	112.14	-	-	-	-	112.14	-
27	Padmapur	80.19	80.19	-	-	-	-	80.19	-
28	Ujanigaon	66.35	66.35	-	-	-	-	66.35	-
29	Deborgaon	47.75	47.75	-	-	-	-	47.75	-
30	Dangaigaon	101.17	101.17	-	-	-	-	101.17	-
31	Salpara	40.39	40.39	-	-	-	-	40.39	-
32	Rowmari	122.24	122.24	-	-	-	-	122.24	-
33	Chapaguri	102.17	102.17	-	-	-	-	102.17	-
34	Pub Ashrabari	147.63	147.63	-	-	-	-	147.63	-
35	Pub Bashbari	60.02	60.02	-	-	-	-	60.02	-
36	Katribari	87.73	87.73	-	-	-	-	87.73	-

37	Rangdabasti	78.21	78.21	-	-	-	-	78.21	-
38	Batabari	19.85	19.85	-	-	-	-	19.85	-
39	Bhutipara	36.62	36.62	-	-	-	-	36.62	-
40	Uttar Runikhata	108.97	108.97	-	-	-	-	108.97	-
41	Bhurpar	62.22	62.22	-	-	-	-	62.22	-
42	Anthaihari	40.27	40.27	-	-	-	-	40.27	-
43	Banduguri	73.38	73.38	-	-	-	-	73.38	-
44	Sonapur	40.15	40.15	-	-	-	-	40.15	-
45	Habrubari	44.74	44.74	-	-	-	-	44.74	-
46	Milanpur	12.22	12.22	-	-	-	-	12.22	-
47	Tigerguri	98.93	98.93	-	-	-	-	98.93	-
48	Baitabilow	58.96	58.96	-	-	-	-	58.96	-
49	Bilw budang	186.56	186.56	-	-	-	-	186.56	-
50	Aminpara	40.02	-	40.02	-	-	-	-	40.02
51	Bhouraguri	69.23	-	69.23	-	-	-	-	69.23
52	Nijrapara	49.25	-	49.25	-	-	-	-	49.25
53	gwjanpuri	17.16	-	17.16	-	-	-	-	17.16
54	Sonapara	68.82	-	68.82	-	-	-	-	68.82
55	Pub Salbari	47.75	-	47.75	-	-	-	-	47.75
56	Gurangpara	18.68	-	18.68	-	-	-	-	18.68
57	West Golajhar	49.96	-	49.96	-	-	-	-	49.96
58	East Golajhar	40.32	-	40.32	-	-	-	-	40.32
59	Ashrabari	112.37	-	112.37	-	-	-	-	112.37
60	Gorshingpara	98.76	-	98.76	-	-	-	-	98.76
61	Lakhipur	68.82	68.82	-	-	-	-	68.82	-
62	Amguri	74.41	74.41	-	-	-	-	74.41	-
63	Serfanguri	178.64	178.64	-	-	-	-	178.64	-
64	North Batabari	39.92	-	39.92	-	-	-	-	39.92
65	South Batabari	20.17	-	20.17	-	-	-	-	20.17

66	komabari	136.68	-	136.68	-	-	-	-	136.68
67	Koilabari	30.58	-	30.58	-	-	-	-	30.58
68	East Garlabari	39.94	-	39.94	-	-	-	-	39.94
69	East Duttapur	25.67	-	25.67	-	-	-	-	25.67
70	Duttapur	87.39	-	87.39	-	-	-	-	87.39
71	Enkarbari	44.27	-	44.27	-	-	-	-	44.27
72	Dedwmbil	60.08	-	60.08	-	-	-	-	60.08
73	Udalguri	89.82	89.82	-	-	-	-	89.82	-
74	East Udalguri	54.22	54.22	-	-	-	-	54.22	-
75	West Udalguri	37.06	37.06	-	-	-	-	37.06	-
76	Kanthalmari	77.32	-	77.32	-	-	-	-	77.32
77	Modati	52.06	-	52.06	-	-	-	-	52.06
78	Kumguri	64.93	-	64.93	-	-	-	-	64.93
79	Madhyam Dakhingaon	92.37	-	92.37	-	-	-	-	92.37
80	Dakhin Madhyamgaon	50.12	-	50.12	-	-	-	-	50.12
81	Dorogaon	68.91	-	68.91	-	-	-	-	68.91
82	Bashbari	78.29	-	78.29	-	-	-	-	78.29
83	Islakhata	73.21	-	73.21	-	-	-	-	73.21
84	Oxiguri	40.06	-	40.06	-	-	-	-	40.06
85	Khorpaguri	73.07	-	73.07	-	-	-	-	73.07
86	Khujubari	10.61	-	10.61	-	-	-	-	10.61
87	Hatidhura	48.93	-	48.93	-	-	-	-	48.93
88	Konthalmari	27.06	-	27.06	-	-	-	-	27.06
89	North Nangdorbeel	145.59	-	145.59	-	-	-	-	145.59
90	North Kajalgaon	89.34	89.34	-	-	-	-	89.34	-
91	Polashguri	45.68	45.68	-	-	-	-	45.68	-
92	Laoriyapara	112.06	112.06	-	-	-	-	112.06	-
93	Barigaon	60.25	60.25	-	-	-	-	60.25	-
94	Hasraobari	90.31	90.31	-	-	-	-	90.31	-

95	Silpota	70.69	70.69	-	-	-	-	70.69	-
96	Hatipota	23.66	23.66	-	-	-	-	23.66	-
97	Tharebari	74.12	74.12	-	-	-	-	74.12	-
98	North Rowmari	77.18	77.18	-	-	-	-	77.18	-
99	Odalguri	72.54	72.54	-	-	-	-	72.54	-
100	Katribari	32.68	32.68	-	-	-	-	32.68	-
101	Khagrabari	102.49	102.49	-	-	-	-	102.49	-
102	Goragaon	50.33	50.33	-	-	-	-	50.33	-
103	Balapara	82.14	82.14	-	-	-	-	82.14	-
104	Manikpur	189.96	-	189.96	-	-	-	-	189.96
105	Bhabanipur	177.34	-	177.34	-	-	-	-	177.34
106	Sisubari	114.36	-	114.36	-	-	-	-	114.36
107	Tulsidangi	86.69	-	86.69	-	-	-	-	86.69
108	Anthabari	112.04	-	112.04	-	-	-	-	112.04
109	Kanibhur	174.29	-	174.29	-	-	-	-	174.29
110	No. 1 Balapara	89.91	-	89.91	-	-	-	-	89.91
111	No. 2 Balapara	12.15	-	12.15	-	-	-	-	12.15
112	Durgapara	71.53	-	71.53	-	-	-	-	71.53
113	Garlabari	45.32	-	45.32	-	-	-	-	45.32
114	Purba Ashrabari	72.38	-	72.38	-	-	-	-	72.38
115	Thaikerjhora	187.84	-	187.84	-	-	-	-	187.84
116	Dakhingaon	201.33	-	201.33	-	-	-	-	201.33
117	Runikhata	124.55	-	124.55	-	-	-	-	124.55
118	Bwigriguri	258.89	-	258.89	-	-	-	-	258.89
119	Khunring	178.92	-	178.92	-	-	-	-	178.92
120	Dakhinpara	200.42	-	200.42	-	-	-	-	200.42
121	Maoper	103.39	-	103.39	-	-	-	-	103.39
122	East Maoper	111.25	-	111.25	-	-	-	-	111.25
123	Ouguri	72.26	-	72.26	-	-	-	-	72.26

124	Digaldong	114.63	-	114.63	-	-	-	-	114.63
125	Aidubri	64.47	-	64.47	-	-	-	-	64.47
126	Thuribari	15.56	15.56	-	-	-	-	15.56	-
127	Bamingaon	62.25	62.25	-	-	-	-	62.25	-
128	Hegurmari	33.36	33.36	-	-	-	-	33.36	-
129	Pretgaon	50.22	50.22	-	-	-	-	50.22	-
130	South Mojabari	30.03	30.03	-	-	-	-	30.03	-
131	Jaoliabari	39.92	39.92	-	-	-	-	39.92	-
132	Dakhin dewalguri	90.11	90.11	-	-	-	-	90.11	-
133	Uttar Dewalguri	40.44	40.44	-	-	-	-	40.44	-
134	Nimagaon	66.31	66.31	-	-	-	-	66.31	-
135	Fulguri	54.42	54.42	-	-	-	-	54.42	-
136	Tirimari	40.06	40.06	-	-	-	-	40.06	-
137	Chotopathar gaon	60.21	60.21	-	-	-	-	60.21	-
138	West Golajhar	56.46	56.46	-	-	-	-	56.46	-
139	East Golajhar	43.39	43.39	-	-	-	-	43.39	-
140	Momeronbari	38.98	38.98	-	-	-	-	38.98	-
141	Domgaon Salbari	112.38	112.38	-	-	-	-	112.38	-
142	Pub Domgaon	69.87	69.87	-	-	-	-	69.87	-
143	Bongibari	125.82	125.82	-	-	-	-	125.82	-
144	Thunkhobari	30.03	30.03	-	-	-	-	30.03	-
145	Soulmari	42.36	42.36	-	-	-	-	42.36	-
146	Kashibari	79.87	79.87	-	-	-	-	79.87	-
147	Nepalpara	68.34	68.34	-	-	-	-	68.34	-
148	Simlaguri	40.02	40.02	-	-	-	-	40.02	-
149	Salbari	12.29	12.29	-	-	-	-	12.29	-
150	Bwrijhora	67.76	67.76	-	-	-	-	67.76	-
151	Pachim Hulmagaon	58.99	58.99	-	-	-	-	58.99	-
152	Sil Gagri	77.43	77.43	-	-	-	-	77.43	-

153	Dongshibari	28.93	28.93	-	-	-	-	28.93	-
154	Dadraguri	15.62	15.62	-	-	-	-	15.62	-
155	Bangaldoba	37.78	37.78	-	-	-	-	37.78	-
156	Pakhriguri	29.88	29.88	-	-	-	-	29.88	-
157	Dohalapara	54.32	54.32	-	-	-	-	54.32	-
158	Gowabari	38.88	38.88	-	-	-	-	38.88	-
159	Rowmari	15.05	15.05	-	-	-	-	15.05	-
160	Bengtol	86.23	86.23	-	-	-	-	86.23	-
161	Serfanguri	32.54	32.54	-	-	-	-	32.54	-
162	Borosalangi	101.36	101.36	-	-	-	-	101.36	-
163	Dwikaruri	88.94	88.94	-	-	-	-	88.94	-
164	Turshidangi	123.58	123.58	-	-	-	-	123.58	-
165	North Khagrabari	78.89	78.89	-	-	-	-	78.89	-
166	Middle Khagrabari	22.39	22.39	-	-	-	-	22.39	-
167	dolo Khagrabari	12.54	12.54	-	-	-	-	12.54	-
168	East santipur	47.78	47.78	-	-	-	-	47.78	-
169	Ambiguri	38.09	38.09	-	-	-	-	38.09	-
170	North kashibari	57.71	57.71	-	-	-	-	57.71	-
171	Birinchipuri	111.85	111.85	-	-	-	-	111.85	-
172	East Khagrabari	7.82	7.82	-	-	-	-	7.82	-
173	Dakhingaon	308.94	308.94	-	-	-	-	308.94	-
174	Dablee	187.73	187.73	-	-	-	-	187.73	-
175	Jaoliabari	68.81	-	68.81	-	-	-	-	68.81
176	Birgaon	18.84	-	18.84	-	-	-	-	18.84
177	Thalitbari	10.06	-	10.06	-	-	-	-	10.06
178	No. 2 Thalitbari	8.77	-	8.77	-	-	-	-	8.77
179	Corpaguri	37.52	-	37.52	-	-	-	-	37.52
180	Jamphaiguri	10.03	-	10.03	-	-	-	-	10.03
181	No. 2 Bashbari	50.41	-	50.41	-	-	-	-	50.41

182	Tilogaon	38.74	-	38.74	-	-	-	-	38.74
183	Dynama	74.49	-	74.49	-	-	-	-	74.49
184	Bhawraguri	41.18	-	41.18	-	-	-	-	41.18
185	Dharmapur	37.05	-	37.05	-	-	-	-	37.05
186	No. 2 Talipbari	20.11	-	20.11	-	-	-	-	20.11
187	Rani Sundari	11.04	-	11.04	-	-	-	-	11.04
188	Bikrampur	28.97	-	28.97	-	-	-	-	28.97
189	Nalbari	8.66	-	8.66	-	-	-	-	8.66
190	Simliguri	78.56	-	78.56	-	-	-	-	78.56
191	Boro Nalbari	40.06	-	40.06	-	-	-	-	40.06
192	Dabobil	60.24	-	60.24	-	-	-	-	60.24
193	Garubhasa	48.87	-	48.87	-	-	-	-	48.87
195	No.1 Pakhriguri	102.37	-	102.37	-	-	-	-	102.37
196	Nilapara	12.58	-	12.58	-	-	-	-	12.58
197	Salgari	19.93	-	19.93	-	-	-	-	19.93
198	Dangtol	54.47	-	54.47	-	-	-	-	54.47
199	Gendergaon	33.23	-	33.23	-	-	-	-	33.23
200	Bangaldoba	24.48	-	24.48	-	-	-	-	24.48
201	Dobraguri	27.43	-	27.43	-	-	-	-	27.43
202	Moigaon	50.21	-	50.21	-	-	-	-	50.21
203	Thuribari	31.27	-	31.27	-	-	-	-	31.27
204	Singimari	52.28	-	52.28	-	-	-	-	52.28
205	Gaybari	127.97	-	127.97	-	-	-	-	127.97
206	Majlipara	101.05	-	101.05	-	-	-	-	101.05
207	Batabri	36.62	36.62	-	-	-	-	36.62	-
208	Uttar Islakhata	62.37	62.37	-	-	-	-	62.37	-
209	Katribari West	85.97	85.97	-	-	-	-	85.97	-
210	South Bhutipara	51.24	51.24	-	-	-	-	51.24	-
211	Kakragoon	142.21	-	142.21	-	-	-	-	142.21

