2016 - 2021

DISTRICT IRRIGATION PLAN

ANJAW

GOVERNMENT OF ARUNACHAL PRADESH

NABAR D CONSULTANCY SERVICES PVT. LTD.

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District Irrigation Plan

2016-2021

Under

Pradhan Mantri Krishi Sinchayee Yojana (PMKSY)

ANJAW

Arunachal Pradesh

NABCONS

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CREDIT CITATION

NABCONS sincerely acknowledges that without the overall support provided by the top officials of the State Government, Arunachal Pradesh, especially the Departments of Agriculture, Horticulture, Water Resources Department, DRDA and RD Department (State) as also the teams of District-level field functionaries of the participating Departments and agencies under the overall leadership of the Chairman, District Level Implementation Committee (DLIC), it would not have been possible to prepare this ***District Irrigation Plan (DIP)*** *under "****Pradhan Mantri Krishi Sinchayee Yojana" for the State of Arunachal Pradesh****".*

NABCONS hereby records its earnest thanks and gratitude for the same and trusts that this document shall be instrumental in bringing about a transformative progress in the lives of the farmers in the District.

District Irrigation Plan (DIP) Dashboard

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<tr><td>Total for Anjaw District</td><td>10141.93</td><td>100.00</td></tr>
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ACKNOWLEDGEMENT

Water is vital for human and animal life and for attaining ecological balance for developmental efforts. The ever increasing demand for water due to population growth, urbanization and industrialization making water available for multiple uses in an economical and optimal manner assumes great significance. Against the above backdrop, Govt. of India formulated PMKSY with a vision of extending coverage of Irrigation and improving water use efficiency in a focus manner with end to end solution on water resource creation, distribution, management and application and extension activities.

The District Irrigation Plan of ANJAW district of Arunachal Pradesh has been prepared by NABCONS keeping in view all the important aspects like – water resource availability, demand for water resource from multiple users, present and future water balance both at District and Block Level and also multiple strategist to augment water resources and improve efficiency of existing water facilities through the Strategic Action Plan formulated by it under PMKSY in close coordination with the participating Departments like Water Resources, Department of Agriculture, Horticulture and DRDA.

I hereby acknowledge that the participating Departments as also NABCONS put their best effort in formulating this strategic action plan under PMKSY keeping in view the guidelines of PMKSY which will be implemented in the five years (2016 – 21) and I wish to all the Lined Departments being a Public Representative of the District for proper and successful implementation of all the schemes proposed under the DIP.

29/5/17

Member of Legislative Assembly
Hayuliang (ST) Assembly Constituency

Member of Legislative Assembly
45-Hayuliang (ST) Assembly (A.P.)

PMKSY, ARUNACHAL PRADESH **DIP – ANJAW**

Foreword by DLIC

In pursuance of the mandate of the Government of India to attract investment in irrigation system at field level, develop and expand cultivable land in the country, enhance rain water use in order to minimize wastage of water, enhance crop per drop by implementing water – saving technologies and precision irrigation through Pradhan Mantri Sinchayee Yojna (PMKSY), The District Irrigation Plan of Anjaw district, Arunachal Pradesh has been prepared by District Level Implementation Committee consisting of various Departments and NABCONS after thoroughly studying the scenario of the district. The DIP has been prepared through detailed energetic activities with a dedicated team. I wish to thank the Department of Agriculture, Govt. of Arunachal Pradesh, and all the members of DLIC, NABCONS and all other officers/officials of all the line departments for preparation of District Irrigation Plan and wish them good luck for its better implementation.

(Mamata Riba)
Deputy Commissioner
Anjaw District
Arunachal Pradesh

Place: Hawai, Anjaw District
Date : 10th June 2016

ACKNOWLEDGEMENT

It is my sincere privilege to express my deep sense of gratitude and heartfelt thanks to the Ministry of Agriculture and Farmers' Welfare and other concerned departments of Government of India for providing an opportunity to prepare an exhaustive irrigation plan covering all the components of PMKSY for the benefit of major farming community in the district.

I am also highly thankful to the Deputy Commissioner, Anjaw who is also the Chairman of this District Level Implementation Committee (DLIC) for her extensive support and guidance towards the preparation of this District Irrigation Plan and making it possible to present the same in an implementable manner. I also thank all the members of the DLIC for providing the desired data/ programme to be taken up in the Plan.

Place : Hawai
Date : 10th Jun'2017

Deputy Director, Agriculture,
Anjaw District, Arunachal Pradesh
Deputy Director Agriculture
Anjaw District Hawai (A:P)

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Abbreviations Decoded

Abbreviations	Decoded Forms
AIBP	Accelerated Irrigation Benefit Programme
ATMA	Agricultural Technology Management Agency
BCM	Billion Cubic Meters
CAD	Command Area Development
CCA	Culturable Command Area
DIP	District Irrigation Plan
DLIC	District Level Implementation Committee
DRDA	District Rural Development Agency
DTW	Deep Tube Well
HKKP	HKKP
IWMP	Integrated Water Management Programme
KVK	Krishi Vigyan Kendra
LLP	Low Lift Points
LPCD	Litres Per Capita Per Day
MCM	Million Cubic Meters
MGNREGS	Mahatma Gandhi National Rural Employment Guarantee Scheme
MI	Minor Irrigation
NABARD	National Bank for Agriculture and Rural Development
NABCONS	NABARD Consultancy Services
PDMC	PDMC
PMKSY	Pradhan Mantri Krishi Sinchayee Yojana
RIDF	Rural Infrastructure Development Fund
SIP	State Irrigation Plan
SLIC	State Level Implementation Committee
SLNA	State Level Nodal Agency
STW	Shallow Tube Well
ZRS	Zonal Research Station
CGWB	Central Ground Water Board
AMSL	Above Mean Sea Level
GEC'97	Ground Water Estimation Committee, 1997

Executive Summary

In an agrarian economy like India, agriculture utilizes the major share of country's exploitable water resources. Though, the sector utilizes the maximum share of exploitable water resources, availability of the same at different locations to different extent makes it vital to adopt effective utilization of water through storage, channelizing and judicial use. At some places like Punjab and Haryana, the environmental and socio-economic rationale for this 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 is inevitable. In developing countries, irrigated agriculture plays a vital role in contributing towards domestic food security and poverty alleviation. Therefore, achievement of these objectives is dependent on adequate allocations of water to agriculture. Justification of such allocations requires that irrigated agriculture be a cost-effective means of achieving stated political or social objectives, such as food security or poverty alleviation, and that all externalities be taken into account in the pricing mechanism. Improved allocation of irrigation water is required within the agriculture sectors in order to achieve greater efficiency in the use of irrigation water and existing irrigation infrastructure. Reallocation is also required in order to reduce waterlogging and salinization of irrigated land to decrease the negative environmental impacts and other externalities of irrigation (caused by over-extraction of groundwater and depletion and pollution of surface water).

Government of India launched Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) to address the constraints in providing assured irrigation as well as increasing efficiency and productivity of current water use to bring more prosperity to the rural areas. Priorities of Government of India were reflected in the Hon'ble President's address to the joint Session of the Parliament of 16th Lok Sabha where he indicated that "Each drop of water is precious". Government is committed to giving high priority to water security. It will complete the long pending irrigation projects on priority and launch the 'Pradhan Mantri Krishi Sinchayee Yojana' with the motto of 'HKKP'. 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. Harnessing rainwater through '*Jal Sanchay*' and '*Jal Sinchan*' 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.50000 crore over a period of five years from 2015-16 to 2019-21. 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 schemes like Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS), 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 programme will be supervised and coordinated, utilizing the existing mechanism and structure available under Rashtriya Krishi Vikas Yojana (RKVY) 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 (HKKP), PMKSY (PDMC) and PMKSY (watershed development) will be decided by the respective program ministry/department.

The five chapters of the DIP, along with its introductory chapter, explains the profile of the District, its water requirement for agriculture and allied sectors, water availability, assessment of water requirement for various sectors and Strategic Action Plan for augmentation and effective management of available water resources.

During the course of preparation of District Irrigation Plan (DIP) for Anjaw District of the State of Assam, a team of Consultants from NABCONS (A wholly-owned subsidiary of National Bank for Agriculture and Rural Development) had visited the District to collect data and have interaction with all the stakeholders. The methodology adopted to prepare DIP included collection of primary and secondary data from the field from various sources, including published documents and websites, conduct of meetings with different line departments and other stakeholders to obtain ground-level realities and data through structured, unstructured interviews, focussed group discussions etc., Meetings with various State Government departments and related institutions, GIS maps of the areas/clusters were studied to understand the land-morphology, topography of the District, focussed group discussions and interaction with of Agriculture Officers, Horticulture Officers, Soil Conservation Officers, Extension Officers, Rural Development Department, Animal Husbandry Department, Irrigation Officers for identifying the key issues and focus areas of the District. In the District, the Panchayat and village-level schemes were identified as per the need and irrigation potential to be created under PMKSY. The Panchayat resolutions were consolidated and put up in the Block Development Committee and Block Plans were put up in the Zilla Parishad along with the plans of other line departments participating in implementation of PMKSY. On the basis of detailed discussion and analysis of data, the team arrived at the projection of various components of PMKSY and a 5 Year Strategic Action Plan under PMKSY has been prepared for the year 2016-17 to 2020-21 as detailed in Chapter-V of this District Irrigation Plan.

District Demography

As per 2011 census, the population of the district is 21,167 (excluding population in the age group 0 - 6) out of which male population is 11,507 and female population is 9,660. With a population density of 3 persons per square kilometer, Anjaw is relatively denser compared to the population density of the state. There are 4,425 households in the district as per census 2011

Demand for water and the gap:

The water budget of the district is prepared for the district for 2015-16 to 2020-21. The present water availability/demand and also for 2020-21 are worked out and the water gap is found out. The water budget clearly shows the water gap of **467.75** MCM in present and 575.90 **MCM** in future between the water availability and requirement.

PMKSY Financial Proposal

A total of 04 departments of the district such as Agriculture, Horticulture, Water Resource Department, DRDA and State RD Department (*under DRDA*) have participated in the District Irrigation Plan preparation under PMKSY for Anjaw District. All the departments have proposed various kinds of activities to be implemented under four major components of PMKSY, i.e., Har Khet Ko Pani (HKKP), Per Drop More Crop (PDMC) and PMKSY Watershed Management Components.