212	Pachim Kakragaon	46.32	-	46.32	-	-	-	-	46.32
213	Dimakumari	35.63	-	35.63	-	-	-	-	35.63
214	Tilapara	39.61	-	39.61	-	-	-	-	39.61
215	Silguri	50.56	-	50.56	-	-	-	-	50.56
216	Dablegaon	41.32	-	41.32	-	-	-	-	41.32
217	Khagrabari	30.05	-	30.05	-	-	-	-	30.05
218	Dangtol	68.56	-	68.56	-	-	-	-	68.56
219	Kinaborgaon	117.35	-	117.35	-	-	-	-	117.35
220	Simlaguri	141.20	-	141.20	-	-	-	-	141.20
221	Petlagaon	50.45	-	50.45	-	-	-	-	50.45
222	Sonagaon	127.22	-	127.22	-	-	-	-	127.22
223	Tepamari	32.12	32.12	-	-	-	-	32.12	-
224	Kachugaon	107.12	107.12	-	-	-	-	107.12	-
225	Rabhapara	82.47	82.47	-	-	-	-	82.47	-
226	Pub Bhadra	58.29	58.29	-	-	-	-	58.29	-
227	Nichinapara	51.36	51.36	-	-	-	-	51.36	-
228	Nehalgaon	59.83	59.83	-	-	-	-	59.83	-
229	Basugaon Basti	40.26	40.26	-	-	-	-	40.26	-
230	Ulubari	104.32	104.32	-	-	-	-	104.32	-
231	Ghilaguri	10.02	10.02	-	-	-	-	10.02	-
232	Girjongaon	20.65	20.65	-	-	-	-	20.65	-
233	Batagaon	31.61	31.61	-	-	-	-	31.61	-
234	Trimari	109.26	109.26	-	-	-	-	109.26	-
235	Sakati	52.22	52.22	-	-	-	-	52.22	-
236	Nalbari	27.83	27.83	-	-	-	-	27.83	-
237	Patargaon	59.23	59.23	-	-	-	-	59.23	-
238	Tilogaon Pt-I	25.56	25.56	-	-	-	-	25.56	-
239	Tilogaon-Pt-II	22.31	22.31	-	-	-	-	22.31	-
240	Duramari	62.32	62.32	-	-	-	-	62.32	-

241	Carikhura	108.53	108.53	-	-	-	-	108.53	-
242	Salguri	118.69	118.69	-	-	-	-	118.69	-
	Total =	16,921.44	9,937.81	6,983.63	-	-	-	9,937.81	6,983.63

Table 3.2: Status of command area in Borobazar Development Block

Block: Borobazar Development Block									
Area in Ha									
Sl. No.	Name of the village	Information of canal command			Information on the other services command			Total Area	
		Total Area	Developed Area	Undeveloped Area	Total Area	Developed Area	Undeveloped Area	Developed Command	Undeveloped Command
1	2	3	4	5	6	7	8	4+7	5+8
1	Dahalapara	108	108	-	-	-	-	108	-
2	Kalagaon	87	87	-	-	-	-	87	-
3	Barlaogaon	102	102	-	-	-	-	102	-
4	Pub Makra	131	131	-	-	-	-	131	-
5	Ghilaguri	91	91	-	-	-	-	91	-
6	deotary	109	109	-	-	-	-	109	-
7	Simlaguri	112	112	-	-	-	-	112	-
8	Poslabari	127	127	-	-	-	-	127	-
9	lakhipur	115	115	-	-	-	-	115	-
10	Simlaguri	119	119	-	-	-	-	119	-
11	Kaliagaon	64	64	-	-	-	-	64	-
12	Amguri	75	75	-	-	-	-	75	-
13	Bhatopara	97	97	-	-	-	-	97	-
14	Andhergao n	91	91	-	-	-	-	91	-
15	Lowerpara	102	102	-	-	-	-	102	-
16	Nepalipara	94	94	-	-	-	-	94	-
17	Hatimara	95	95	-	-	-	-	95	-
18	Lantipara	51	51	-	-	-	-	51	-
19	Kaliagaon	126	126	-	-	-	-	126	-
20	Ladanguri	105	105	-	-	-	-	105	-
21	Bautipara	99	99	-	-	-	-	99	-
22	Galapara	205	205	-	-	-	-	205	-
23	Behapara	212	212	-	-	-	-	212	-
24	Morapara	52	52	-	-	-	-	52	-
25	Abadipara	120	120	-	-	-	-	120	-
26	Badulpara	102	102	-	-	-	-	102	-

27	Ashrabari	56	56	-	-	-	-	56	-
28	namjalpara	103	103	-	-	-	-	103	-
29	South gargaon	93	93	-	-	-	-	93	-
30	Gargaon Kochpara	169	169	-	-	-	-	169	-
31	Subajhar	63	63	-	-	-	-	63	-
32	Langdangpara	85	85	-	-	-	-	85	-
33	Hasraobari	56	56	-	-	-	-	56	-
34	Pub Gumargao n	62	62	-	-	-	-	62	-
35	Pachim Gumargao n	86	86	-	-	-	-	86	-
36	nangdarber i	91	91	-	-	-	-	91	-
37	sarapet	55	55	-	-	-	-	55	-
38	Mazrabari	36	36	-	-	-	-	36	-
39	Baghmara	75	75	-	-	-	-	75	-
40	Tangabari	71	71	-	-	-	-	71	-
41	Gumargao n	68	68	-	-	-	-	68	-
42	East Daichungu ri	48	48	-	-	-	-	48	-
43	West Malipara	65	65	-	-	-	-	65	-
44	East Gumargao n	29	29	-	-	-	-	29	-
45	Ratikhola	64	64	-	-	-	-	64	-
46	KoilaMoila	74	74	-	-	-	-	74	-
47	Thaisobeel no.1	51	51	-	-	-	-	51	-
48	Thaisobeel no.2	53	53	-	-	-	-	53	-
49	Burista No.1	65	65	-	-	-	-	65	-
50	Burisuta No.2	67	67	-	-	-	-	67	-
51	Balimari	85	85	-	-	-	-	85	-
52	Abdaguri	44	44	-	-	-	-	44	-
53	kallajhar	112	112	-	-	-	-	112	-
54	Gelajhora	135	135	-	-	-	-	135	-
	Total	4852	4852					4852	

Table 3.3: Status of command area in Dangtol development block

Name of the Block	:	Dangtol Development Block
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Sl. No.	Name of the Villages Covered	Information of Canal Command			Information of Other Services Command			Total Area	
		Total Area (in Ha)	Developed Area (in Ha)	Undeveloped Area (in Ha)	Total Area (in Ha)	Developed Area (in Ha)	Undeveloped Area (in Ha)	Developed Area (in Ha)	Undeveloped Area (in Ha)
1	Kakragaon	142.21	-	142.21	-	-	-	-	142.21
2	Pachim Kakragaon	46.32	-	46.32	-	-	-	-	46.32
3	Dimakumari	35.63	-	35.63	-	-	-	-	35.63
4	Tilapara	39.61	-	39.61	-	-	-	-	39.61
5	Silguri	50.56	-	50.56	-	-	-	-	50.56
6	Dablegaon	41.32	-	41.32	-	-	-	-	41.32
7	Khagrabari	30.05	-	30.05	-	-	-	-	30.05
8	Dangtol	68.56	-	68.56	-	-	-	-	68.56
9	Kinaborgaon	117.35	-	117.35	-	-	-	-	117.35
10	Simlaguri	141.20	-	141.20	-	-	-	-	141.20
11	Petlagaon	50.45	-	50.45	-	-	-	-	50.45
12	Sonagaon	127.22	-	127.22	-	-	-	-	127.22
13	Tepamari	32.12	32.12	-	-	-	-	32.12	-
14	Kachugaon	107.12	107.12	-	-	-	-	107.12	-
15	Rabhapara	82.47	82.47	-	-	-	-	82.47	-
16	Pub Bhadra	58.29	58.29	-	-	-	-	58.29	-
17	Nichinapara	51.36	51.36	-	-	-	-	51.36	-
18	Nehalgaon	59.83	59.83	-	-	-	-	59.83	-
19	Basugaon Basti	40.26	40.26	-	-	-	-	40.26	-
20	Ulubari	104.32	104.32	-	-	-	-	104.32	-
21	Ghilaguri	10.02	10.02	-	-	-	-	10.02	-
22	Girjongaon	20.65	20.65	-	-	-	-	20.65	-
23	Batagaon	31.61	31.61	-	-	-	-	31.61	-
24	Trimari	109.26	109.26	-	-	-	-	109.26	-
25	Sakati	52.22	52.22	-	-	-	-	52.22	-
26	Nalbari	27.83	27.83	-	-	-	-	27.83	-

27	Patargaon	59.23	59.23	-	-	-	-	59.23	-
28	Tilogaon Pt-I	25.56	25.56	-	-	-	-	25.56	-
29	Tilaogaon-Pt-II	22.31	22.31	-	-	-	-	22.31	-
30	Duramari	62.32	62.32	-	-	-	-	62.32	-
31	Carikhura	108.53	108.53	-	-	-	-	108.53	-
32	Salguri	118.69	118.69	-	-	-	-	118.69	-
	Total =	2,074.48	1,184.00	890.48	-	-	-	1,184.00	890.48

The canal command area is maximum in Sidli-Chirang development block with total canal area of 16,921.44 ha. with developed area being 9937.81 ha. (58.72%) and undeveloped area being 6,983.63 ha.

The canal command area in Borobazar Development Block is 4852 hectares with all 4852 hectares being in developed area.

The canal command area in Dangtol Development block is 2,074.48 ha. with developed area being 1,184 ha. (57.07%) and 890.48 ha.

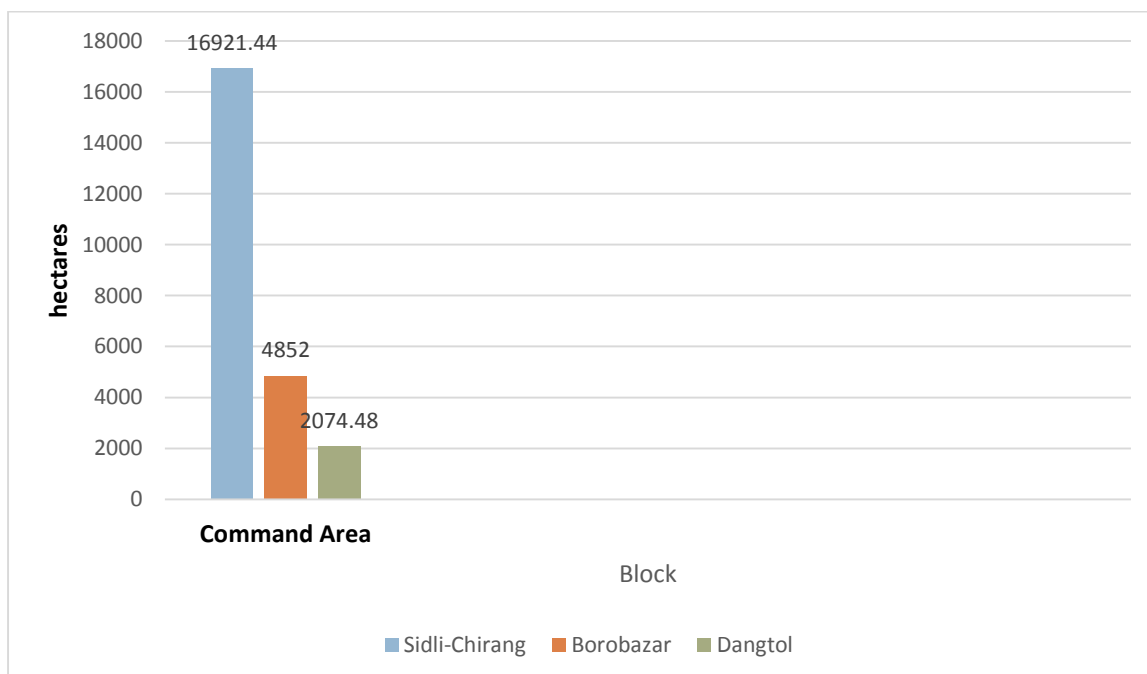


Figure 3.4: Status of command area in Chirang district

3.4 Existing type of irrigation

Table 3.4: Existing type of irrigation

Name of the Block : Sidli Chirang Development Block																		
Source of Irrigation	Surface Irrigation (1)					Ground Water(2)						Other Sources including Traditional WHS (3)	Treated effluent discharged from STP	Water extraction devices/ Lift			Total	
	Canal Based		Tanks/Ponds/ Reservoirs			Tube Wells		Open Wells		Bore Well				Electricity pump (4)	Diesel pump (5)	Others (6)	Irrigation Sources (1 + 2 + 3)	Water Extracting units (4 + 5 + 6)
	Govt. Canal	Community/Pvt. Canal	Community Ponds Including Small	Individual /Pvt. Ponds	Govt. Reservoirs/ Dams	Govt.	Pvt.	Community/ Govt.	Pvt.	Govt.	Pvt.							
No	89	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Command Area (ha)	16,170.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Chapter 4: Water Requirement/Demand

The earlier Chapters deal with the general profile, water profile and water availability of Chirang district. The present chapter deals with the current (2016) 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

This includes the water requirement in private buildings for drinking, cooking, bathing, gardening, sanitary purposes etc. The amount of domestic water consumption per person shall vary according to the living conditions. The requirement of water depends on a number of factors like climate, culture, working conditions, physiology, level of development, etc.

As per the Bureau of Indian Standards, a minimum water supply of 200 litres per capita per day (lpcd) should be provided for domestic consumption in cities with full flushing systems. It also mentions that the amount of water supply may be reduced to 135 lpcd for the LIG and the economically weaker sections (EWS) of the society and in small towns. The total domestic consumption generally amounts to 55 to 60% of the total water consumption. The break-up of 135 litres/day/person may be approximately taken as shown in table 4.1.