The total outlay of the District Irrigation Plan for a period of 5 years (2016-2021) is estimated as **Rs. 10141.93 lakh** distributed among 04 blocks of the district as given in Table-5.1. The Hawai -Walong Development Block has the maximum share of Rs.4028.8 lakh in the proposed total outlay of the DIP and constitutes about 39.72% followed by Hayuliang block with a total proposed outlay of Rs.2704.93 lakh, contributing 26.67% while, Manchal Block has the minimum share of Rs.1450 lakh, i.e. 14.30% of the total outlay.

Expected Outcome

The Strategic Action Plan has proposed a total command area of 20621.28 Hectares Irrigation potential to be created under the three components of PMKSY being the total gross cropped area of the district only 11196 hectare. Thus, it would boost up the gross crop intensity more significantly as the farmers would be able to go for multiple cropping throughout the year and hence, the district can be brought under the command of assured irrigation in the district.

In terms of economic benefit, the assured water supply to the farm land will result in enhancement of production and productivity of the crops. This is likely to generate an additional income to the farmers of the district. This is also likely to increase maydays in non-recurring employment as also create livelihood opportunities in agriculture and allied sectors of the economy of the district through increased acreage under crops. The intervention will also contribute both in agriculture and horticulture production and productivity thereby paving the way of generating direct and indirect employment among the local people. Thus, the overall economy of the district would get better and better in the days to come after the contemplated projects get implemented and yield results in terms of enhanced crop production.

INTRODUCTION

Background

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

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

Government of India through a resolution in National Development Council on 29th May 2007 conceived a special Additional Central Assistance Scheme (ACAS) to address the slow growth of agriculture and allied sectors by incentivizing States to draw up plans for their agriculture sectors more comprehensively. The NDC resolution states "GoI introduced a new Additional Central Assistance Scheme to incentivize states to draw up plans for their agriculture sector more comprehensively, taking agro-climatic conditions, natural resource issues and technology into account, and integrating livestock, poultry and fisheries, etc. This involved a new scheme for Additional Central Assistance (ACA) to State Plans, administered by the Union Ministry of Agriculture over and above its existing Centrally Sponsored Schemes, to supplement the State-specific strategies including special schemes for beneficiaries of land reforms. The newly created National Rain-fed Area Authority on request, was to assist States in planning for rain-fed areas".

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

1. To prepare a Comprehensive District Agriculture Plan (C-DAP) through participatory process involving various organizations and stakeholders;
2. To enable optimum utilization of scarce natural, physical & financial resources;
3. To assess and plan for the infrastructure required to support the agriculture development;

4. To establish linkages with the required institutional support services, like credit, technology transfer, ICT, research etc.; and

5. To evolve an action plan for achieving sustainable agricultural growth with food security and cropping system that will improve farmers' income. The guidelines required the State/District authorities to (i) ensure that the agricultural plans are prepared for the district and then integrated into the agricultural plans of the State based on the agro-climatic conditions, availability of technology, trained manpower and natural resources; (ii) local needs / crops / feed and fodder / animal husbandry / dairying / fisheries / priorities are reflected in the plan; (iii) productivity gaps for important crops and livestock and fisheries are reduced; and (iv) the returns to the farmers from these are maximized.

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

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

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

The per capita water availability which stood at 5,177 cubic meters in 1951 was reduced to 1820 cubic meters in 2001 while the international prescribed limit is 1800 cubic meters. The projected per capita availability of water is 1341 cubic meters in 2025 and 1140 cubic meters in 2050 suggesting shortage of water in the medium term[1]. Further, the all India water balance estimates does not reflect the variations in water balance across time and space- certain areas having a positive water balance and the others facing acute shortage. The problem is further accentuated by water quality related issues.

With the abundant surface and ground water supply in the first five decades since independence, more than 80 percent of the total available water resources were allocated for irrigation purposes and the rest meeting the domestic and industrial demands. In a recent study[2] on the demand for water from

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

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

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

a) Planning, development and management of water resources need to be governed by common integrated perspective considering local, regional, State and national context, having an environmentally sound basis, keeping in view the human, social and economic needs;

b) Principle of equity and social justice must inform use and allocation of water;

c) Good governance through transparent informed decision making is crucial to the objectives of equity, social justice and sustainability. Meaningful intensive participation, transparency and accountability should guide decision making and regulation of water resources;

d) Water needs to be managed as a common pool community resource held, by the state, under public trust doctrine to achieve food security, support livelihood, and ensure equitable and sustainable development for all. Water is essential for sustenance of eco-system, and therefore, minimum ecological needs should be given due consideration.

e) 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.

f) 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.

g) 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

[2] *Ministry of Water Resources, National Water Policy, 2012, Government of India, New Delhi.*

system which economizes on water use and maximizes value from water, and (b) bringing in maximum efficiency in use of water and avoiding wastages.

h) 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.

i) 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.

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 popularized to ensure 'Per drop-More crop***".

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The funds under this program would be provided to the States as per the pattern of assistance of Centrally Sponsored Schemes (CSS) decided by the Ministry of Finance and NITI Aayog. During 2015-16 the existing pattern of assistance of ongoing Scheme will be continued. An outlay of Rs. 50,000 crore

have been approved for 2015-20. The financial assistance provided to the state governments from this centrally sponsored scheme is subject to fulfilment of certain conditions. Firstly, a state will become eligible to access PMKSY fund only if it has prepared the District Irrigation Plans (DIP) and State Irrigation Plan (SIP), excepting for the initial year, and the expenditure in water resource development for agriculture sector in the year under consideration is not less than the baseline expenditure, which is defined as the average of the expenditure in irrigation sector irrespective of the department in the state plan in three years prior to the year under consideration. Secondly, States will be given additional weightage for levying charges on water and electricity for irrigation purposes, so as to ensure sustainability of the programme. Thirdly, interstate allocation of PMKSY fund will be decided based on

- Share of percentage of unirrigated area in the state vis-à-vis national average including prominence of areas classified under Desert Development Programme (DDP) and Drought Prone Area Development Programme (DPAP);
- Increase in percentage share of expenditure on water resource development for agriculture sector in State Plan expenditure in the previous year over three years prior to it; and
- Improvement in irrigation efficiency in the state.

Vision

The overreaching vision of Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) will be to ensure access to some means of protective irrigation to all agricultural farms in the country, to produce 'PDMC', thus bringing much desired rural prosperity.

Objectives

The objectives of the PMKSY are to:

a) Achieve convergence of investments in irrigation at the field level (preparation of district level and, if required, sub district level water use plans).

b) Enhance the physical access of water on the farm and expand cultivable area under assured irrigation (Har Khet Ko Pani).

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

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

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

e) Enhance recharge of aquifers and introduce sustainable water conservation practices.

f) Ensure the integrated development of rain-fed areas using the watershed approach towards soil and water conservation, regeneration of ground water, arresting runoff, providing livelihood options and other NRM activities.

g) Promote extension activities relating to water harvesting, water management and crop alignment for farmers and grass root level field functionaries.

h) Explore the feasibility of reusing treated municipal waste water for peri-urban agriculture, and

i) Attract greater private investments in irrigation.

Strategy/Approach

To achieve these objectives PMKSY adopted strategies that include:

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

b) Developing/augmenting distribution network where irrigation sources (both assured and protective) are available or created;

c) Promotion of scientific moisture conservation and run off control measures to improve ground water recharge so as to create opportunities for farmers to access recharged water through shallow tube/dug wells;

d) Promoting efficient water conveyance and field application devices within the farm viz, underground piping system, Drip & Sprinklers, pivots, rain-guns and other application devices etc.;

e) Encouraging community irrigation through registered user groups/farmer producers' organizations/ NGOs; and

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

Programme Components

PMKSY has following four components:

1. Accelerated Irrigation Benefit Programme (AIBP)

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

2. PMKSY Har Khet Ko Pani (HKKP)

This component focuses on: -

a) Creation of new water sources through Minor Irrigation (both surface and ground water).

b) Repair, restoration and renovation of water bodies; strengthening carrying capacity of traditional water sources, construction rain water harvesting structures (Jal Sanchay);

c) Command area development, strengthening and creation of distribution network from source to the farm;

d) Ground water development in the areas where it is abundant, so that sink is created to store runoff/ flood water during peak rainy season.

e) Improvement in water management and distribution system for water bodies to take advantage of the available source which is not tapped to its fullest capacity (deriving benefits from low hanging fruits). At least 10% of the command area to be covered under micro/precision irrigation.

f) Diversion of water from source of different location where it is plenty to nearby water scarce areas, lift irrigation from water bodies/rivers at lower elevation to supplement requirements beyond IWMP and MGNREGS irrespective of irrigation command.

g) Creating and rejuvenating traditional water storage systems like Khatri, Kuhl etc. at feasible locations.

3. PMKSY Per Drop More Crop (PDMC)

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 HKKP, 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; and

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 rain-fed blocks including renovation of traditional water bodies.

Rationale/ Justification

In reference to the status and need of irrigation, the water resource management including irrigation related priorities was identified for Anjaw 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 Anjaw district including (i) creating irrigation potential through water harvesting structure, Nalla and Check Bundh, Percolation and Recharge tanks (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) increase the forest cover in the district and (vii) land improvement measures.

Methodology

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

a) Collection of primary and secondary data from the field from various sources including published documents and websites.
b) Various meetings were held to obtain ground level realities and data from key personnel/stakeholders through structured, unstructured interviews, focused group discussions etc.
c) Meetings with various State Government departments and related institutions were held
d) Focused group discussions and interaction with of agriculture officers, horticulture officers, soil conservation officers, extension officers, rural development department, animal husbandry department, irrigation officers for identifying the key issues and focus areas of the region.

e) Discussion with NABARD officer of was also held during the visit.

f) Team members also participated in the District Level workshop and held active discussions with Departmental officers, State Level officers and scientists of various institutions.

In the district, the Panchayat level schemes were identified as per the need and potential and resolutions were passed by the Panchayat to include the schemes under PMKSY. The Panchayat resolutions were then consolidated and put up in the Block Development Committee and a block plan was put up in the Zila Parishad along with the programme of other line departments participating in implementation of PMKSY.

On the basis of detailed discussion and analysis of data, the team arrived at the projections of various components of PMKSY and Department-wise plan for 5 years from 2016-17 to 2020-21 as detailed in the Plan.