Table 4.1: Average Domestic water consumption in an Indian city

Use	Consumption in litres/day/person
Drinking	5
Cooking	5
Bathing	55
Washing of clothes	20
Washing of utensils	10
Washing and cleaning of houses and residences	10
Flushing of latrines etc.	30
Total	135

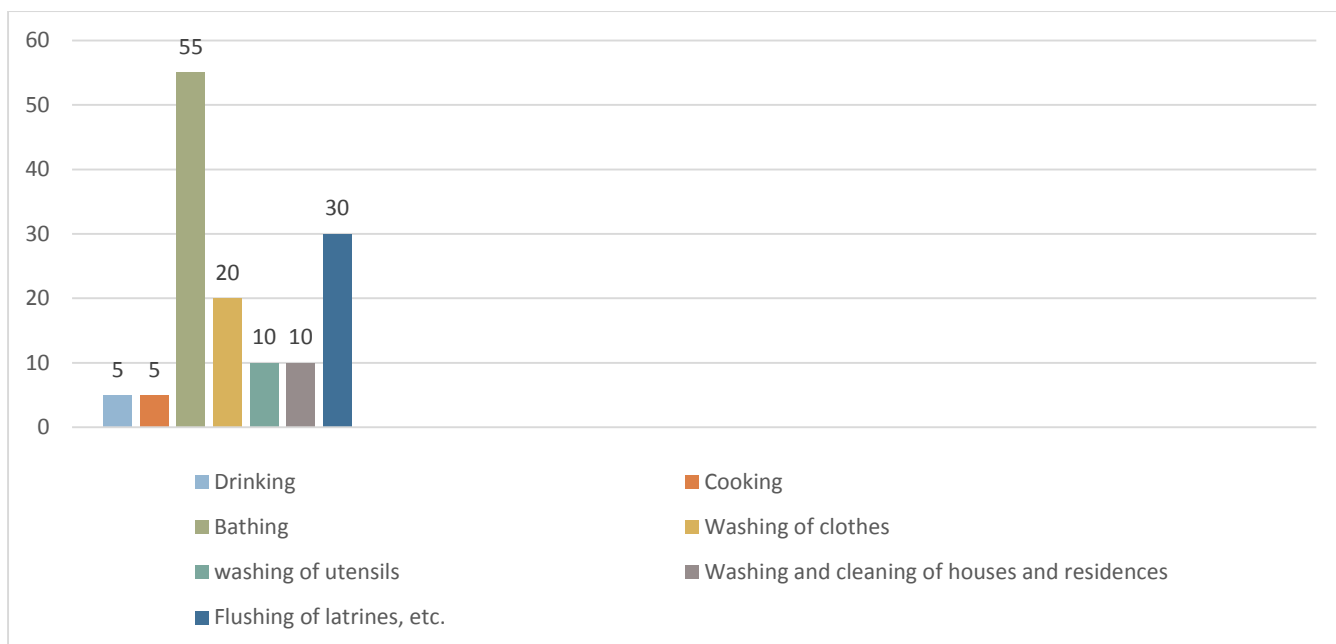


Figure 4.1: Use of water

The decadal growth rate for Chirang district is 11.34% as per Census, 2011. The projected population in 2020 is worked out assuming the last decadal growth and annual growth rate of 1.134% is used to apply for the period 2011-2020 (9 years). Current population (in 2016) has been calculated by assuming a growth rate of 5.67% ($1.134\% \times 5$ Years) over a period of five years (from 2011-2016). Projected population has been calculated in similar way by assuming a growth rate of 4.536% ($1.134\% \times 4$ Years) over the period of four years (from 2016-2020).

Table 4.2: Domestic water demand

Blocks	2011 Population	Population in 2016	Present Water Requirement 2016 (MCM)	Projected Population in 2020	Annual Water Requirement in 2020 (MCM)
Sidli-Chirang	216974	2,29,276	11.29759588	239676.404	11.810055
Borobazar	159424	1,68,463	8.301031118	176104.838	8.6775659

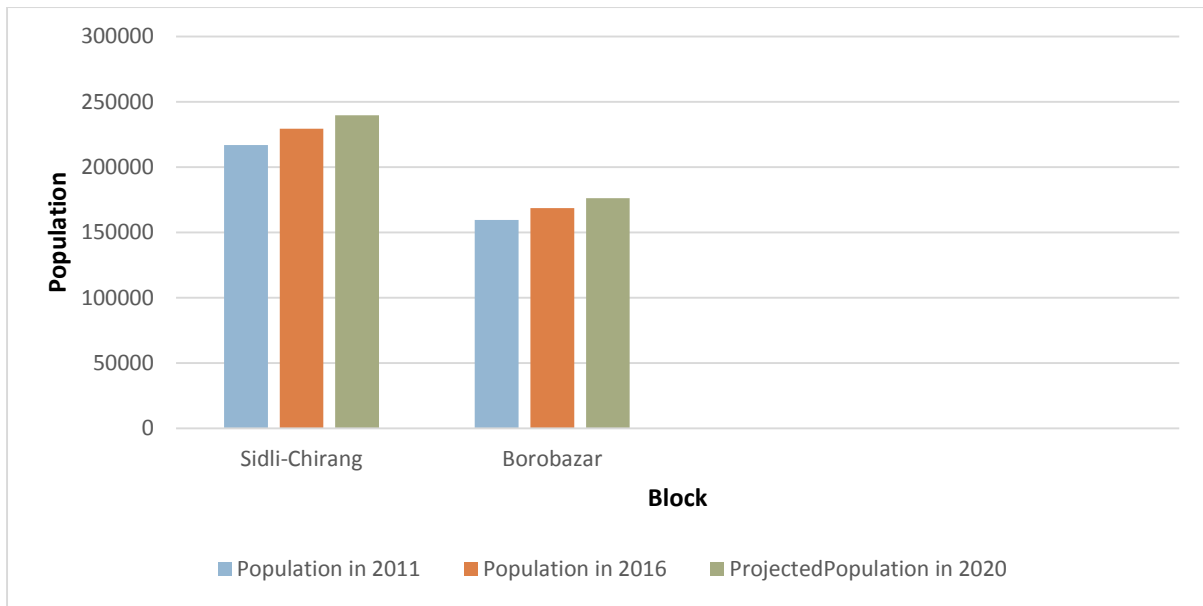


Figure 4.2: Block-wise increase in population

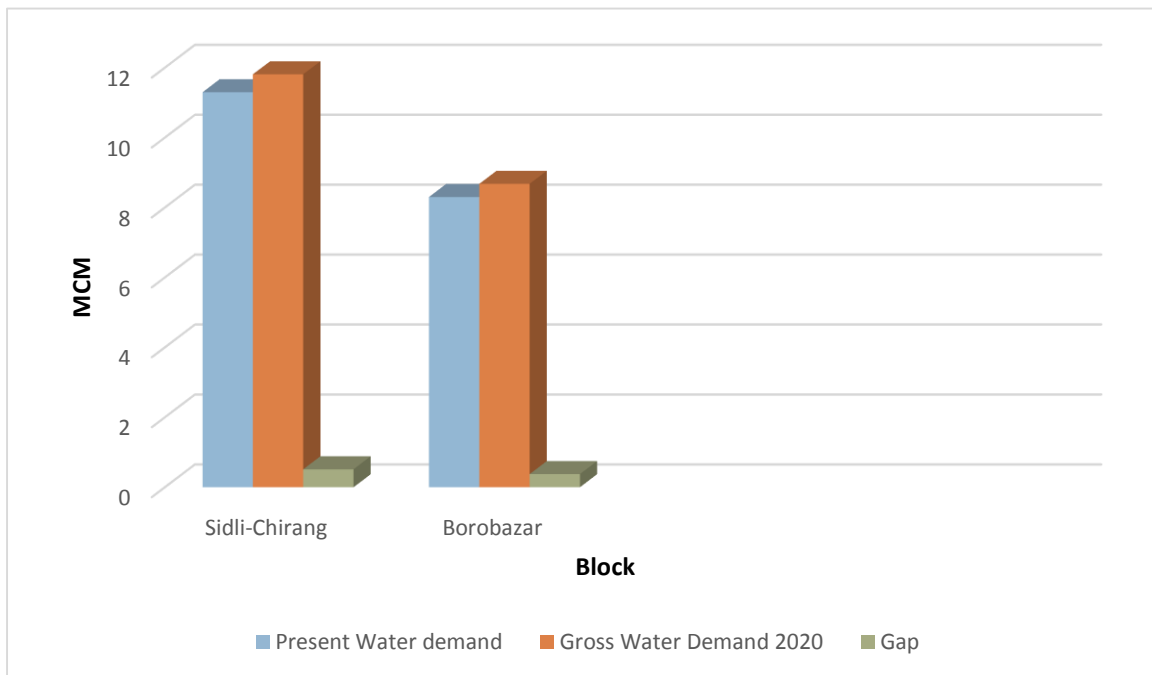


Figure 4.3: Water demand and gap

4.2 Crop water Requirement

Cereals are cultivated on major part of the gross cropped area in the district. Hence, the crop water requirement for major cereals viz. Paddy, Wheat, maize, etc. are taken into consideration. The crops used for calculation of crop water requirement along with their respective assumptions are as under:

Table 4.3: Area sown and water requirement for major crops in Chirang

Crop	Area(ha)	Water requirement (m per ha.)
Kharif rice	36284	1
Summer rice	1713	2
Autumn Rice/upland rice	15622	0.55
Wheat	1064	0.55
Maize	478	0.65
Pulses	3698	0.275
Mustard	8557	0.275
Castor	6	0.5
Jute	1416	0.495
Banana	418	1.7
Pineapple	461	0.85
Potato	2287	0.6
Sugarcane	92	2.25
Vegetables	10085	0.9
Chillies	540	0.5
Onion	195	0.45

Source: Chirang District, Inventory of Agriculture 2015(ICAR) and KVK

Table 4.4: Crop water requirement in Chirang

District	Area sown (Ha)	Irrigated area (ha)	Crop Water Demand (MCM)	Water Potential Required (MCM)	Existing Water Potential (MCM)	Water Potential to be created (MCM)
Chirang	82916	11261	653.8795	567.7312	169.47	567.7312

Source: Based on computation

Water potential required has been derived from water required by crops cultivated under rainfed conditions. Therefore, the existing water potential represents the water requirement of crops cultivated in irrigated areas.

It can be concluded from the table that a total water potential of 567.73 MCM is to be created in the district to fulfil the requirement of crops.

4.3 Livestock water Requirement

As per the livestock census 2012, livestock population in Assam has grown at a rate of 10.77%. For the purpose of calculation of the growth rates, livestock census of 2012 and 2007 are considered. However, since Chirang district was formed only after 2009, hence there is no base year for comparison and so growth rates for the state are used. The growth rates for Assam (2007-2012) is as follows:

Table 4.5: Growth rates for livestock in Assam in 2007-12

	Growth rate
Poultry	-6.35%
Cattle	2.45%
Sheep	46.43%
Goat	42.81%
Pigs	-18.22%
Ducks	-6.35%

Source: Livestock Census, 2012

The annual growth rates are then used from the data above to arrive at the final figures.

The water consumption for animals is used as per the following:

Table 4.6: Water requirement range and daily water use for livestock

Water Consumptions by Animals/ Birds			
S.No.	Livestock Category	Water Requirement Range	Average water Use L/day
1	Poultry	0.16-0.24	0.20
2	Small Animals	13-20	16.50
3	Large Animals	39-59	49

Source: Adapted from Nutrient Requirements of poultry, sheep, and cattle. (9th edition). Washington D.C.: National Research Council, 1994,

Table 4.7: Livestock water requirement

	Population in 2016	Present water demand(MCM)	Water Demand in 2020(MCM)	Existing water Potential(MCM)	Water potential to be created(MCM)
Poultry	222833	0.016266809	0.014614101	0.016267	-0.00165

Ducks	40121	0.002928833	0.002631264	0.002929	-0.0003
Pigs	44685	0.269115413	0.190662887	0.269115	-0.07845
Goats	81694	0.492002115	0.829003884	0.492002	0.337002
Sheep	13913	0.083791043	0.146037732	0.083791	0.062247
Large animals	1,35,690	2.42681565	2.521946823	2.426816	0.095131
Draught	96941	1.733789785	1.801754345	1.73379	0.067965
Total	635877	5.024709647	5.506651036	5.02471	0.481941

Source: Based on computation

*Calculated gross water demand for a year

4.4 Industrial Water Demand

There are no major industries in the district and the District Industries and Commerce Center, Chirang could not provide any information on water requirement for industries as the units present do not provide any information on their individual water requirement to any department or government body and as such the water requirement by industries cannot be commented upon. It can be said with certainty though that industrial water demand is meagre in the district due to very few industries being present here.

4.5 Water Demand for Power Generation

Power is not generated in the district and hence, water requirement has been indicated to be zero. The power requirement of district is met through common grid system of the state.