Chapter- I
General Information of the District

1.1 District Profile

The district is situated in the eastern most part of Arunachal Pradesh. It is located approximately between 27º33' to 29º22' North latitudes and 95º15' to 97º24' East longitudes. The district is bounded in the north by China, in the east by Myanmar, in the south by Changlang district, in the west by Lohit district and a part in the northwest by Lower Dibang Valley district. The total area of the district is 6190 Sq. Kms. Anjaw district ranks 6th in terms of area in the State. The area of the district accounts for 7.4 percent of the total area of the State. It is a new district created after 2001 Census carved out from Lohit district.

The major physical feature of the district is mountainous. The district consists of continuous chains of hills and mountains. The altitude varies from place to place and elevated up to 17000 ft above sea level. The high mountainous region of the northern boundary is extremely cold, a large tract of which remains snow bound through most part of the year. Hawai, the district Headquarters is situated at an altitude of 1296 mtrs. There are many ravines in the district. All rivers are coming down from the high hills through the rock for which land erosion is very less and accordingly there are no badland. On account of the existence of the hill and the valley, its topography assumes typical character. The hill ridges are situated haphazardly. As soon as one ends, the other ridge starts either parallel or in the opposite direction. As per the cartographic analysis of the state, the district can be said to have three main regions.

Delei and Dav Valley

The entire region is situated in the inner Himalayas. It is drained by the river Delei and Dav. The region spreads over mainly Chaglagam and Goiliang circles and a portion of Hayuliang circle.

Kibithoo-Walong region

The region is a part of Inner Himalayas and it is from here that the inner Himalayas turn totally southwards. The region extends over the Kibithoo and Walong circles and also covers a portion of Goiliang circle.

Hawai region

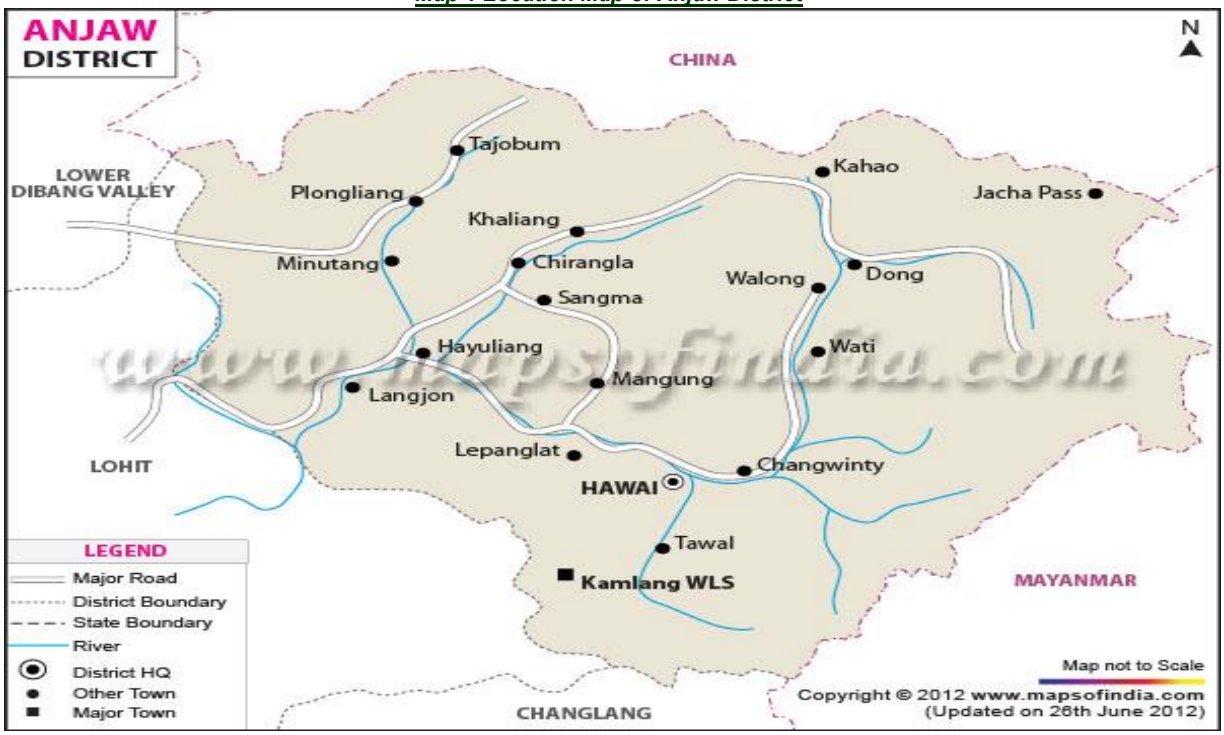
The entire region is located in the inner and middle Himalayas. It is drained by the river Tellu and its tributaries. The region extends over mainly Hawai circle and a part of Hayuliang circle. It also covers a small portion of Walong circle.

Table 1.1. District Profile of Anjaw District

Name of District	District code	Latitude	Longitude
Anjaw	260	27°33' to 29°22' N	95°15' to 97°24' E

Source: Census of India, 2011

Map 1 Location Map of Anjaw District



Source: www.mapsofindia.com

Administrative Set-up of Anjaw District

The Deputy Commissioner is the administrative head in the district with its headquarters at Hawai. The Deputy Commissioner is assisted by several other administrative Officers and various head of departments in the district in discharging of duties. For administrative convenience, the district is divided into Sub-Divisions which is under the charge of Additional Deputy Commissioner or Sub-Divisional officer and Sub-Divisions are divided into Circles which is the lowest unit of administration and is under the control of a Circle Officer. The villages have their own customary administrative system in the form of traditional village councils. The village council consists of the Gaon Burahs/Headman and village members. There are 8 Circles, 4 Community Development (CD) Blocks and 305 villages in the district during Census 2011. Details of administrative units can be given as under.

Sl. No	Name of CD Block	Name of Circle	Total No.of Villages
1	Hayuliang	Hayuliang	68
		Goiliang	32
2	Manchal	Manchal	58
3	Chagalam	Chagalam	18
		Metengliang	30
4	Walong	Kibitho	12
		Walong	25
		Hawai	62
Total			305

Source: Census of India, 2011

Hawai is the only town in the district. It is located at an altitude of 1296 m above the sea level. At present there is one Assembly Constituency in the district i.e. 45 Hayuliang (ST) and it is a part of the Arunachal East Parliamentary Constituency.

1.2 District Demography

As per Census 2011, the population of Anjaw district was 21,167 which comprises of 11,507 males and 9,660 females. Hayuliang block has the largest population in the district with 4,194 males and 3,259 females, followed by Walong block with 3,683 males and 3,000 females and Manchal block with 1,629 males and 1,742 females. Chagalagam block has the least population in the district.

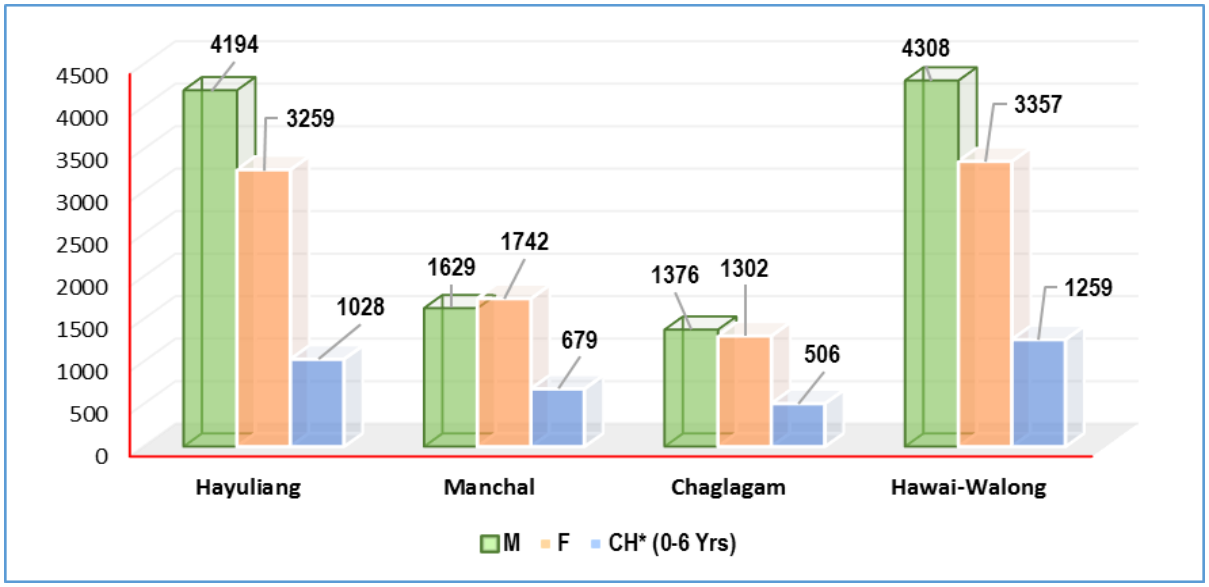
Table 1.2. Demography of Anjaw District

Table 1.2 District Demographic Profile								
Blocks	Number of the Villages Covered	Population				ST	Others	Total
		Male	Female	CH* (0-6 yrs)	Total (excl CH*)	No. of Member	No. of Member	No. of Member
Hayuliang	100	4194	3259	1028	7453	5962	1491	7453
Manchal	58	1629	1742	679	3371	2697	674	3371
Chaglagam	48	1376	1302	506	2678	2142	536	2678
Hawai-Walong	99	4308	3357	1259	7665	6132	1533	7665
Total	**305**	**11507**	**9660**	**3472**	**21167**	**16934**	**4233**	**21167**