4.6 Total Water Demand of the district for various sectors

Table 4.8: Present water demand of the district from various components

District	Demand from components (MCM)					Total
	Domestic	Crop	Livestock	Industrial	Power Generation	
Chirang	19.59	561.73	5.02	0.00	0.00	586.34

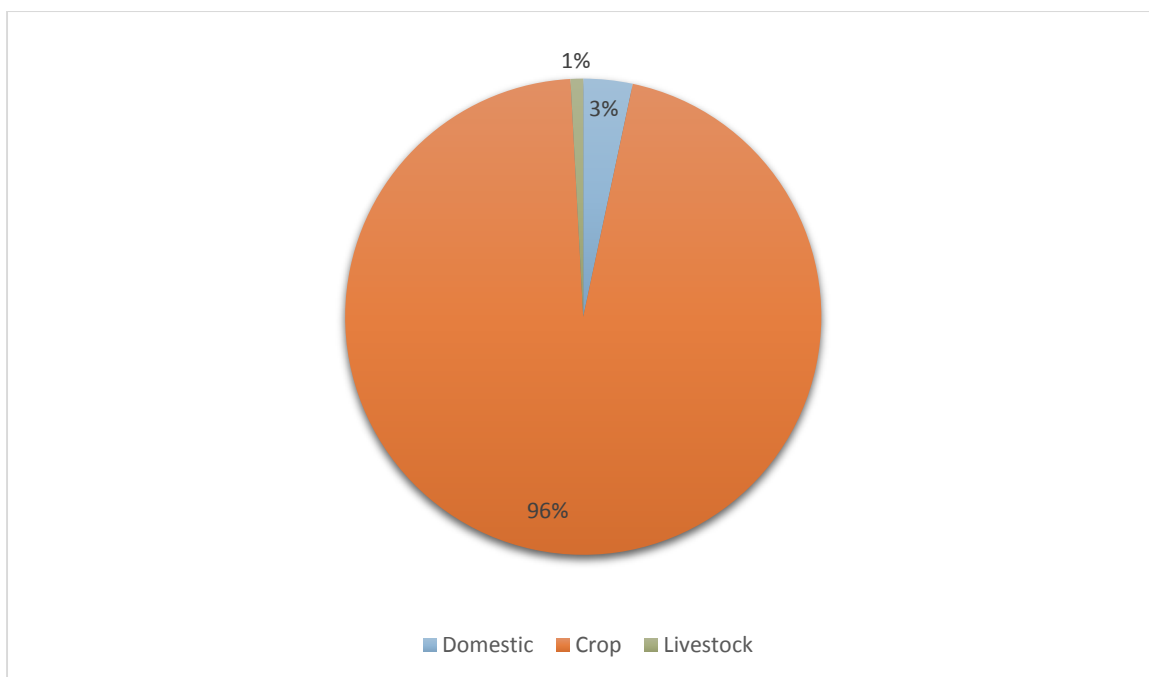


Figure 4.4: Present water demand of the district for various sectors

Table 4.9: Projected water demand(2020) of the district for various sectors

District	Demand from components (MCM)					Total
	Domestic	Crop	Livestock	Industrial	Power Generation	
Chirang	20.48	561.73	5.50	0.00	0.00	587.71

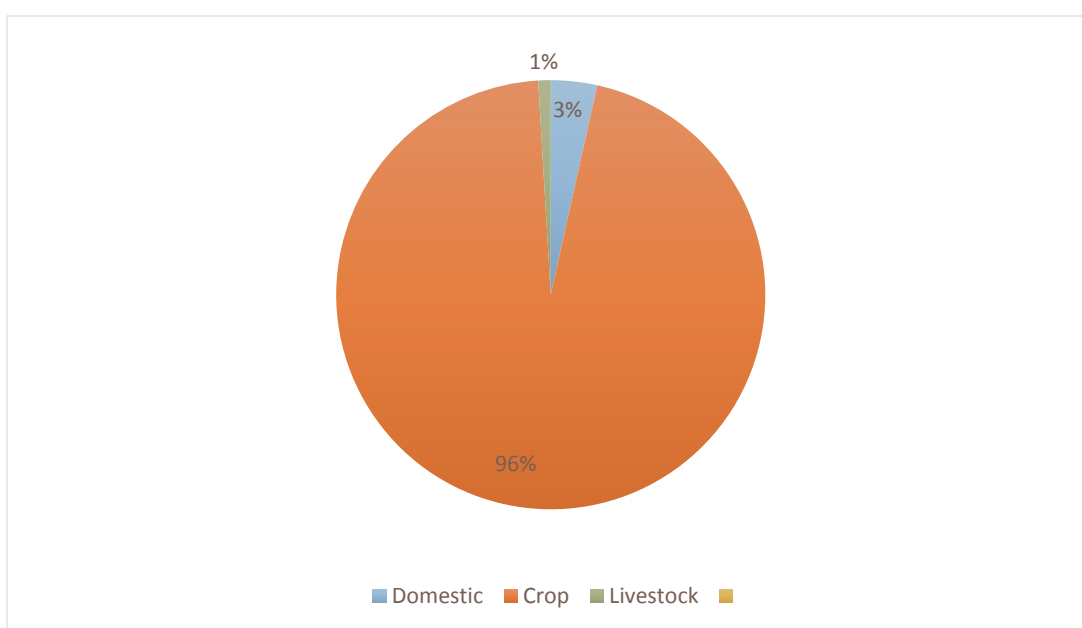


Figure 4.5: Projected water demand(2020) of the district for various sectors

Based on calculation it is reflected that total current water requirement is 586.34 MCM. Due to increase in population in 2020 water requirement is 586.71MCM.

4.7 Water Budget

District	Existing water availability		Total (MCM)	Water Demand (MCM)		Water Gap (MCM)	
	Surface Water	Ground Water		Present	Projected (2020)	Present	Projected (2020)
Chirang		30.9		586.34	587.71		

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

The strategic action plan presents the estimated area planned to be brought under irrigation and the financial outlays required for completion of the proposed projects for the period 2016-17 to 2019-20.

5.1 Block/ Sub-District Wise Area Covered:

Through the PMKSY project, nearly 3,32,830 hectares of land is planned to be covered during the period 2016-17 to 2019-20 out of which 2,46,581 hectares (74%) of area will be covered in Sidli-Chirang Development block while 86,248.8(26%) hectares is to be covered in Borobazar block.

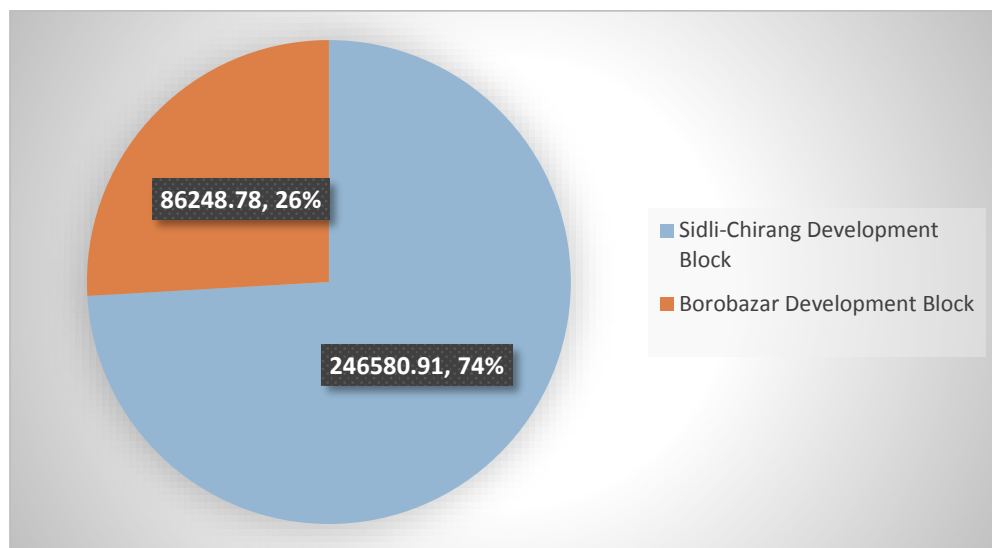


Figure 5.1: Block-wise plan under PMKSY in Chirang District

5.2 Block-Wise planned outlay under PMKSY

Out of the total plan of 110404.229 lakhs, 82% is pertaining to Sidli-Chirang Development Block while Borobazar has a share of 18% with 19751.7003 lakhs. The major chunk of the funds are planned for the AIBP which is totally in the Sidli-Chirang Development block.

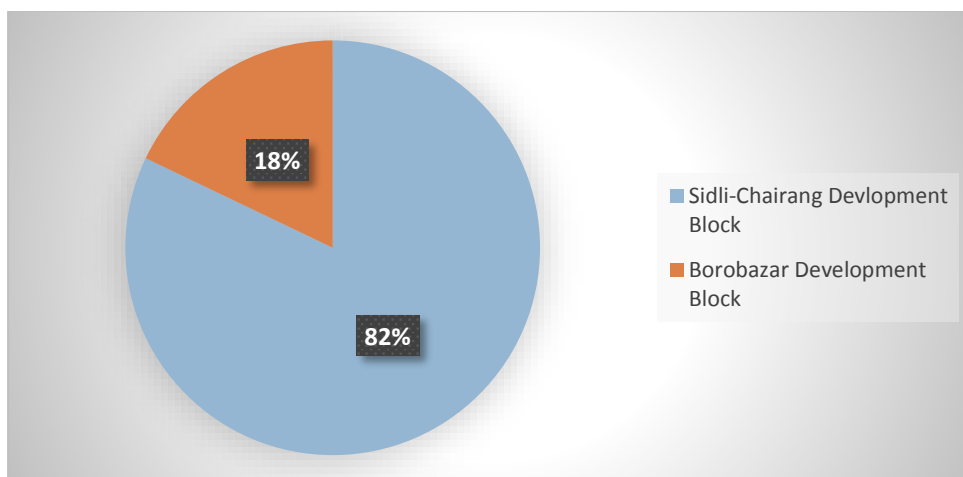


Figure 5.2: Block-wise share under PMKSY

5.3 Component wise Area Covered:

Among the four PMKSY components Per Drop More Crop is the major program in Chirang district covering a planned area of 2,57,151 hectares (or 77%), followed by watershed, AIBP and Har Khet Ko Pani roughly around 8%, 7% and 8% respectively. AIBP being huge projects it is expected that they will involve coverage of area under irrigation heavy expenditure.

Component	Area(Ha)
AIBP	23597.15
HKKP	26110.27
PDMC	257151
Watershed	25971.27

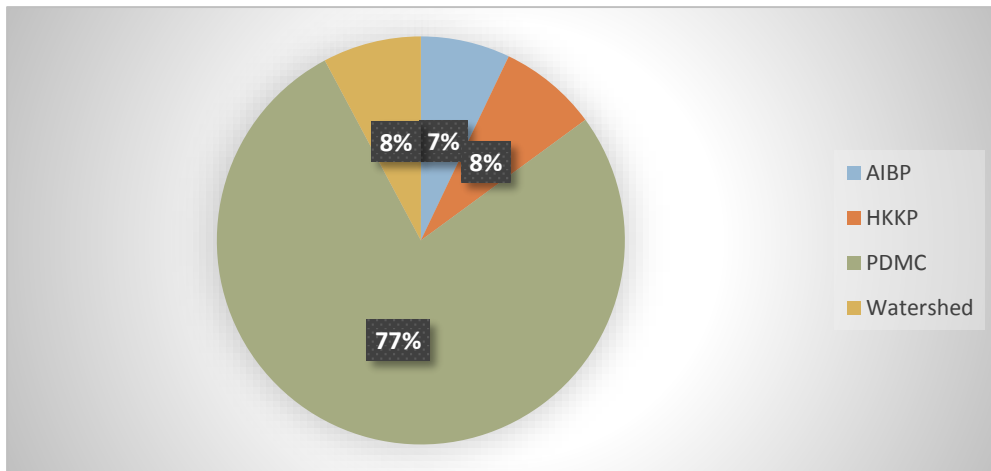


Figure 5.3: Component wise area covered

5.4 Component wise planned outlay

Out of the total planned outlay of 110404.229 lakhs in Chirang district, the following is the share of each component:

Table 5.1: Component-wise planned outlay

Component	Share(in lakhs)
AIBP	58656.73
HKKP	13100.7
PDMC	25715.1
Watershed	12931.7

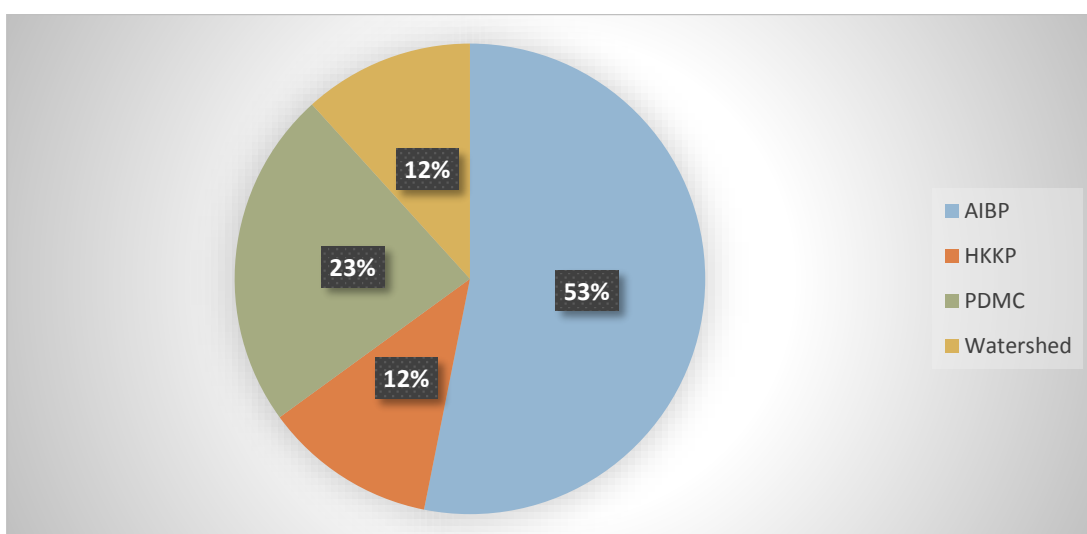


Figure 5.4: Component-wise share in planned outlay

5.5 Department-wise planned outlay

Table 5.2: Department-wise planned outlay

Department	Outlay (Rs. in lakhs)
Irrigation	71757.43
Agriculture	25715.1
Soil Conservation	12931.69871

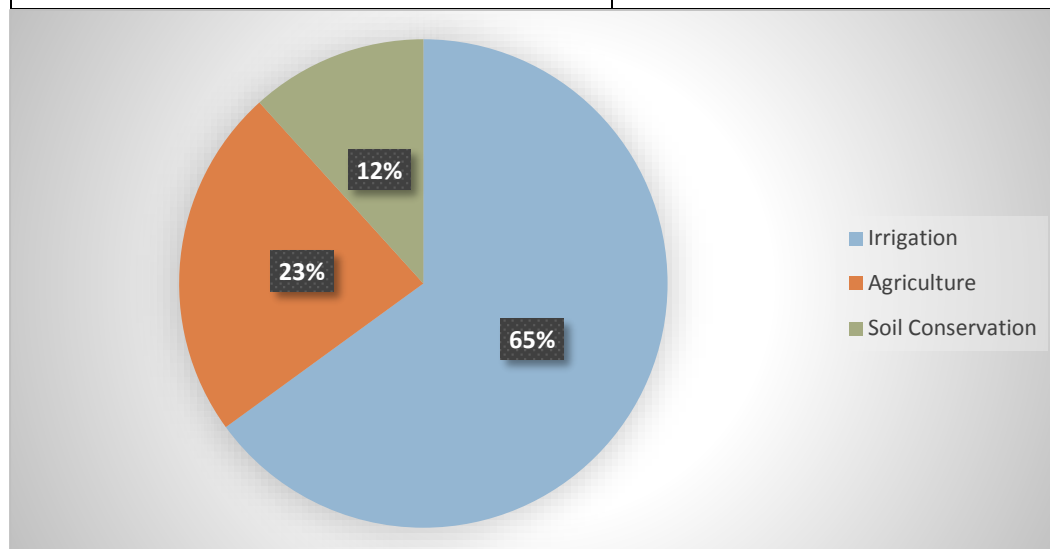


Figure 5.5: Department-wise share in planned outlay

The major costs incurred by Department of Irrigation is due to AIBP being planned for in the Sidli-Chirang Development block that has a command area of 23597.15 ha and estimated costs of 58656.7 lakhs. Agriculture Department has a planned outlay of 25715.1 or 23% of total outlay for Chirang.