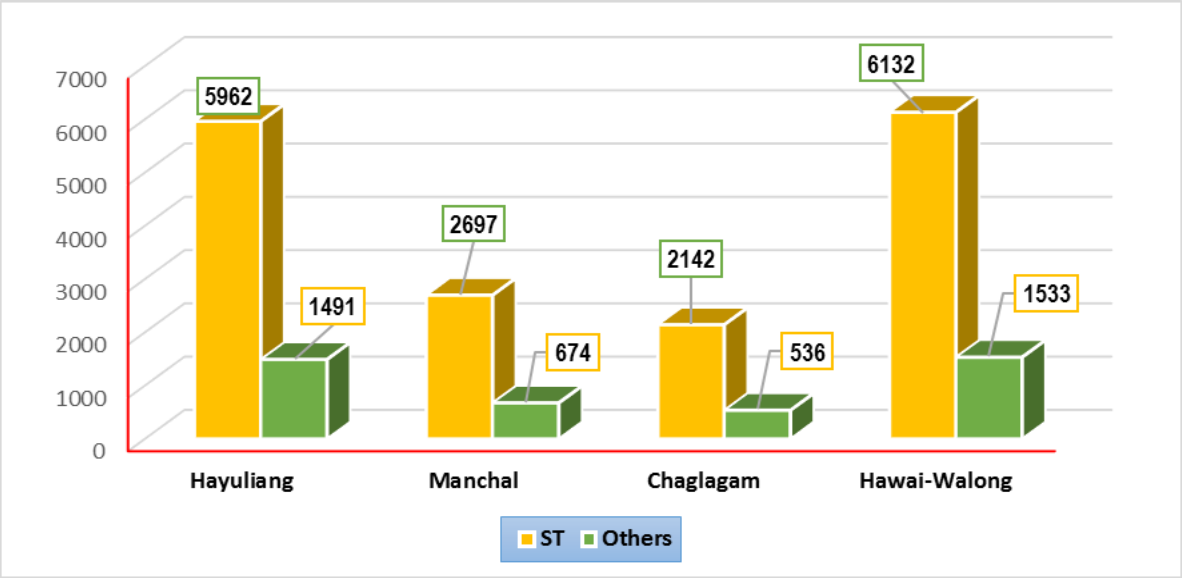
Source: Census of India, 2011 Anjaw District
****M- Male, F- Female, CH- Children 0-6 years***

The Mishmi and the Meyor are the main tribes inhabited Anjaw district. The district is the second least populated district in the state with density of 3 persons per Sq. km. The district is ranked 4th in terms of least sex ratio in the state with only 839 females per 1000 males. The block-wise population statistics of the district are given below in graph 1.2 (a) and 1.2 (b)

Graph 1.2 (a) Block wise Population Statistics of Anjaw District



Graph 1.2 (a) Block wise Population Statistics of Anjaw District



1.3 Biomass and Livestock

Next to Agriculture and Horticulture, Livestock rearing is an important enterprise of the district. Cows, buffaloes, draft animals, goats, pigs, poultry are main commodities of livestock enterprise. Cows, goats, pigs, mithun and poultrys in small numbers are also reared in almost all the blocks of the district. Mostly, in the case of Anjaw district, mithun, a traditional and unique animal is reared to meet up the demands of meat during traditional performances and marriages. The population of the Large, Small, Milch or meat animals including the draft animals (Buffalos/yak/bulls etc) are given in Table no. 1-3 (a) and 1-3 (b).

Table 1-3 (a): Population of Small and Milch or Meat Animals in Anjaw District

Name of Block	Small Animals (in Nos)					Any other Milch or Meat Animal (Nos.)
	Poultry (Nos)	Ducks (Nos)	Pigs (Nos)	Goats (Nos)	Sheeps (nos	
Hayuliang	15303	28	4070	1255	-	-
Manchal	4742	0	2502	833	-	-
Chaglagam	4250	47	3464	854	-	-
Hawai-Walong	11674	8	5175	2803	-	-
Total	**35969**	**83**	**15211**	**5745**	**-**	**-**

Source: Livestock census of India 2012, Anjaw District

Table 1-3 (b): Population of Large and Draft Animals in Anjaw

Name of Block	Large Animals (in Nos)			Hybrid Buffalo (nos)	Draft Animal Horses & Ponies (nos)
	Indigenous Cows	Hybrid Cow	Mithun		
Hayuliang	1517	82	1713	-	-
Manchal	1125	0	1975	-	-
Chaglagam	543	75	2191	-	-
Hawai-Walong	2049	300	3879	-	-
Total	**5234**	**457**	**9758**	**-**	**-**

Source: Livestock census of India 2012, Anjaw District

1.4 Agro-Ecology, Climate, Hydrology and Topography

In general, the climate of the district is largely influenced by the nature of its terrain. There are high hills and snow-capped mountains and deep ravines in the district. The mountain peaks rise from 4500 Mtrs. to 5000 Mtrs. (15000 to 17000 ft.) above the sea level at many places. As a result, the climate is very cold in winter and moderate in summer. All the circle headquarters are situated in high altitude for which it is extremely cold and in summer it is moderately warm. The coldest months are January and February and the hottest months are June and July. Winds are generally light and cold increasing slightly in the monsoon months. Strong winds with thunder storms blows occasionally during the period from March to May. Most of the rainfall is received during the monsoon. The amount of rainfall is likely to be less in the higher mountainous regions due to snow fall. The period from March to June is marked by heavy showers and thunder storms. Due to heavy rain in some part of the district, the rain water flowing down the river resulted in flood and land erosion in the plain area and disruption of road communication.

Table 1-4: Agro-ecology and Topography of Anjaw district

Block	Agro Ecological Zone Type	Type of Terrain	Block Area (Ha)	Normal Annual Rainfall (mm)	Normal Rainy Days (No.)	Maximum Rainfall Intensity (mm)		
						Upto 15 Min	Beyond 15 but upto 30 Min	Beyond 30 but upto 60 Min
HAYULIANG	Temperate zone	summits and Ridge	102500	283	130 Days	2 Days	9 Days	119 Days
MANCHAL	Temperate zone	Summits and Ridge	22000					
CHAGLAGAM	Alpine zone	Rocky barren and ice caps	94500					
HAWAI - WALLONG	Alpine zone and Temperate zone	Rocky barren and ice caps	400000					

Table 1-4 (b): Climate and Elevation of Anjaw district

Average Weekly Temperature (° C)									Elevation		
Period											
Summer (April - May			Winter (Oct - Mar)			Rainy (June - Sept)			Min	Max	Median
Min	Max	Median	Min	Max	Median	Min	Max	Median			
19	24	22	15	19	17	22	26	24	501	2200	1350.5
									501	2200	1350.5
									2201	6000	4100.5
									501	2200	1350.5

1.5 Soil Profile

Majority of the total area is said to be covered with hills. The soil taxonomy of the district has been identified as Sandy fine and coarse loamy black soil, black loamy soil and black loamy fine soil. The soil textures of the district are of fine texture (on the southern border over a small patch of land), Medium texture (mostly found all over the district) and Rocky mountain covered with perpetual snow & glaciers. The soil pH value ranges from 4.2 – 6.5 and as such the soil is nearly neutral to acidic. Slope of the district ranges from moderately sloping to steep or very steeply sloping. A substantial portion in the north and east of the district is rocky mountain covered with perpetual snow and glaciers.

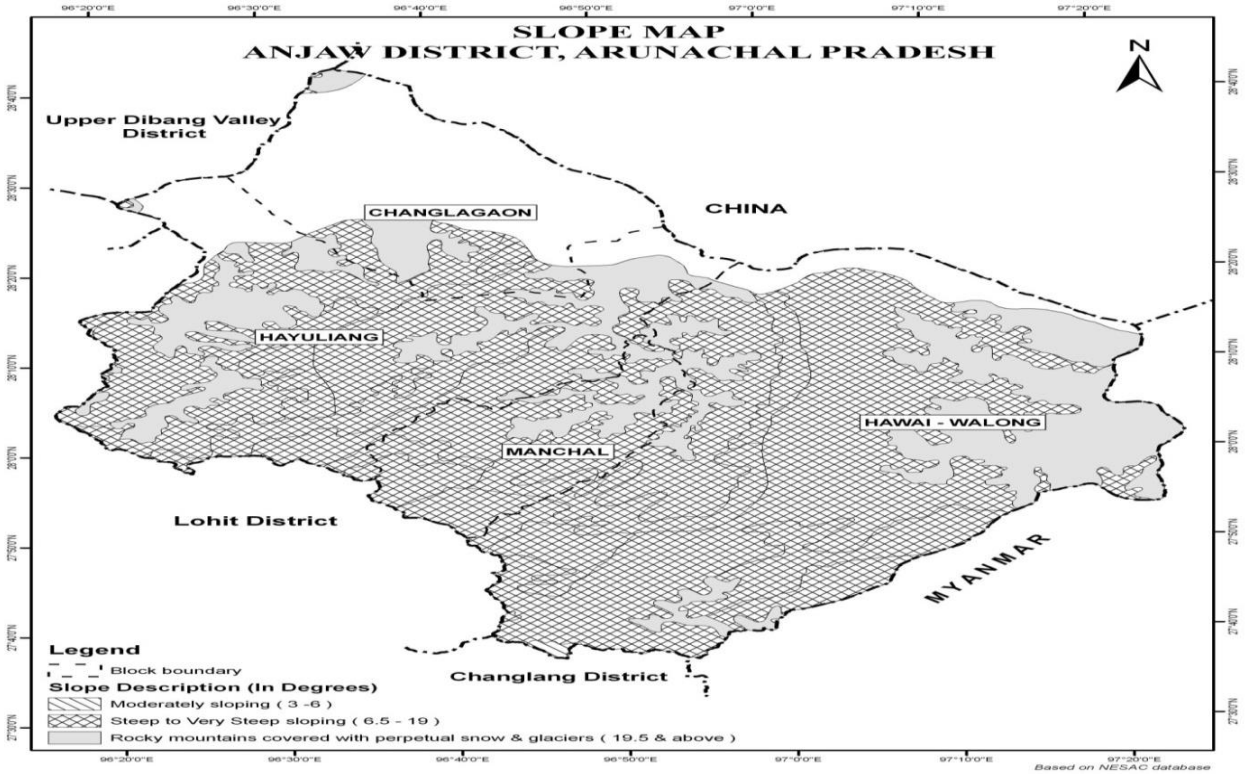
Table.1.5: Soil Profile of the Anjaw District

Major Soils (common names like shallow red soils, etc.)	Area ('000 Ha)	Percent (%) of total
Sandy coarse loamy black soil	115.5	18
Sandy Fine loamy black soil	126.0	20
Black loamy soil	242.5	40
Black loamy fine soil	135.0	22
Total	**619.00**	100

Name of Taluka	Soil Area (ha)	Land Slope			
		0-3% (Ha)	3-8% (ha)	8-25% (ha)	>25% (ha)
Anjaw	619000	6190	12380	92850	507580

Source: Agriculture Contingency Plan for District Anjaw

Slope Map



1.6 Land use Pattern

The land-based enterprises support a large segment of population in the district. The land based enterprises particularly the cultivation of field crops as well as horticulture crops is considered a critical determinant of the pace of overall economic development. The efficient use of land resource, therefore, assumes singular significance with respect to planning of economic activities. The total geographical area of the district is 619000 hectares. The total Gross Cropped Area of the district is 11196 hectares out of which the gross cropped area under agricultural crops is 9714 hectares.

Further, the district has total Net Sown Area of 9949 hectares out of which the net sown area under agricultural crops is 8467 hectares and net sown area under horticulture is 1482 hectares. The average cropping intensity of the district is 115%. However, the Hawai-Walong Block has maximum cropping intensity of 139%, followed by Manchal, Chaglagam and Hayuliang Blocks with 138%, 128% and 119% respectively. The Block-wise cropping intensity and land use pattern of the district are represented graphically as under:

Table 1.6 (a)Land Use Pattern of the District

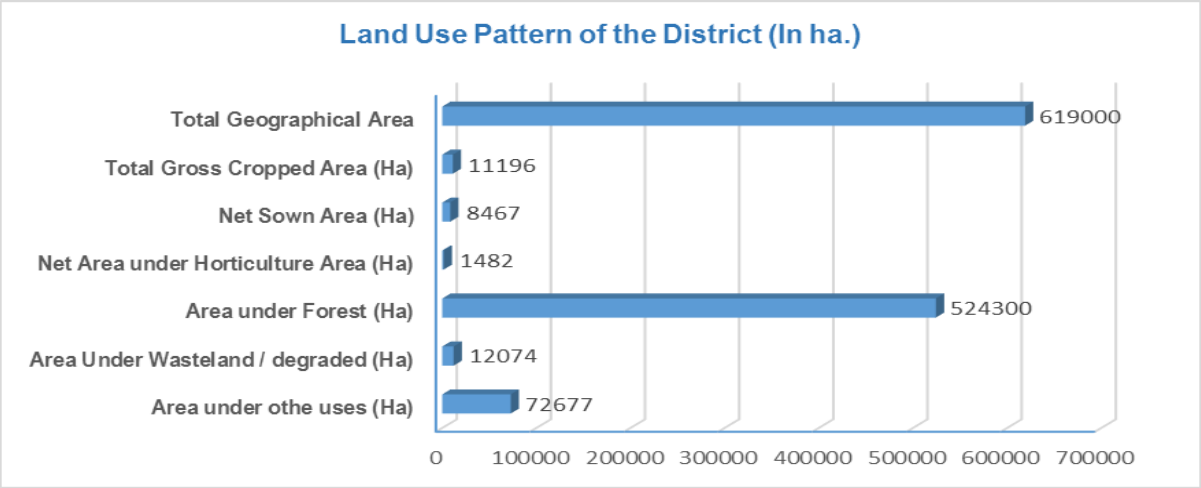


Figure 1.6 Block-wise Cropping Intensity of the District

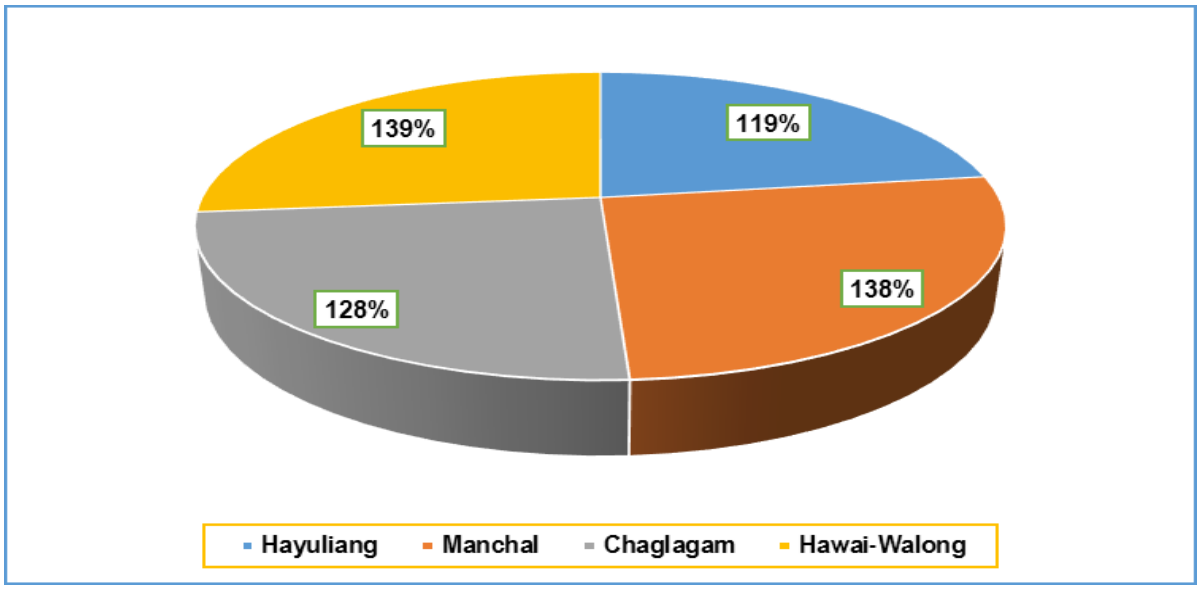


Table 1.6(b): Land use pattern in Anjaw District

Sl. No.	Name of Block	Total Geographical Area (in Ha)	Area under cultivation					Area under Non-cultivation		
			Area under Agriculture (in Ha)				Total Gross Cropped Area (Ha)	Area under Forest (Ha)	Area Under Wasteland / degraded (Ha)	Area under othe uses (Ha)
			Agriculture Area (Ha)	Net Sown Area (Ha)	Cropping Intensity (%)	Net Area under Horticulture Area (Ha)				
1	Hayuliang	102500	3657	3177	119%	510	4167	82500	3950	12873
2	Manchal	22000	2184	1924	138%	357	2541	17600	534	1942
3	Chaglagam	94500	1095	866	128%	148	1243	80300	3523	9811
4	Hawai-Walong	400000	2778	2500	139%	467	3245	343900	4067	48051
Total		**619000**	**9714**	**8467**	**115%**	**1482**	**11196**	**524300**	**12074**	**72677**

Source: Department of Agriculture, Anjaw District

Chapter- II
District Water Profile

Water is vital for survival of both plants and animals. It is the central component of the planet Earth controlling the weather, climate, plant and animal kingdom. It supports agriculture, forestry, navigation, industries and hydroelectricity generation and other uses such as for recreation, water sports activities etc. The importance of water has been recognized all over the world. Water resource development and management practices are given top priorities all over the world to avoid the water crisis in future. This chapter outlines the different type of crops, productivity and irrigation status of the Anjaw district.

2.1 Area Wise, Crop-Wise Irrigation Status

The economy of the district centres on agriculture and piggery and paddy is the predominant commodity that is cultivated. The district receives around 85.56 mm rainfall annually, with a major share during the four months of monsoon (June-September). However, due to lack of proper and sufficient water harvesting structures, the crops grown under different seasons has to rely on the mercy of rain to realize a good harvest. The crop wise irrigated and rainfed area sown in different seasons like Kharif, Rabi in the district for each block is given in the tables below: -

Table. 2.1. Area-wise, Crop-wise Irrigation status of Anjaw District

Agriculture Crops

Table 2.1 Area Wise Crop Wise Irrigation Status									
Block	Kharif (Area in ha.)			Rabi (Area in ha.)			Total (ha)		
	Irrigated	Rainfed	Total	Irrigated	Rainfed	Total	Irrigated	Rainfed	Grand Total
Hayuliang	180	2997	3177	5	475	480	185	3472	3657
Manchal	78	1846	1924	16	244	260	94	2090	2184
Chaglagam	47	819	866	12	217	229	59	1036	1095
Hawai-Walong	792	1708	2500	20	258	278	812	1966	2778
Total	**1097**	**7370**	**8467**	**53**	**1194**	**1247**	**1150**	**8564**	**9714**

Source: Agriculture Department

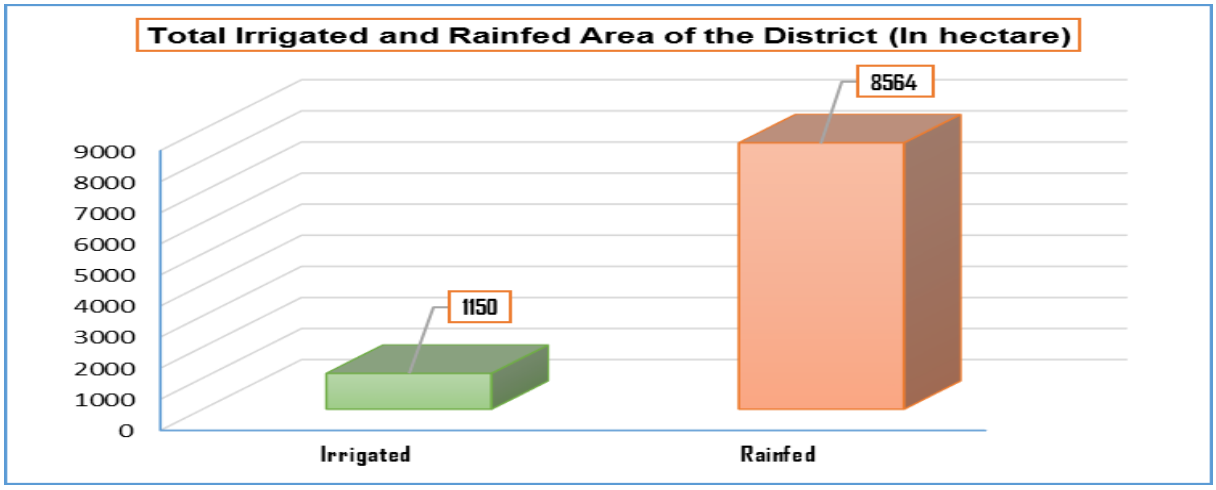
Horticulture Crops

Horticulture				
Sr. No.	Block	Irrigated	Rainfed	Total
1	Hayuliang	0	224	224
2	Manchal	0	495	495
3	Chaglagam	0	21	21
4	Hawai-Walong	0	742	742
Total		**0**	**1482**	**1482**