5.6 Block-wise Plan

5.6.1 Sidli-Chirang Development Block

5.6.1.1 Component wise plan

As discussed above about various components of PMKSY, the plan is prepared accordingly. AIBP component covers 23597.2 hectares or 10% of the total PMKSY proposal of the block. This component will be mainly executed by Irrigation Department. Har Khet ko Pani component covers 22245.27 (9.00%) and will be executed by Agriculture and Irrigation Departments. Per Drop More Crop component covers 188532 hectares or 76% of the total area proposed in the block under PMKSY, which is to be executed mainly by Agriculture and Irrigation departments. Watershed and Convergence with MGNREGS covers 12206.5 hectares

or 5% in the block. All the stakeholders need to have coordination among themselves to have the maximum irrigation efficiency and to avoid duplicity.

Table 5.3: Component-wise area covered in Sidli-Chirang Development block

Component	Area (ha.)
AIBP	23597.15
Har Khet Ko pani	22245.27
Per Drop More Crop	188532
Watershed	12206.49

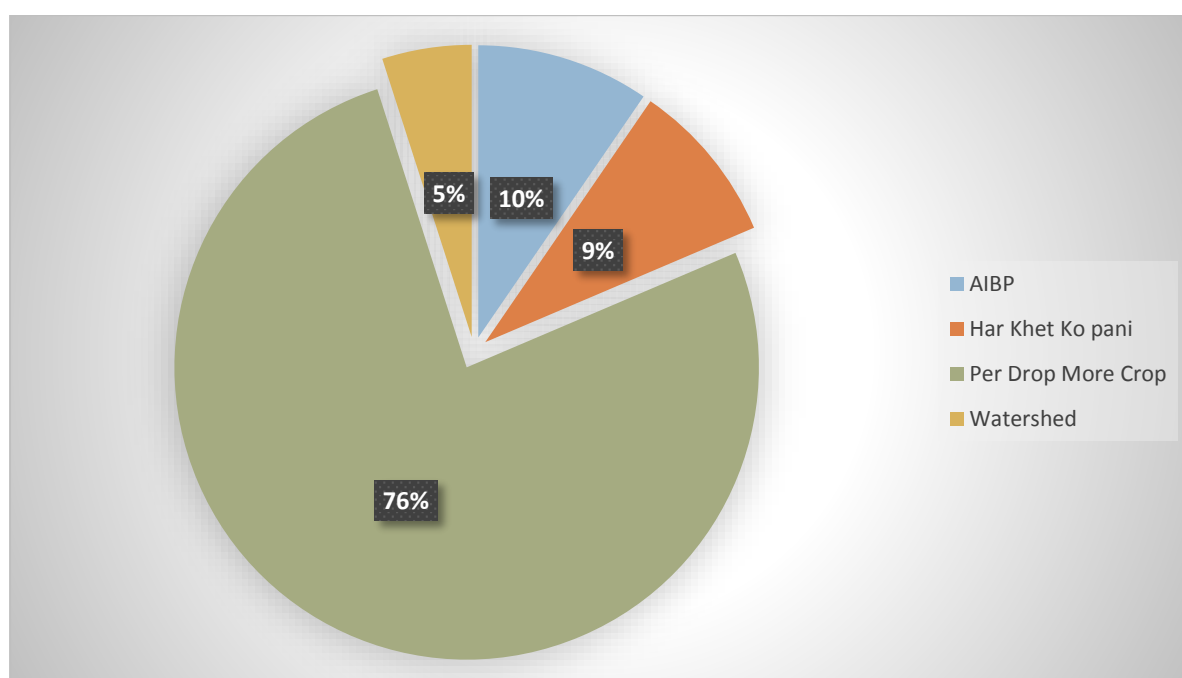


Figure 5.6: Component-wise share in area covered in Sidli-Chirang Development block

5.6.1.2 Component wise planned outlay in the block

AIBP component has a planned outlay of 58656.7 lakhs or 64% of the total PMKSY proposal of the block. This component will be mainly executed by Irrigation Department. Har Khet ko Pani component has planned outlay of Rs.7064.7 lakhs (8%), and will be executed by Agriculture and Irrigation Departments. Per Drop More Crop component has a planned outlay of Rs.18853.2 lakhs or 21% of the total planned outlay in the block under PMKSY, which is to be executed mainly by Agriculture and Irrigation departments. Watershed and Convergence with MGNREGS has a planned outlay of Rs.6077.9 lakhs or 7% in the block. All the stakeholders need to have coordination among themselves to have the maximum irrigation efficiency and to avoid duplicity.

Table 5.4: Component wise planned outlay in Sidli-Chirang

Component	Share (in lakhs)
AIBP	58656.73
Har Khet Ko Pani	7064.7
Per Drop More Crop	18853.2
Watershed	6077.898

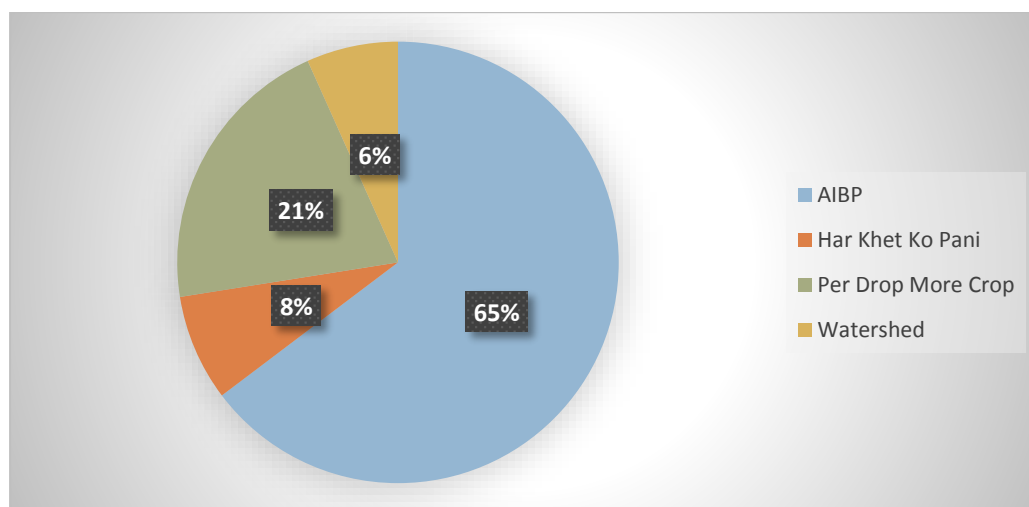


Figure 5.7: Component-wise share in planned outlay of Sidli-Chirang block

5.6.2 Borobazar Block

5.6.2.1 Component wise plan

AIBP component does not cover any area under the PMKSY proposal in the block. Har Khet ko Pani component covers 3865 hectares (4.00%) and will be executed by Agriculture and Irrigation Departments. Per Drop More Crop component covers 68619 hectares or 80% of the total area proposed in Borobazar block under PMKSY, and is to be executed mainly by Agriculture and Irrigation departments. Watershed and Convergence with MGNREGA covers 13764.78 hectares or 16% of the area proposed under PMKSY in the block. This is to be undertaken by both the Irrigation Department and the Soil Conservation Department.

Table 5.5: Component wise area covered in Borobazar block

Component	Share (in hectares)
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AIBP	0
Har Khet Ko Pani	3865
Per Drop More Crop	68619
Watershed	13764.78

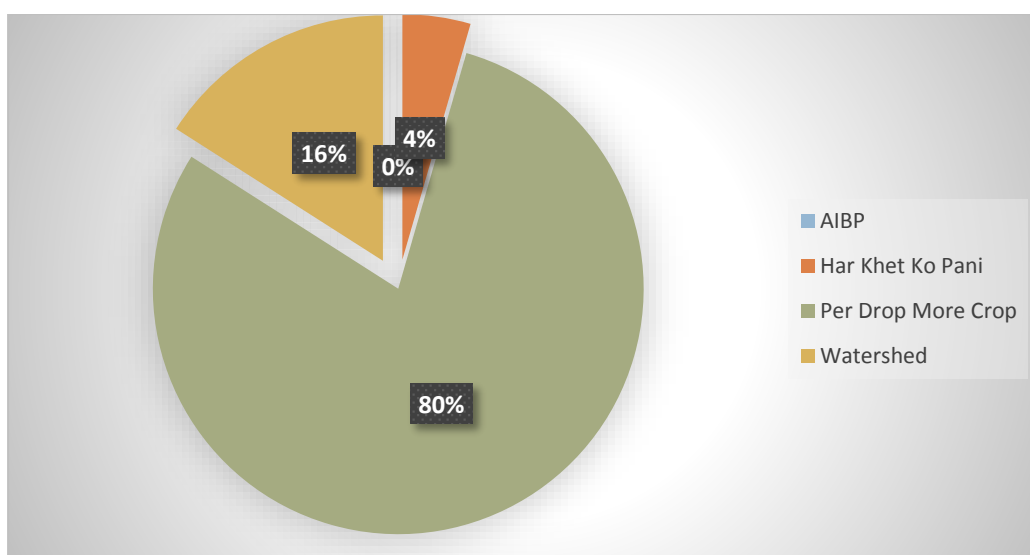


Figure 5.8: Component-wise share in area covered under PMKSY in Borobazar block

5.6.2.2 Component wise planned outlay in the block

AIBP component does not have any planned outlay under PMKSY in the block. Har Khet ko Pani component has planned outlay of Rs.6036 lakhs (35%), and will be executed by Agriculture and Irrigation Departments. Per Drop More Crop component has a planned outlay of Rs.6861.9 lakhs or 35% of the total planned outlay in the block under PMKSY, which is to be executed mainly by Agriculture and Irrigation departments. Watershed and Convergence with MGNREGA has a planned outlay of Rs.6853.8 lakhs or 30% in the block and is to be executed mainly by Soil Conservation Department in the block.

Table 5.6: Component-wise planned outlay for Borobazar block

Component	Share (in lakhs)
AIBP	0
Har Khet Ko Pani	6036
Per Drop More Crop	6861.9
Watershed	6853.8

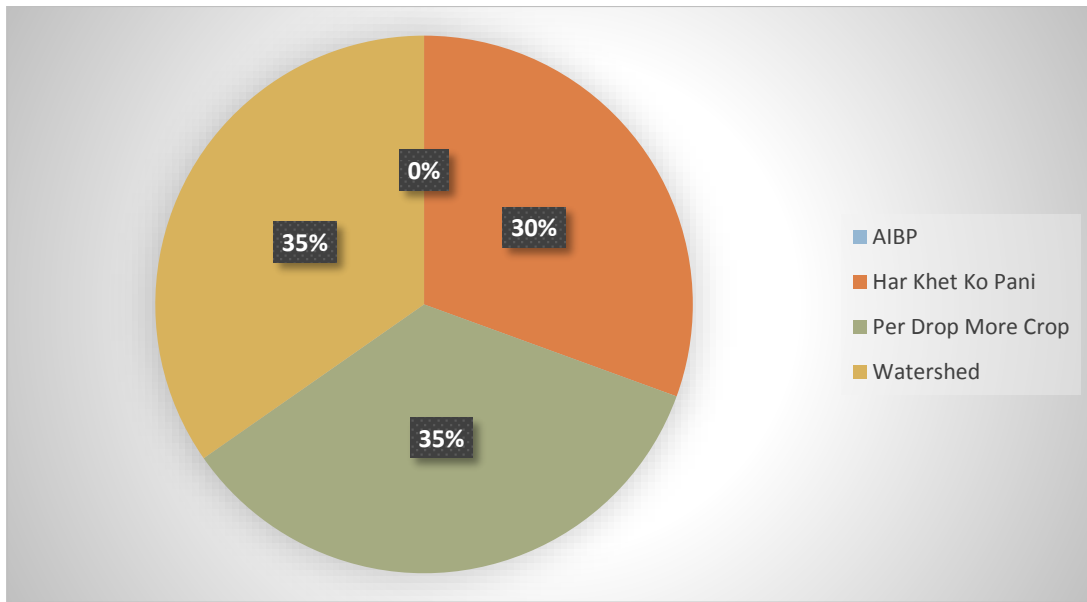


Figure 5.9: Component-wise share in planned outlay for Borobazar block

Annexure I

Strategic Action Plan for Irrigation in District under PMSKY									
S. No.	Name of the blocks/ Sub district	Concerned Ministry/ Department	Component	Activity	Total Number/Capacity (cum)	Command Area/ Irrigation Potential (Ha.)	Period of Implementation	Estimated Cost (in Rs.)	
1	Sidli-Chirang Development Block	MoWR	AIBP	Major Irrigation	2	5680.15		27182.33	
2		MoWR		Medium Irrigation					
3		MoWR		Surface Minor Irrigation	1	17917	5	31474.4	
4		MoWR	HAR Khet Ko Pani	Lift Irrigation					
5		MoWR		Ground Water development	32	7389	5	397.15	
6		MoWR		RRR of Water Bodies	15	5948.12	5	4771.66	
7		MoWR		Construction of field channels					
7.1		MoWR		Lined Field Channels	560	8908.15	5	628.5	
7.2		MoWR		Unlined Field Channels	260		5	838.34	
8		MoWR		Micro-Irrigation	10		2	429.05	
9		MOA & FW-DAC & FW		Per drop more crop (Micro Irrigation)	DPAP Drip				
10		MOA & FW-DAC & FW	DPAP Sprinkler						
11		MOA & FW-DAC & FW	Non- DPAP Drip						
12	MOA & FW-DAC & FW	Non- DPAP Sprinkler							
13	MOA & FW-DAC & FW	Per drop more crop	Topping up of MGNREGA						