Source: Horticulture Department

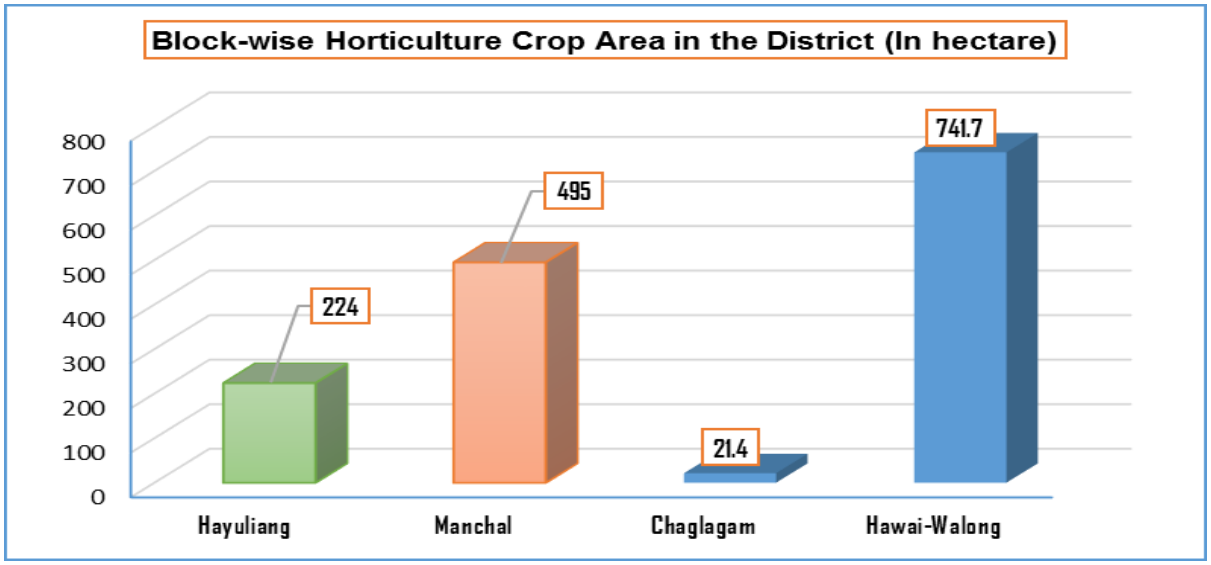
As indicated in table 2.1, the total irrigated area in the district under agricultural crops is 1150 Hectare and the rain-fed area is 8564 Hectare. Only the Hawai-Walong block has the maximum irrigated area of agricultural crops amounting to 812 Hectare and the majority of the area is shared by Kharif crops. Further, the Hayuliang block has covered maximum rain-fed areas of agricultural crops, i.e., 3472 Hectare, out of which a total of 2997 Hectare covered by Kharif crops, 475 Hectare by Rabi crops. The area-wise agriculture crop distribution of the District is represented graphically as follows:

Figue 2.1 a District Irrigation Status of Cropped Area



As regards horticulture crops, the district has covered a total of 1482 Hectares of land under horticulture production. All the Horticulture cropped area of the district is rain-fed. No irrigated area is under horticulture crops in the district. Hawai-Walong Block has maximum of 742 Hectares Horticulture cropped area followed by Manchal. Hayuliang and Chaglagam Block with 495 Hectares, 224 Hectares and 21 Hectares respectively. The Block-wise horticulture crop area distribution of the district is represented graphically as follows:

Figure. 2.1.b District Irrigation Status of Cropped Area



2.2 Production and Productivity of Major Crops

Majority of total population in Anjaw district are hilly tribal and they practice agriculture along with poultry and piggery mostly for subsistence level. Total geographical area of the district is 619000 Ha and out of which 8467 ha. is only net sown area for agriculture crops and 1482 ha. is the net sown area for horticulture crops. Gross irrigated area 1150 Ha. The soils are very rich in organic matter indicating potential to go for organic farming under proper management practices. Other than rice and maize, horticultural crops and other seasonal vegetables have tremendous production potentials and their qualities can compete with world class standards. As those are grown mostly on the hill slopes, they need irrigation support during the critical stages to ensure optimum quality and productivity to meet the demand locally as well as outside the state. The crop-wise production and productivity of different types of crops are given in the table 2.2 below.

Table 2.2 Block-wise Area production and Productivity of various Crops in the District

Name of the District : Anjaw									
Block Name	Rainfed			Irrigated			Total		
	Area (Ha)	Production (Qtl/yr)	Yield (kg/Ha)	Area (Ha)	Production (Qtl/Yr)	Yield (kg/Ha)	Area (Ha)	Production (Qtl/yr)	Yield (kg/Ha)
Hayuliang	3325	38480	1157	185	2864	1548	3510	41344	2705
Manchal	2215	24816	1120	94	1372.4	1460	2309	26188.4	2580
Chaglagam	1057	9151	866	59	661	1120	1116	9812	1986
Hawai-Walong	1967	23893	1215	812	10812	1332	2779	34705	2547
Total	**8564**	**96340**	**1125**	**1150**	**15709.4**	**1366**	**9714**	**112049**	**1153**

Source: - District Agriculture Department

The total area covered under agriculture crop production in the district is 9714 hectares while under horticulture it is 1482 hectares. The total production under various field crops was found to be 112049 Quintal with an average productivity of 1153 Qtl/ha. The average productivity was found to be 1366 kg/ha under irrigated condition while it is 1125 Kg/ha in rainfed condition.

2.3 Irrigation Based Classification

In Anjaw District, the rain-fed crop covers around 90% of the total cropped area and remaining cropped area is irrigated. The Block-wise details of irrigation based classification of the district is given below: -

Table 2.3: Irrigation Based Classification of the District

Sr.no	Name of Block	Gross Irrigated Area (Ha)	Net Irrigated Area (Ha)	Un-Irrigated or Totally Rainfed (Ha)	Gross Cropped Area
1	Hayuliang	185	154	3696	4167
2	Manchal	94	78	2585	2541
3	Chaglagam	59	49	1057	1243
4	Hawai-Walong	812	816	2708	3245
TOTAL		**1150**	**1097**	**10046**	**11196**

Source: Water Resources Dept., Anjaw District

From the table above, it is observed that a total of 1097 Hectare land of the district as net irrigated area out of gross irrigated area of 1150 Hectare. The district has totally rain-fed area of 10046 Hectares of land. Thus, there is ample potential to increase the irrigated command area of the district from the gross total area of the district.

Chapter-III

District Water Availability

Water availability is an important issue for ascertaining the demand of water for domestic, livestock, irrigation, industrial and power generation projects. The water availability depends on topography, climatic conditions, rainfall, soil profile, infiltration rate, run off and human activities over the catchment area. The changes in the water levels of the surface source are mainly because of the variations in the inflow from the upper catchments. The fluctuations constitute a sensitive indicator of past and present climate and human activities at a local and regional scale.

3.1 Status of Water Availability

For creating access to water source either assured or protective to each farmer will require a demand and supply assessment of crop water requirements, effective rainfall and potential source of existing and new water sources considering the geo-hydrological and agro ecological scenario of the block. The master plan will include information on all sources of available water, distribution network, defunct water bodies, new potential water sources both surface and sub surface system, application to conveyance provisions, crops and cropping system aligned to available/designed quantity of water and suitability to local agro ecology. All activities are pertaining to water harvesting, water augmentation from surface ad sub surface sources, distribution and application of water including repair, renovation and restoration of water bodies, major, medium and minor irrigation works, command area development etc. are to be taken up within the frame work of this muster plan. Emphasis is to be given for deriving the potential benefit from low hanging fruits like extending the reach/coverage of water source through effective distribution and application mechanism, reducing the gap between potential created and utilized through more focus on command area development and precision irrigation. Proper integration of creation of diversion head work and water harvesting structures, distribution system like canals and command area development works and precision farming is to be made for best possible use of water resources.

Table.3.1: Status of Water Availability in Anjaw District

Sl. No.	Sources	Kharif (MCM)	Rabi (MCM)	Summer (MCM)	Total (*MCM*)
1	**Surface Irrigation**				
(i)	Canal (Major & Medium)	0	0	0	0
(ii)	Minor Irriagation Tanks	0	0	0	0
(iii)	Lift Irrigation/Diversion	70.50	18.19	0	88.69
(iv)	Various Water Bodies including Rain Water Harvesting	0	0	0	0
(v)	Treated Effluent received from STP	0	0	0	0
(vi)	Untreated Effluent	0	0	0	0
(vii)	Perrenial Sources of Water	0	0	0	0
2	**Ground Water**				
(i)	Open Well	0	0	0	0
(ii)	Deep Tube Well	0	0	0	0
(iii)	Medium Tube Well	0	0	0	0
(iv)	Shallow Tube Well	0	0	0	0
Total		**70.50**	**18.19**	**0**	**88.69**

Source: - Department of Water Resources, Anjaw District CWC, CGWB, District Irrigation and Agriculture office records of Anjaw District (MCM per Ha).

3.2 Status of Ground Water Availability

India has largest irrigated agriculture with 65 million ha Net irrigated area (21 million ha through surface and 44 million ha through ground water). Methodology adopted for ground water resource estimation of the district is as per GEC 1997 Report, i.e. Ground Water Level Fluctuation and Rainfall infiltration factor Method. Assessment unit can be categorized into 4 categories as SAFE, SEMI-CRITICAL, CRITICAL, and OVER-EXPLOITED. As long-term water level trend does not show any major change so the whole district may be considered as SAFE. The detailed status of ground water, draft, recharge and gaps for the district is given separately in table below.

Table.3.2: Status of Ground Water Availability

Status of Block as per Central Government Water Board Notification			Ground Water (BCM)		
Critical	Semi- Critical	Safe	Draft	Recharge	Gap
--	--	--	--	--	--

Source: - Central Ground Water Resource Board

District ground water resources falls under safe zone. However, no published report is available for Anjaw district and, hence, no data is available for the district which have been confirmed by Department.

3.3 Status of Command Area

As per records of the Water Resources Department of the district, the village-wise status of other services command area is not available. However, only the status of canal command area is available with the dept. The Block-wise details of command area of the district are given below and the village wise command area is given in Annexure at the end of this report.

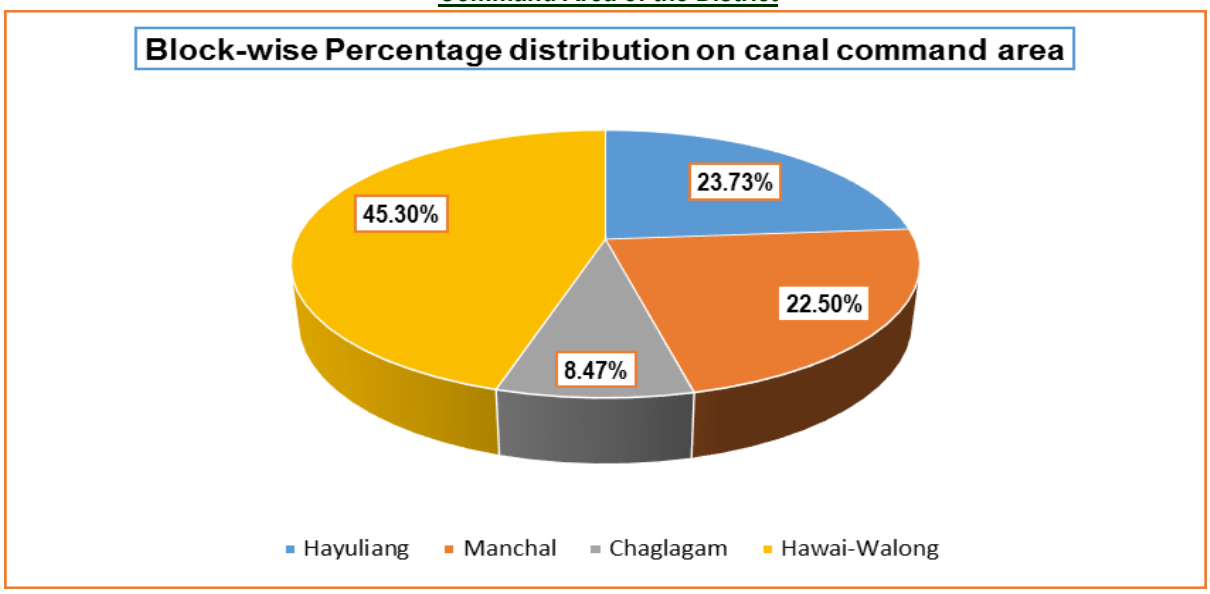
Table 3.3: Status of Command Area

Name of Block	Information of Canal Command			Information of the other services Command			Total Area	
	Total Area	Developed Area	Undeveloped Area	Total	Developed Area	Undeveloped Area	Developed Command	Undeveloped Command
Hayuliang	308	216	92	0	0	0	216	92
Manchal	292	242	50	0	0	0	242	50
Chaglagam	110	97	13	0	0	0	97	13
Hawai-Walong	588	542	46	0	0	0	588	46
Total	**1298**	**1097**	**201**	**0**	**0**	**0**	**1097**	**201**

Source: - Water Resource Department

The percentage distribution of Block-wise other canal command area of the district is represented below:

Figure: 3.3 Percentage Distribution of Block-wise of canal Command Area of the District



From Figure: 3.3, it is observed that Hawai-Walong Block of the district has occupied the maximum canal command area with 45.30% of total command area of the district followed by Hayuliang, Manchal and Chaglam by 23.73%, 22.50% and 8.47% respectively.

3.4 Existing Type of Irrigation

As shown in the table 3.4 below, in the district, for surface water, a total of 45 nos is covered under government canals under Surface Irrigation. The existing type of irrigation in the district is summarized in Table: 3.4

Table 3.4: Existing Type of Irrigation

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 Wells				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	Govt	Pvt	Community/govt	Pvt	Govt	Pvt							
Stream	45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0

Chapter- IV

Water Requirement/Demand

The earlier chapters dealt with the general profile, water profile and water availability of Anjaw 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, lawn sprinkling, gardening, sanitary purposes etc. The amount of domestic water consumption per person shall vary according to the living conditions of the consumers. On an average, this domestic consumption under normal conditions in Indian city is expected to be around 135 litres/day/person as per IS: 1172-1971. In a developed and an effluent country like USA, this figure goes as high as 340 litres/day/person. This is because more water is consumed in rich living, air cooling/conditioning, automatic household appliances, car washing etc. The total domestic consumption generally amounts to 55% to 60% of the total water consumption.

The total domestic water demand shall be equal to the total design population multiplied by the per capita domestic consumption i.e. 140 litre/day. As the last population census was made in 2011, the actual population of the district in 2016 is not readily available. Considering the population of the Anjaw district as per Census, 2011 the projected population in 2020 is worked out assuming the last decadal growth of 14.19% and annual exponential growth rate of 1.419% to apply for the period 2011-2020. The domestic water demand is given in the table 4.1 below.

Table 4. 1: Domestic water Demand of Anjaw District

Block	Population 2011	Projected population 2016	present water requirement (MCM)	Projected population 2021	Gross water Demand 2021 (MCM)	Water Gap in 2021 (MCM)
Hayuliang	7453	8088	0.04	8511	0.042	0.021
Manchal	3371	3659	0.02	3850	0.020	0.010
Chaglagam	2678	2907	0.01	3059	0.015	0.008
Hawai-Walong	7665	8318	0.04	8753	0.043	0.021
Total	**21167**	**22972**	**0.11**	**24173**	**0.120**	**0.060**

4.2 Crop Water Requirement

Water requirement of a crop means the total quantity and the way in which a crop requires water, from the time it is sawn to the time it is harvested (crop period). Different crops will have different water requirements and the same crop may have different water requirements at different places of the same country depending upon the climate, type of soil, method of cultivation and useful rainfall etc. The total quantity of water required by the crop for its full growth may be expressed in Hectare-m or in Million Cubic meter or simply as a depth to which the total supplied irrigation water would stand above the surface without percolation or evaporation. This depth is known as delta for the crop. On the other hand, duty is defined as the area irrigated per cumec of discharge running for the base period. The duty helps us in designing the efficient canal irrigation system. If we know the crops area required to be irrigated and their duties, we can work out the discharge required for designing the canal.

Consumptive use for a particular crop may be defined as the total amount of water used by the plant in transpiration (building of plant tissues etc.) and evaporation from adjacent soils or from plant leaves, in any specified time. Therefore, crop water requirements are defined as "the depth of water needed to meet the water loss through evapo-transpiration of a disease free crop, growing in large fields under non restricting soil conditions including soil water and fertility and achieving full production under the given growing environment. Consumptive use for a particular crop may be defined as the total amount of water used by the plant in transpiration (building of plant tissues etc.) and evaporation from adjacent soils or from plant leaves, in any specified time. Thus crop water requirement is nothing but the consumptive use itself, but exclusive of effective precipitation, stored soil moisture or ground water. Consumptive use or evapotranspiration depends upon all those factors on which evaporation and transpiration depend such as, temperature, sunlight, wind movement etc. The crop water requirement of the Anjaw district has been worked out and a statement is prepared as shown in table 4.2 below which outlines the required and available water potential in the district.

Table.4.2. Crop Water Demand of the District

District	Gross Cropped Area	Net Irrigated area (ha)	Projected Area	Existing Water Potential (MCM))	Existing Water Potential (MCM)	Water Potential required in 2021 (MCM)	Water Potential to be created (MCM)
Anjaw	**11196**	**1097**	**10046**	**556.29**	**75.56**	**660.01**	**584.46**

4.3 Livestock Water Requirement

The requirement of water by livestock in the district has been derived from two livestock census (2007 & 20012), as discussed in Chapter-2. The table below represents the Block-wise water requirement as well as total water requirement of the district for livestock. The details of Livestock water demand are graphically represented as follows:

Table. 4.3 Livestock Water Demand of the District

Block	Total No. of Livestock/Wildlife	Present Water Demand (MCM)	Water Demand in 2020 (MCM)	Existing Water Potential (MCM)	Water Potential to be Created (MCM)
Hayuliang	23968	0.092439	0.184878	0.0092439	0.0924392
Manchal	11177	0.075874	0.151748	0.0075874	0.0758742
Chaglagam	11424	0.078556	0.157113	0.0078556	0.0785572
Hawai-Walong	25888	0.0160287	0.320575	0.0160287	0.0160288
Total	**72457**	**0.407156**	**0.814315**	**0.407156**	**0.407159**

4.4 Industrial water Requirement

This includes the quantity of water required to be supplied to offices, factories, different industries, hostels, hospitals etc. This quantity will vary considerably with the nature of city and with the type of industries and commercial establishments present in it. On an average, a provision of 20-25% of the total water consumption is generally made in the design for these uses. In small residential communities, the industrial use may be as low as 45 /litre/day, but in industrial cities, it may be as high as 450 litres/day. Some of the industries may develop their own supplies and may place little or no

demand on municipal system. Zoning of the city affects the location of the industries and may help in estimating future industrial demands. The industrial water demand for Anjaw district is given in table below: -

Table 4.4 Block-wise Industrial Water Requirement

Block	Type of Industry	No. of Industry	Water Demand (MCM)	No. of Proposed industry in 2020	Water Demand in 2020 (BCM)	Existing Water Potential (BCM)	Water Potential to be Created (BCM)
Hayuliang	Timber	0	0	2	0.0170852	0	0.0170852
Manchal	-	0	0	0	0	0	0
Chaglagam	-	0	0	0	0	0	0
Hawai-Walong	Timber	0	0	3	0.025628	0	0.0256278
Total		**0**	**0**	**5**	**0.04271**	**0**	**0.042713**

4.5 Water Demand for Power Generation

Water demand for power generation at present and water potential to be created for the district as received from the District Department is shown in the table 4.5 below.

Table 4.5 Block-wise Water Demand for Power Generation

Block	Power Requirement (MW)	Water Demand (BCM)	Water Demand in 2020 (BCM)	Existing Water Potential (BCM)	Water Potential to be Created (BCM)
Hayuliang	1.3	0.0734	0.2084	0.0734	0.135
Manchal	0.3	0.0206	0.7055	0.0206	0.6849
Chaglagam	0.45	0.0299	0.0299	0.0299	0
Hawai-Walong	1.35	0.0856	0.1865	0.0856	0.1009
Total	**3.4**	**0.2095**	**1.3398**	**0.2095**	**0.9208**

4.6 Total Water Demand for various sector

This section presents the total water demand of the district. The total water demand of the district for all the sectors described in 4.1 to 4.5 are given in the are assessed by summing up all the values of water demand for domestic uses, livestock, power and industrial/commercial uses etc. The current water demand has been indicated in Table 4.6.1 and the projected water demand has been depicted in Table 4.6.2. Total present water requirement for the district is **556.45 MCM** while the total future water requirement for the district is **664.59 BCM**.