			(Supplementa r y water management activities)					
14		MOA & FW-DAC & FW		Drought Proofing through check Dams/Water Harvesting Structures	856	142083	7	14208.3
15		MOA & FW-DAC & FW		Secondary Storage Structure	282	46249	7	4624.9
16		MOA & FW-DAC & FW		On Farm Developmen t (distribution pipe / raised bed and furrow system etc.)	1	200	5	20
17	Sidli	DoLR- MoRD	PMKSY Watershed	Newly created WHS				
17. 1		DoLR- MoRD		Farm Ponds	263385.71	2633.86	7	962.7701
17. 2		DoLR- MoRD		Check Dams	43614.36	436.14	7	1964.906 9
17. 3		DoLR- MoRD		Nallah Bunds	64478.13	644.78	7	1020.9
17. 4		DoLR- MoRD		Percolation Tank	35146.13	351.46	7	165.1815
17. 5		DoLR- MoRD		Other Ground Water Recharge structure	88719.93	887.2	7	827.2644 1
17. 6		DoLR- MoRD		Fishery Ponds/cattle Ponds	611993.58	6119.94	7	349.9507 2
18		DoLR- MoRD		Renovated WHS				
18. 1		DoLR- MoRD		Farm Ponds	567.26	5.67	7	200.9841 6
18. 2		DoLR- MoRD		Check Dams	593.08	5.93	7	78.26613

18.3		DoLR-MoRD		Nallah Bunds	110554.48	2736.54	7	2986.995
18.4		DoLR-MoRD		Percolation Tank				
18.5		DoLR-MoRD		Other Ground Water Recharge structure	1587.19	15.87	7	27.56942
18.6		DoLR-MoRD		Fishery Ponds/cattle Ponds	10.34	0.1	7	78.02
19		DoRD-MoRD	Convergence with MGNREGA	Newly Created				
19.1		DoRD-MoRD		Water Conservation				
19.2		DoRD-MoRD		Water Harvesting				
19.3		DoRD-MoRD		Creation of Irrigation canals & Drains				
19.4		DoRD-MoRD		Providing Infrastructure for Irrigation				
19.5		DoRD-MoRD		Land Development				
20		DoRD-MoRD		Renovation				
20.1		DoRD-MoRD		Renovation of water bodies including desilting:				
20.2		DoRD-MoRD		Renovation & Maintenance of Irrigation Canals & Drains				
21		State Planned Scheme of Irrigation						
21.1		State Irrigation Department	Name of the scheme	Major Irrigation				
21.2		State Irrigation Department	Name of the scheme	Medium Irrigation				
21.3		State Irrigation Department	Name of the scheme	Surface Minor Irrigation				
22		Irrigation Scheme of State	Name of the scheme					

		Agricultur e Departmen t						
23		Irrigation Scheme of State Agricultur e Departmen t	Name of the scheme					
24		Externally aided projects	Name of the scheme					
25		other loan projects like NABARD	Name of the scheme					

Name of the blocks/ Sub district	Concerned Ministry/ Department	Component	Activity	Total Number/Capacity (cum)	Command Area/ Irrigation Potential (Ha.)	Peroid of Implementation	Estimated Cost (in Rs.)
Borobazar Development Block	MoWR	AIBP	Major				
			Irrigation				
	MoWR		Medium				
			Irrigation				
	MoWR		Surface Minor Irrigation				
	MoWR		Lift Irrigation				
	MoWR		Surface & Ground Water Develpoment	9	3865	5	6036
	MoWR	HAR Khet Ko Pani	RRR of Water Bodies				
	MoWR		Construction of field channels				
	MoWR		Lined Field Channels				
MoWR	Unlined Field Channels						
MoWR	Micro- Irrigation						
	MOA & FW-DAC & FW		DPAP Drip				
	MOA & FW-DAC & FW	Per drop more crop (Micro Irrigation)	DPAP Sprinkler				

	MOA & FW-DAC & FW		Non- DPAP Drip				
	MOA & FW-DAC & FW		Non- DPAP Sprinkler				
	MOA & FW-DAC & FW		Topping up of				
		Per drop more crop	MGNREGA				
		(Supplementary water management activities)					
	MOA & FW-DAC & FW		Drought	302	51803	7	5180.3
			Proofing				
			through				
			check				
			Dams/Water				
			Harvesting				
	MOA & FW-DAC & FW		Secondary	92	16816	7	1681.6
			Storage				
		Structure					
MOA & FW-DAC & FW		On Farm Development (distribution pipe / raised bed and furrow system etc.)	0	0	0	0	
Sidli	DoLR-MoRD	PMKSY Watershed	Newly created WHS				
	DoLR-MoRD		Farm Ponds	297009.42	2970.09	7	1085.6769
	DoLR-MoRD		Check Dams	49182.15	491.82	7	2215.7461
	DoLR-MoRD		Nallah Bunds	72709.39	727.09	7	1151.2277
	DoLR-MoRD		Percolation Tank	39632.87	396.33	7	186.2685
	DoLR-MoRD		Other Ground Water Recharge structure	100045.88	1000.46	7	932.87263

	DoLR-MoRD		Fishery Ponds/cattle Ponds	690120.42	6901.2	7	394.62528
	DoLR-MoRD		Renovated WHS				
	DoLR-MoRD		Farm Ponds	639.67	6.4	7	226.64171
	DoLR-MoRD		Check Dams	668.8	6.69	7	88.25756
	DoLR-MoRD		Nallah Bunds	124667.82	3046.68	7	4053.415
	DoLR-MoRD		Percolation Tank				
	DoLR-MoRD		Other Ground Water Recharge structure	1789.91	17.9	7	31.08893
	DoLR-MoRD		Fishery Ponds/cattle Ponds	11.66	0.12	7	87.98
	DoRD-MoRD		Newly Created				
	DoRD-MoRD		Water Conservation				
	DoRD-MoRD		Water Harvesting				
	DoRD-MoRD		Creation of Irrigation canals & Drains				
	DoRD-MoRD		Providing Infrastructure for Irrigation				
	DoRD-MoRD	Convergence with MGNREGA	Land Development				
	DoRD-MoRD		Renovation				
	DoRD-MoRD		Renovation of water bodies including desilting:				
	DoRD-MoRD		Renovation & Maintenance of Irrigation Canals & Drains				
	State Planned Scheme of Irrigation						
	State Irrigation Department	Name of the scheme	Major				
			Irrigation				
			Medium				

	State Irrigation Department	Name of the scheme	Irrigation				
	State Irrigation Department	Name of the scheme	Surface Minor Irrigation				
	Irrigation Scheme of State	Name of the scheme					
	Agriculture						
	Department						
	Irrigation Scheme of State	Name of the scheme					
	Agriculture						
	Department						
	Externally aided projects	Name of the scheme					
	other loan projects like NABARD	Name of the scheme					

Activities for PMKSY under Soil Conservation Department

Sidli Development Block

17	Sidli	DoLR-MoRD	PMKSY Watershed	Newly created WHS				
17.1		DoLR-MoRD		Farm Ponds	263385.71	2633.86	7	96277010
17.2		DoLR-MoRD		Check Dams	43614.36	436.14	7	196490693
17.3		DoLR-MoRD		Nallah Bunds	64478.13	644.78	7	102090002
17.4		DoLR-MoRD		Percolation Tank	35146.13	351.46	7	16518150
17.5		DoLR-MoRD		Other Ground Water Recharge structure	88719.93	887.2	7	82726441
17.6		DoLR-MoRD		Fishery Ponds/cattle Ponds	611993.58	6119.94	7	34995072
18		DoLR-MoRD		Renovated WHS				
18.1		DoLR-MoRD		Farm Ponds	567.26	5.67	7	20098416
18.2		DoLR-MoRD		Check Dams	593.08	5.93	7	7826613
18.3		DoLR-MoRD		Nallah Bunds	110554.48	1105.54	7	40208500
18.4		DoLR-MoRD		Percolation Tank				

18.5		DoLR-MoRD		Other Ground Water Recharge structure	1587.19	15.87	7	2756942
18.6		DoLR-MoRD		Fishery Ponds/cattle Ponds	10.34	0.1	7	7802000
19		DoRD-MoRD	Convergence with MGNREGA	Newly Created				
19.1		DoRD-MoRD		Water Conservation				
19.2		DoRD-MoRD		Water Harvesting				
19.3		DoRD-MoRD		Creation of Irrigation canals & Drains				
19.4		DoRD-MoRD		Providing Infrastructure for Irrigation				
19.5		DoRD-MoRD		Land Development				
20		DoRD-MoRD		Renovation				
20.1		DoRD-MoRD		Renovation of water bodies including desilting:				
20.2		DoRD-MoRD		Renovation & Maintenance of Irrigation Canals & Drains				

Borobazar Block

17	Borobazar	DoLR-MoRD	PMKSY Watershed	Newly created WHS				
17.1		DoLR-MoRD		Farm Ponds	297009.42	2970.09	7	108567692
17.2		DoLR-MoRD		Check Dams	49182.15	491.82	7	221574611
17.3		DoLR-MoRD		Nallah Bunds	72709.39	727.09	7	115122768
17.4		DoLR-MoRD		Percolation Tank	39632.87	396.33	7	18626850
17.5		DoLR-MoRD		Other Ground Water Recharge structure	100045.88	1000.46	7	93287263

17.6		DoLR-MoRD		Fishery Ponds/cattle Ponds	690120.42	6901.2	7	39462528
18		DoLR-MoRD		Renovated WHS				
18.1		DoLR-MoRD		Farm Ponds	639.67	6.4	7	22664171
18.2		DoLR-MoRD		Check Dams	668.8	6.69	7	8825756
18.3		DoLR-MoRD		Nallah Bunds	124667.82	1246.68	7	45341500
18.4		DoLR-MoRD		Percolation Tank				
18.5		DoLR-MoRD		Other Ground Water Recharge structure	1789.91	17.9	7	3108893
18.6		DoLR-MoRD		Fishery Ponds/cattle Ponds	11.66	0.12	7	8798000
19		DoRD-MoRD		Newly Created				
19.1		DoRD-MoRD		Water Conservation				
19.2		DoRD-MoRD		Water Harvesting				
19.3		DoRD-MoRD		Creation of Irrigation canals & Drains				
19.4		DoRD-MoRD		Providing Infrastructure for Irrigation				
19.5		DoRD-MoRD	Convergence with MGNREGA	Land Development				
20		DoRD-MoRD		Renovation				
20.1		DoRD-MoRD		Renovation of water bodies including desilting:				
20.2		DoRD-MoRD		Renovation & Maintenance of Irrigation Canals & Drains				

Strategic Action Plan for Irrigation in District under PMKSY :								
Sl. No	Name of the Blocks/Sub Districts	Concerned Ministry/Department	Component	Activity	Total Number/ Capacity (Cum)	Command Area/Irrigation Potential (Ha)	Period of Impementation (5 / 7 years)	Estimated Cost (in Lacs)
1	Sidli Chirang Development Block	MoWR	AIBP	Major Irrigation				
2		MoWR		Medium Irrigation				
3		MoWR		Surface Minor Irrigation	65 (List enclosed)	17893.00	5	30453.38
4		MoWR	Har khet ko pani	Lift Irrigation				
5		MoWR		Ground water Development	4 (List enclosed)	169.00	5	397.15
6		MoWR		RRR of Water Bodies	1 (List enclosed)	110	5	260.00
7		MoWR		Construction of Field Channels				
7.1		MoWR		Lined Field Channels	180	1512	5	7240.00
7.2		MoWR		Unlined Field Channels	260	1716	5	3120.00
8		MoWR		Micro Irrigation				
9		Sidli Chirang Development Block		MOA & FWDAC & FW	Per drop more crop (Micro Irrigation)	DPAP Drip		
10			MOA & FWDAC & FW	DPAP Sprinkler				
11			MOA & FWDAC & FW	Non - DPAP Drip				
12	MOA & FWDAC & FW		Non - DPAP Sprinkler					
13	MOA & FWDAC & FW		Per drop more crop (Supplementary water)	Topping up of MGNREG A				

14	Sidli Chirang Development Block	MOA & FWDAC & FW	management activities)	Drought Proofing through check Dams/Water Harvesting Structures				
15		MOA & FWDAC & FW		Secondary Storage Structures				
16		MOA & FWDAC & FW		On Farm Development (distribution pipe / raised bed and furrow system etc.)				
17		DoLR-MoRD	PMKSY Watershed	Newly created WHS				
17.1		DoLR-MoRD		Farm Ponds				
17.2		DoLR-MoRD		Check Dams				
17.3		DoLR-MoRD		Nallah Bunds				
17.4		DoLR-MoRD		Percolation Tanks				
17.5		DoLR-MoRD		Other Ground Water Recharge Structure				
17.6		DoLR-MoRD		Fishery ponds/cattle pond				
18		DoLR-MoRD		Renovated WHS				
18.1		DoLR-MoRD		Farm Ponds				
18.2		DoLR-MoRD		Check Dams				
18.3		DoLR-MoRD		Nallah Bunds				
18.4		DoLR-MoRD		Percolation Tanks				
18.5	DoLR-MoRD	Other Ground Water Recharge Structure						

18.6	Sidli Chirang Development Block	DoLR-MoRD		Fishery ponds/cattle pond					
19		DoLR-MoRD	Convergence with MGNREGA	Newly created					
19.1		DoLR-MoRD		Water Conservation:					
19.2		DoLR-MoRD		Water Harvesting :					
19.3		DoLR-MoRD		Creation of Irrigation canals and Drains					
19.4		DoLR-MoRD		Providing Infrastructure for Irrigation					
19.5		DoLR-MoRD		Land Development :					
20		DoLR-MoRD		Renovation					
20.1		DoLR-MoRD		Renovation of Water bodies including desilting					
20.2		DoLR-MoRD		Renovation & Maintenance of Irrigation Canals & Drains :					
21		Sidli Chirang Development Block		State Planned Scheme of Irrigation					
21.1	State Irrigation Department			Name of the Scheme	Major Irrigation				
21.2	State Irrigation Department		Name of the Scheme	Medium Irrigation					
21.3	State Irrigation Department		Name of the Scheme	Surface Minor Irrigation					
22	Irrigation Scheme of State Agriculture Department		Name of the Scheme						

23		Irrigation Scheme of other line Department	Name of the Scheme					
24		Externally aided projects	Name of the Scheme					
25		Other loan projects like NABARD	Name of the Scheme					

5 Strategic Action Plan for Irrigation in District under PMKSY :								
Sl. No.	Name of the Blocks/Sub Districts	Concerned Ministry/ Department	Component	Activity	Total Number/ Capacity (Cum)	Command Area/Irrigation Potential (Ha)	Period of Impementation (5 / 7 years)	Estimated Cost (Rs in Lacs)
1	Sidli-Chirang Development Block	MoWR	AIBP	Major Irrigation	1 (List enclosed)	5680.15		27182.33
2		MoWR		Medium Irrigation				
3		MoWR		Surface Minor Irrigation	1 (List enclosed)	424	1	1021.00
4		MoWR	Har khet ko pani	Lift Irrigation				
5		MoWR		Surface & Ground water	28 (List enclosed)	7220	5	13975.00
6		MoWR		RRR of Water Bodies	14 (List enclosed)	5838.12	5	4511.66
7		MoWR		Construction of Field Channels				
7.1		MoWR	Lined Field Channels	380	5680.15	2	628.50	

7.2		MoWR		Unlined Field Channels & others			2	838.34
8		MoWR		Micro Irrigation	10		2	429.05
9		MOA & FWDAC & FW	Per drop more crop (Micro Irrigation)	DPAP Drip				
10		MOA & FWDAC & FW		DPAP Sprinkler				
11		MOA & FWDAC & FW		Non - DPAP Drip				
12		MOA & FWDAC & FW		Non - DPAP Sprinkler				
13		MOA & FWDAC & FW	Per drop more crop (Supplementary water management activities)	Topping up of MGNREGA				
14		MOA & FWDAC & FW		Drought Proofing through check Dams/Water Harvesting Structures				
15		MOA & FWDAC & FW		Secondary Storage Structures				
16	Sidli-Chirang Development Block	MOA & FWDAC & FW	Per drop more crop (Supplementary water management activities)	On Farm Development (distribution pipe / raised bed and furrow system etc.)				
17		DoLR-MoRD		Newly created WHS				

17.1	DoLR-MoRD	PMKSY Watershed	Farm Ponds				
17.2	DoLR-MoRD		Check Dams				
17.3	DoLR-MoRD		Nallah Bunds				
17.4	DoLR-MoRD		Percolation Tanks				
17.5	DoLR-MoRD		Other Ground Water Recharge Structure				
17.6	DoLR-MoRD		Fishery ponds/cattle pond				
18	DoLR-MoRD		Renovated WHS				
18.1	DoLR-MoRD		Farm Ponds				
18.2	DoLR-MoRD		Check Dams				
18.3	DoLR-MoRD		Nallah Bunds	4 (List enclosed)	240	5	343.62
18.4	DoLR-MoRD	Percolation Tanks					
18.5	DoLR-MoRD	Other Ground Water Recharge Structure					
18.6	DoLR-MoRD	Fishery ponds/cattle pond					
19	DoLR-MoRD	Convergence with MGNREG A	Newly created				
19.1	DoLR-MoRD		Water Conservation:				
19.2	DoLR-MoRD		Water Harvesting:				
19.3	DoLR-MoRD		Creation of Irrigation				

				n canals and Drains				
19.4		DoLR-MoRD		Providing Infrastructure for Irrigation				
19.5		DoLR-MoRD		Land Development :				
20		DoLR-MoRD		Renovation				
20.1	Sidli-Chirang Development Block	DoLR-MoRD	Convergence with MGNREG A	Renovation of Water bodies including desilting				
20.2		DoLR-MoRD		Renovation & Maintenance of Irrigation Canals & Drains :				
21		State Planned Scheme of Irrigation						
21.1		State Irrigation Department	Name of the Scheme	Major Irrigation				
21.2		State Irrigation Department	Name of the Scheme	Medium Irrigation				
21.3		State Irrigation Department	Name of the Scheme	Surface Minor Irrigation				
22		Irrigation Scheme of State Agriculture Department	Name of the Scheme					
23		Irrigation Scheme of other line Department	Name of the Scheme					
24		Externally aided projects	Name of the Scheme					

25	Other loan projects like NABARD	Name of the Scheme						
							48929	
							25082.42	.50

Executive Engineer
 Champamati Canal
 Division
 (Irrigation) ::
 Dhaligaon

List of AIBP in Sidli-Chirang Development Block

Sl. No.	Name of block	Concerned Ministry/ Department	Components	Activities	Command Area/ Irrigation Potential (Ha)	Estimated Cost in Rs.	Period of implementation (5/7 Yrs.)
1	Sidli-Chirang Dev. Block	MoWR	AIBP	Champamati Irrigation Project (Major) at Nagdarbari Latitude= 26°36'N Longitude = 90°22'E	5680.15	30921.75 (project as a whole) = (under this Division amount = 17182.33)	90% work already completed & balance work expected to be completed by March/2017
2	Sidli-Chirang Dev. Block	MoWR	AIBP	ERM of Champamati Irrigation Project (Major) at Nagdarbari Latitude= 26°36'N Longitude = 90°22'E		Rs 10000.00 (Project as a whole =Rs 15000.00)	5 years

5 Strategic Action Plan for Irrigation in District under PMKSY :									
Sl. No.	Name of the Blocks/Sub Districts	Concerned Ministry/ Department	Component	Activity	Total Number/Capacity (Cum)	Command Area/Irrigation Potential (Ha)	Period of Impementation (5 / 7 years)	Estimated Cost (` in Lacs)	
1	Boro Bazar Tribal Development Block	MoWR	AIBP	Major Irrigation					
2		MoWR		Medium Irrigation					
3		MoWR		Surface Minor Irrigation					
4		MoWR	Har khet ko pani	Lift Irrigation					
5		MoWR		Surface & Ground water	9 (List enclosed)	3865	5	6036.00	
6		MoWR		RRR of Water Bodies					
7		MoWR		Construction of Field Channels					
7.1		MoWR		Lined Field Channels					
7.2		MoWR		Unlined Field Channels					
8		MoWR		Micro Irrigation					
9		MOA & FWDAC & FW		Per drop more crop (Micro Irrigation)	DPAP Drip				
10	MOA & FWDAC & FW	DPAP Sprinkler							
11	MOA & FWDAC & FW	Non - DPAP Drip							

12		MOA & FWDAC & FW		Non - DPAP Sprinkler					
13		MOA & FWDAC & FW	Per drop more crop (Supplementary water management activities)	Topping up of MGNREGA					
14		MOA & FWDAC & FW		Drought Proofing through check Dams/Water Harvesting Structures					
15	Boro Bazar Tribal Development Block	MOA & FWDAC & FW	Per drop more crop (Supplementary water management activities)	Secondary Storage Structures					
16		MOA & FWDAC & FW		On Farm Development (distribution pipe / raised bed and furrow system etc.)					
17		DoLR-MoRD	PMKSY Watershed	Newly created WHS					
17.1		DoLR-MoRD		Farm Ponds					
17.2		DoLR-MoRD		Check Dams					
17.3		DoLR-MoRD		Nallah Bunds					
17.4		DoLR-MoRD		Percolation Tanks					
17.5		DoLR-MoRD		Other Ground Water Recharge Structure					
17.6	DoLR-MoRD	Fishery ponds/cattle pond							

18		DoLR-MoRD		Renovated WHS				
18.1		DoLR-MoRD		Farm Ponds				
18.2		DoLR-MoRD		Check Dams				
18.3		DoLR-MoRD		Nallah Bunds				
18.4		DoLR-MoRD		Percolation Tanks				
18.5		DoLR-MoRD		Other Ground Water Recharge Structure				
18.6		DoLR-MoRD		Fishery ponds/cattle pond				
19		DoLR-MoRD		Newly created				
19.1		DoLR-MoRD		Water Conservation:				
19.2		DoLR-MoRD		Water Harvesting:				
19.3		DoLR-MoRD	Convergence with MGNREGA	Creation of Irrigation canals and Drains				
19.4		DoLR-MoRD		Providing Infrastructure for Irrigation				
19.5	Boro Bazar Tribal Development Block	DoLR-MoRD		Land Development :				
20		DoLR-MoRD	Convergence with MGNREGA	Renovation				
20.1		DoLR-MoRD		Renovation of Water bodies including desilting				

20.2	DoLR-MoRD		Renovation & Maintenance of Irrigation Canals & Drains :				
21	State Planned Scheme of Irrigation						
21.1	State Irrigation Department	Name of the Scheme	Major Irrigation				
21.2	State Irrigation Department	Name of the Scheme	Medium Irrigation				
21.3	State Irrigation Department	Name of the Scheme	Surface Minor Irrigation				
22	Irrigation Scheme of State Agriculture Department	Name of the Scheme					
23	Irrigation Scheme of other line Department	Name of the Scheme					
24	Externally aided projects	Name of the Scheme					
25	Other loan projects like NABARD	Name of the Scheme					
				3865	6036.00		

Executive Engineer
Champamati Canal Division
(Irrigation) :: Dhaligaon

PMKSY Works under RRR

sl. No.	name of Block	Name of Scheme	Command Area/Irrigation Potential (Ha)	Estimated Cost (Rs. In Lakh)
1	Sidli chirang	Repair, Renovation and Restoration of Gorabandah water bodies at village Lakhijhar.	110	260.00
		TOTAL	110	260.00

sl. No.	Name of Block	Name of Scheme	Command Area/Irrigation Potential (Ha)	Estimated Cost (Rs. In Lakh)
1	Sidli Chirang Dev Block	Patabari Betini Hazari FIS		
2		Bibari FIS		
3		Afga FIS		
4		Dayud FIS		
5		Sajharang FIS		
6		Samodwisa FIS		
7		Hatimora FIS		
8		Banchomguri FIS		
9		Kanthalmari FIS		
10		Raidwng Dwisa Bund FIS		
11		Pashmukhi FIS		
12		Thaisobund FIS		
13		Bhurpar FIS		
14		Moradong FIS		
15		Rajkhungri FIS		
16		Bashbari FIS		

17	Nizla spillway		
18	Oxiguri FIS		
19	Mod. Of Birinchiguri FIS		
20	Suresh Bund FIS (Ph-I)		
21	Gilwbwr FIS (Ph-I)		
22	Thakajhora FIS (Ph-I)		
23	Union FIS (Ph-I)		
24	Kumbund FIS (Ph-I)		
25	Nareng Dwisā FIS (Ph-I)		
26	Kalibahadur FIS (Ph-I)		
27	Sampati FIS (Ph-I)		
28	Rangijhora FIS (Ph-I)		
29	Sisubari FIS (Ph-I)		
30	Maoper FIS (Ph-I)		
31	Aminpara Demdema FIS (Ph-I)		
32	Tinmukhi FIS (Ph-I)		
33	Dakhingaon Dablee FIS (Ph-I)		
34	Polashguri FIS (Ph-I)		
35	Fulkumari FIS (Ph-I)		
36	Bhutuni FIS (Ph-I)		
37	Danswrang FIS (Ph-I)		
38	Rajamodati FIS (Ph-I)		
39	Mawti FIS (Ph-I)		
40	Sisudangi FIS		
41	Baluram FIS		
42	Rajkhungri FIS		
43	Kalimandir FIS		
44	Duttapur FIS (Ph-I)		
45	Ujani FIS Ph-II		

46	South Simlaguri FIS		
47	Bergaon Laxmi FIS		
48	Maojjihora FIS Ph-I		
49	Boradong FIS		
50	Mega Bund FIS		
51	Guwar Bund FIS		
52	Dighol Dong FIS		
53	Kangkri FIS		
54	Kolaijhora FIS		
55	Garliabari FIS		
56	Molandubi Bangaldoba FIS (Ph-II)		

Sl. No.	Name of Block	Name of Scheme	Command Area/Irrigation Potential (Ha)			Estimated Cost (Rs. In Lakh)	Remarks
			Targetted Potential	Potential Utilized	Potential yet to be utilised		
1	Sidli Chirang Dev Block	Patabari Betini Hazari FIS	1460.00	0.00	1460.00	4715.80	New Proposal
2		Bibari FIS	46.00	0.00	46.00	148.58	New Proposal
3		Afga FIS	44.00	0.00	44.00	142.12	New Proposal
4		Dayud FIS	80.00	0.00	80.00	258.40	New Proposal
5		Sajharang FIS	500.00	0.00	500.00	1615.00	New Proposal
6		Samodwisa FIS	150.00	0.00	150.00	484.50	New Proposal
7		Hatimora FIS	178.00	0.00	178.00	574.94	New Proposal
8		Banchomguri FIS	190.00	0.00	190.00	613.70	New Proposal
9		Kanthalmari FIS	202.00	0.00	202.00	652.46	New Proposal