Table 4.6.1: Present Water Demand of the District for Various Sectors

Blocks	Domestic (MCM)	Crop (MCM)	Livestock (MCM)	Industrial (MCM)	Power Generation (MCM)	Total (MCM)
Total	**0.11**	**556.30**	**0.04**	**-**	**-**	**556.45**

Table 4.6.2: Projected Water Demand of the District for Various Sectors During 2021

Blocks	Domestic (MCM)	Crop (MCM)	Livestock (MCM)	Industrial (MCM)	Power Generation (MCM)	Total (MCM)
Total	0.22	660.02	0.08	4.27	-	664.59

4.7 Water Budget

A water budget reflects the relationship between input and output of water through a region. Thus we have a direct comparison of supply of water and the natural demand for water. The details of the District-wise Water Budget of the district is given in Table.4.7.

Table. 4.7 Water Budget of Anjaw District

District	Existing water availability (MCM)		Total (MCM)	Water Demand (In MCM)		Present Water Gap / Surplus (MCM)	Projected Water Gap / Surplus (MCM)
	Surface water	Ground water		Present	Projected (2021)		
Anjaw	88.69	-	88.69	556.45	664.59	467.75	575.90

Table. 4.7.1 Water Budget for Crop Production in Anjaw District

District	Existing water availability (MCM)		Total (MCM)	Water Demand (In MCM)		Present Water Gap / Surplus (MCM)	Projected Water Gap / Surplus (MCM)
	Surface water	Ground water		Present	Projected (2021)		
Anjaw	88.69	-	88.69	556.45	660.017	467.760	571.32

Chapter-V

Strategic Action Plan for Irrigation in Anjaw District under PMSKY

The vision of the scheme PMKSY is to ensure access to some means of protective irrigation to all agricultural farms in the country, to increase water use efficiency by its 'per drop more crop' subcomponent, thus bringing much desired rural prosperity. The need of the hour is to have well managed watershed resources which not only enhances the ecological resource base of a rural economy but will also create sustainable livelihood opportunity.

At present, the schemes implemented by all the departments are broadly based and are required to be specific and location/ problem based. A systematic integrated approach having full participation of the users in the planning process is the need of the hour and extension facilitation should be inter-disciplinary. On the basis of methodology described above, a strategic plan for five years has been prepared starting from 2016-17 to 2019-21.

The schemes have been prepared by the proper consultation with the actual beneficiaries. The present DIP for Anjaw District is prepared duly considering all the data collected from the line department and converging data of all departments in each block and thus a realistic Action Plan is assured as prevented in the format for the years. The total required of this comprehensive DIP is coming for **Rs. 10141.93 lakh (***including State Plan Schemes IWMP under PMKSY Watershed Management***).** The plan in brief is detailed below.

Prioritization of Blocks and Activities under Strategic Action Plan

Prioritization of projects is very important for successful implementation of the selected projects. There are several block-wise activities proposed by each line departments under different components of PMKSY in Anjaw District. Some of the department has proposed different projects to be implemented within a life cycle of 1 year to 5 year and other departments has proposed with a life cycle of one year. Thus, it is necessary to prioritize the activities based on the irrigation potentials of each block and the nature of benefits to be availed from the particular project after its implementation. Therefore, prioritization of the proposed activities and blocks has been taken into consideration based on the discussion with public representatives of the district, availability of resources, production and productivity of different crops, percentage of small and marginal farmers, cropping intensity, water availability, land use pattern and percentage of irrigated area to gross cropped area in the blocks. The following charts and tables provide the details of strategic action plan for irrigation for each block as well as for whole district along with estimated costs and period of implementation of the proposed individual projects. Further, Annexure-I has given the Block-wise and Component-wise strategic action plan as per DIP Template for all the components of District Irrigation Plan.

5.1 Block-wise Total Plan of the District

The total outlay of the district Irrigation Plan for a period of 7 years is about **Rs. 10141.93 lakh** distributed among different blocks. The Hawai-Walong block has the maximum share of total outlay and constitutes about 39.72% (Rs. 4028.8 lakh) followed by Hayuliang block with 26.67% (Rs. 2704.93 lakh), Chaglagam and Manchal block with 19.31% (Rs. 1958.2 lakh) and 14.30% (Rs. 1450 lakh) respectively.

Figure.5.1 Block-wise Percentage Distribution of Total Outlay of the District

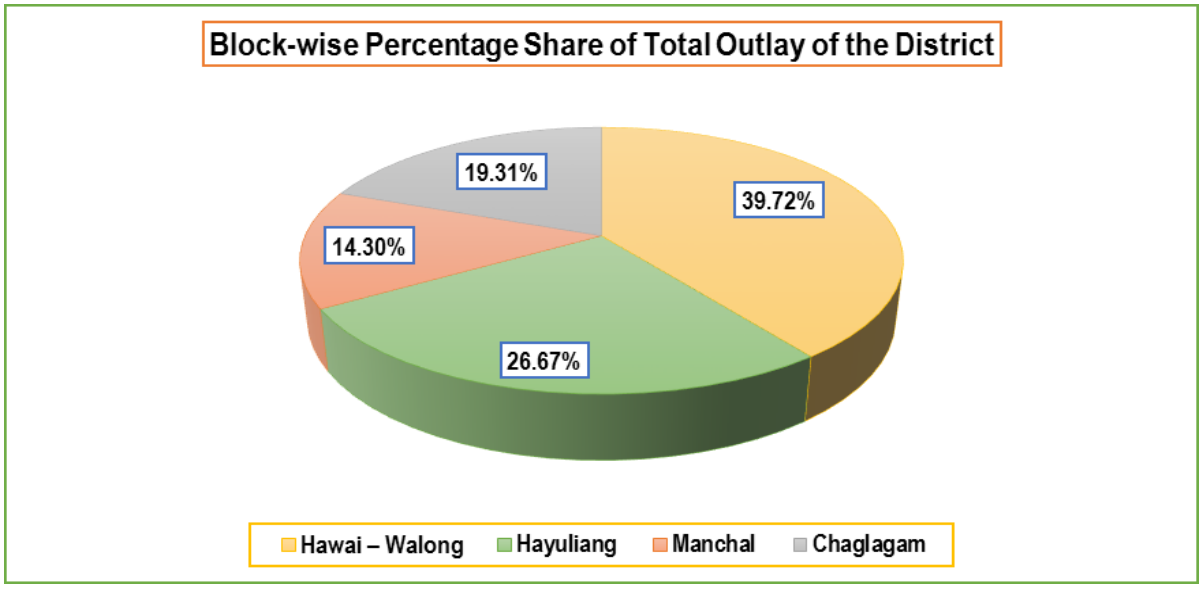


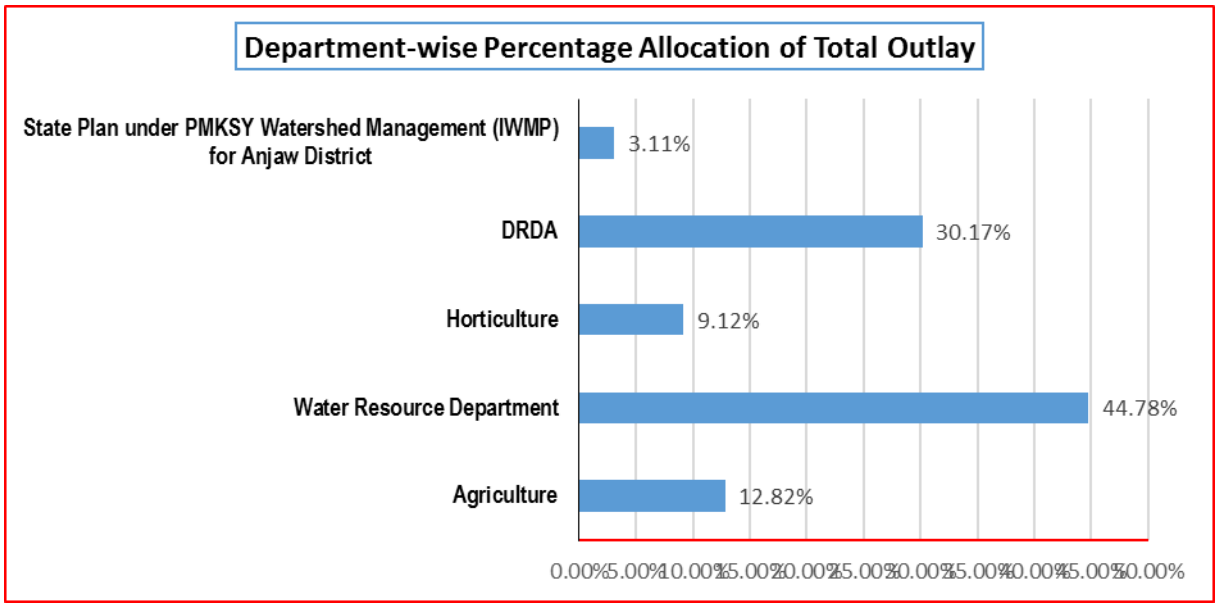
Table 5.1: Block-wise total Outlay of the District

Block-wise Total Outlay of the District under PMKSY (Rs. In Lakh)						
Name of the Block	Name of the Participating Departments				State Plan under PMKSY Watershed Management	Block Total
	WRD	Agriculture	Horticulture	DRDA		
Hawai – Walong	1845.4	740	275	890	278.4	4028.8
Hayuliang	1758	165	225	520	36.93	2704.93
Manchal	345	120	175	810	0	1450
Chaglagam	593.2	275	250	840	0	1958.2
Total	**4541.6**	**1300**	**925**	**3060**	**315.33**	**10141.93**

5.2. Share of Participating Departments on Total Outlay

A total of 05 departments has participated in the district Irrigation Plan preparation such as Agriculture, Horticulture, Department of Water Resources, DRDA and Soil Conservation wing of RD Dept (State). The details of percentage share of each depts. are as follows:

Figure.5.2 Percentage Distribution of Department-wise Total Outlay of the District



Maximum share of total outlay is contributed by WRD with a total share of 44.78%. DRDA under Watershed Component has proposed 30.17% of the total outlay, while agriculture and Horticulture dept. have proposed 12.82% and 9.12% of the total outlay. 3.11% of the total proposed fund has been proposed by RD Department under State Plan PMKSY watershed component.

Department-wise Proposed Outlay under PMKSY (Rs. In lakh)	
Name of Departments	**Estimated Outlay**
Agriculture	1300
Water