10	Raidwng Dwisa Bund FIS	199.00	0.00	199.00	642.77	New Proposal
11	Pashmukhi FIS	60.00	0.00	60.00	193.80	New Proposal
12	Thaisobund FIS	156.00	0.00	156.00	503.88	New Proposal
13	Bhurpar FIS	142.00	0.00	142.00	458.66	New Proposal
14	Moradong FIS	176.00	0.00	176.00	568.48	New Proposal
15	Rajkhungri FIS	146.00	0.00	146.00	471.58	New Proposal
16	Bashbari FIS	148.00	0.00	148.00	478.04	New Proposal
17	Nizla spillway	1220.00	0.00	1220.00	3940.60	New Proposal
18	Oxiguri FIS	136.00	0.00	136.00	439.28	New Proposal
19	Mod. Of Birinchiguri FIS	220.00	0.00	220.00	710.60	New Proposal
20	Suresh Bund FIS (Ph-I)	700.00	400.00	300.00	969.00	Impvt. Of Canal system
21	Gilwbwr FIS (Ph-I)	480.00	280.00	200.00	646.00	Impvt. Of Canal system
22	Thakajhora FIS (Ph-I)	1325.00	600.00	725.00	2341.75	Impvt. Of Canal system
23	Union FIS (Ph-I)	850.00	500.00	350.00	1130.50	Impvt. Of Canal system
24	Kumbund FIS (Ph-I)	300.00	200.00	100.00	323.00	Impvt. Of Canal system
25	Nareng Dwisa FIS (Ph-I)	200.00	120.00	80.00	258.40	Impvt. Of Canal system
26	Kalibahadur FIS (Ph-I)	200.00	120.00	80.00	258.40	Impvt. Of Canal system
27	Sampati FIS (Ph-I)	200.00	110.00	90.00	290.70	Impvt. Of Canal system
28	Rangijhora FIS (Ph-I)	280.00	200.00	80.00	258.40	Impvt. Of Canal system
29	Sisubari FIS (Ph-I)	380.00	240.00	140.00	452.20	Impvt. Of Canal system

30	Maoper FIS (Ph-I)	340.00	210.00	130.00	419.90	Impvt. Of Canal system
31	Aminpara Demdema FIS (Ph-I)	180.00	80.00	100.00	323.00	Impvt. Of Canal system
32	Tinmukhi FIS (Ph-I)	150.00	90.00	60.00	193.80	Impvt. Of Canal system
33	Dakhingaon Dablee FIS (Ph-I)	540.00	350.00	190.00	613.70	Impvt. Of Canal system
34	Polashguri FIS (Ph-I)	175.00	115.00	60.00	193.80	Impvt. Of Canal system
35	Fulkumari FIS (Ph-I)	200.00	140.00	60.00	193.80	Impvt. Of Canal system
36	Bhutuni FIS (Ph-I)	400.00	220.00	180.00	581.40	Impvt. Of Canal system
37	Danswring FIS (Ph-I)	60.00	36.00	24.00	77.52	Impvt. Of Canal system
38	Rajamodati FIS (Ph-I)	100.00	60.00	40.00	129.20	Impvt. Of Canal system
39	Mawti FIS (Ph-I)	275.00	140.00	135.00	436.05	Impvt. Of Canal system
40	Sisudangi FIS	180.00	0.00	180.00	581.40	New Proposal
41	Baluram FIS	90.00	0.00	90.00	290.70	New Proposal
42	Rajkhungri FIS	76.00	0.00	76.00	245.48	New Proposal
43	Kalimandir FIS	120.00	0.00	120.00	387.60	New Proposal
44	Duttapur FIS (Ph-I)	240.00	140.00	100.00	323.00	Impvt. Of Canal system
45	Ujani FIS Ph-II	180.00	120.00	60.00	193.80	Impvt. Of Canal system
46	South Simlaguri FIS	98.00	0.00	98.00	316.54	New Proposal

47	Bergaon Laxmi FIS	102.00	0.00	102.00	329.46	New Proposal
48	Maojjhora FIS Ph-III	380.00	240.00	140.00	452.20	Impvt. Of Canal system
49	Boradong FIS	204.00	0.00	204.00	658.92	New Proposal
50	Mega Bund FIS	135.00	0.00	135.00	436.05	New Proposal
51	Guwar Bund FIS	76.00	0.00	76.00	245.48	New Proposal
52	Dighol Dong FIS	56.00	0.00	56.00	180.88	New Proposal
53	Kangkri FIS	84.00	0.00	84.00	271.32	New Proposal
54	Kolaijhora FIS	80.00	0.00	80.00	258.40	New Proposal
55	Garliabari FIS	92.00	0.00	92.00	297.16	New Proposal
56	Molandubi Bangaldoba FIS (Ph-II)	220.00	180.00	40.00	129.20	Impvt. Of Canal system
57	Khungring Dholapara	102	0	102.00	329.46	New Proposal
58	Bandari FIS	110	0	110.00	355.30	New Proposal
59	Sakati FIS	240.00	0	240.00	775.20	New Proposal
60	Tilapara FIS	460.00	0	460.00	1485.80	New Proposal
61	Madhyam Kajalgaon FIS	640.00	0	640.00	2067.20	New Proposal
62	Baragarh FIS	320.00	0	320.00	1033.60	New Proposal
63	Choraikhosra FIS	260.00	0	260.00	839.80	New Proposal
64	Maidangsri FIS Ph-I	320.00	140	180.00	581.40	Impvt. Of Canal system
65	Ghorabandha FIS Ph-I	240.00	120	120.00	387.60	Impvt. Of Canal system
	Total =	17893.00			41156.66	

Har Khet Ko Pani

Sidli-Chirang Development Block

Sl. No.	Name of block	Concerned Ministry/ Department	Components	Activities	Command Area/ Irrigation Potential (Ha)	Estimated Cost in Rs.(lakhs)	Period of implementation (5/7 Yrs.)
1	Sidli-Chirang Dev. Block	MoWR	Har khet ko pani	Rowmari F.I.S. Ph-I at Dawkha Nagar Latitude=26°31'05.01" N Longitude=90°34'24.52"E	456	1000.00	5 years
2	Sidli-Chirang Dev. Block	MoWR	Har khet ko pani	Katribari FIS over Morabhur River at Katribari Latitude=26°36'27.75"N Longitude=90°24'48.90"E	440	980.00	5 years
3	Sidli-Chirang Dev. Block	MoWR	Har khet ko pani	Ranipur FIS over Ranipur Dwisa at Ranipur F.V Latitude=26°38'36.45"N Longitude=90°27'13.06"E	115	250.00	5 years

4	Sidli-Chirang Dev. Block	MoWR	Har khet ko pani	Khungring Nareng Nala Bund FIS at Khungring village Latitude=26°43'19.70"N Longitude=90°24'31.05"E	205	450.00	5 years
5	Sidli-Chirang Dev. Block	MoWR	Har khet ko pani	Nizlaguri Kanibhur FIS at Santipur Latitude=26°43'52.87"N Longitude=90°26'58.60"E	250	570.00	5 years
6	Sidli-Chirang Dev. Block	MoWR	Har khet ko pani	Borpathar Mukhiajhora FIS at Barpathar Village Latitude=26°40'17.73"N Longitude=90°31'41.86"E	280	600.00	5 years
7	Sidli-Chirang Dev. Block	MoWR	Har khet ko pani	Dwijeb Raja FIS at Garlabari Village Latitude=26°36'31.05"N Longitude=90°25'46.55"E	105	230.00	5 years

8	Sidli-Chirang Dev. Block	MoWR	Har khet ko pani	Uttar Islakhata FIS over Khungrijhora Dwisa at Uttar Islakhata Latitude=26°35'47.18"N Longitude=90°23'21.48"E	140	300.00	5 years
9	Sidli-Chirang Dev. Block	MoWR	Har khet ko pani	Bhandu Bund FIS at Jaoliabari Village Latitude=26°34'34.20"N Longitude=90°25'20.50"E	85	180.00	5 years
10	Sidli-Chirang Dev. Block	MoWR	Har khet ko pani	Siptijhora FIS at Oxiguri village Latitude=26°38'04.44" N Longitude=90°31'37.80" E	265	685.00	5 years
11	Sidli-Chirang Dev. Block	MoWR	Har khet ko pani	South Dighaldong FIS at South Digaldong Latitude=26°38'11.85" N Longitude=90°31'17.33" E	240	580.00	5 years
12	Sidli-Chirang Dev. Block	MoWR	Har khet ko pani	Pachim Hulmagaon FIS over Kanipur Dwisa at Hulmagaon	705	1510.00	5 years

				Latitude=26°34'47.55" N Longitude=90°28'32.05" E			
13	Sidli-Chirang Dev. Block	MoWR	Har khet ko pani	Gandagageb F.I.S. at Serfanguri Latitude=26°35'05.98" N Longitude=90°27'33.57" E	250	450.00	5 years
14	Sidli-Chirang Dev. Block	MoWR	Har khet ko pani	Ingkrijan F.I.S. at Kharija Dolaigaon Latitude=26°29'54.46" N Longitude=90°34'17.28" E	180	350.00	5 years
15	Sidli-Chirang Dev. Block	MoWR	Har khet ko pani	Laoripara F.I.S. at Laoripara Latitude=26°33'27.08" N Longitude=90°23'05.46" E	350	350.00	5 years
16	Sidli-Chirang Dev. Block	MoWR	Har khet ko pani	Choto Shyamthaibari Dhupguri F.I.S. at Choto Shyamthaibari Latitude=26°32'50.12" N Longitude=90°25'25.69" E	515	410.00	5 years

17	Sidli-Chirang Dev. Block	MoWR	Har khet ko pani	Sishudangi F.I.S. at Gorubhasa Latitude=26°34'28.31" N Longitude=90°22'38.11" E	374	400.00	5 years
18	Sidli-Chirang Dev. Block	MoWR	Har khet ko pani	Jiaguri bundh F.I.S. at Choto Majabari Latitude=26°31'55.92" N Longitude=90°24'06.41" E	250	500.00	5 years
19	Sidli-Chirang Dev. Block	MoWR	Har khet ko pani	Birinchiguri F.I.S. at Daomacha village Latitude=26°43'03.42" N Longitude=90°27'04.40" E	200	350.00	5 years
20	Sidli-Chirang Dev. Block	MoWR	Har khet ko pani	Mauria F.I.S. at Balaguri village Latitude=26°39'50.26" N Longitude=90°26'58.03" E	300	700.00	5 years
21	Sidli-Chirang Dev. Block	MoWR	Har khet ko pani	Kungring Aminpara Bwgri F.I.S. at Kungring Aminpara village Latitude= Longitude=	100	200.00	5 years

22	Sidli-Chirang Dev. Block	MoWR	Har khet ko pani	South Islakhata Alijhora Bund at South Islakhata village Latitude=26°35'21.55"N Longitude=90°24'30.70"E	280	560.00	5 years
23	Sidli-Chirang Dev. Block	MoWR	Har khet ko pani	Simlaguri Kungrihora FIS at Simlaguri village Latitude=26°34'57.72"N Longitude=90°22'30.02"E	300	600.00	5 years
24	Sidli-Chirang Dev. Block	MoWR	Har khet ko pani	1No. Salbari Antai Bund at 1No. Salbari village Latitude=26°42'23.03"N Longitude=90°26'37.05"E	185	390.00	5 years
25	Sidli-Chirang Dev. Block	MoWR	Har khet ko pani	Raidwng Dwisa Bund at Raidwngbari village Latitude=26°42'59.04"N Longitude=90°26'17.66"E	95	210.00	5 years

26	Sidli-Chirang Dev. Block	MoWR	Har khet ko pani	Tharaibari Bhur river Bund at Dakhumgaon village Latitude=26°44'20.80"N Longitude=90°23'29.65"E	295	600.00	5 years
27	Sidli-Chirang Dev. Block	MoWR	Har khet ko pani	East Hatidhura Bund at Hatidhura village Latitude=26°40'59.36"N Longitude=90°22'36.34"E	170	370.00	5 years
28	Sidli-Chirang Dev. Block	MoWR	Har khet ko pani	Dwisagwla FIS at Shyamthaibari village Latitude=26°33'16.83"N Longitude=90°24'52.14"E	90	200.00	5 years
					72	13975.00	
					20		

Sl. No.	Name of block	Concerned Ministry/ Department	Components	Activities	Command Area/ Irrigation Potential (Ha)	Estimated Cost in Rs.	Pe riod of implementation (5/7 Yrs.)
1	Boro Bazar Tribale Dev. Block	MoWR	Har khet ko pani	1 Labdang FIS at Kharijabishpani village Latitude=26°34'27.36" N Longitude=90°46'51.18" E	325	650.00	5 years
2	Boro Bazar Tribale Dev. Block	MoWR	Har khet ko pani	2 Bengtal Dwisa F.I.S. at Borolou gaon Latitude=26°32'58.31" N Longitude=90°42'35.15" E	1025	1500.00	5 years
3	Boro Bazar Traible Dev. Block	MoWR	Har khet ko pani	3 Pura River F.I.S. at Kunthaibari Latitude=26°34'24.64" N Longitude=90°46'20.60" E	750	1250.00	5 years
4	Boro Bazar Tribale Dev. Block	MoWR	Har khet ko pani	4 Lathe F.I.S. at Dimajhora village Latitude=26°37'45.44" N Longitude=90°38'17.61" E	105	161.00	5 years
5	Boro Bazar Tribale Dev. Block	MoWR	Har khet ko pani	5 Debichali F.I.S. at Dimajhora village Latitude=26°37'49.84" N Longitude=90°38'19.39" E	100	155.00	5 years

6	Boro Bazar Trible Dev. Block	MoWR	Har khet ko pani	6	Thasobari Dona Bundh F.I.S. at Majrabari village Latitude=26°32'36.44" N Longitude=90°39'45.97" E	270	600.00	5 years
7	Boro Bazar Trible Dev. Block	MoWR	Har khet ko pani	7	Garlajhora F.I.S. at Malipara village Latitude= Longitude=	460	700.00	5 years
8	Boro Bazar Trible Dev. Block	MoWR	Har khet ko pani	8	Taklai F.I.S. at Lakhipur village Latitude= Longitude=	330	500.00	5 years
9	Boro Bazar Trible Dev. Block	MoWR	Har khet ko pani	9	Kanamakra F.I.S. at Khungkrajhora village Latitude= Longitude=	500	520.00	5 years
						3865	6036.00	

Executive Engineer
Champamati Canal Division
(Irrigation) :: Dhaligaon

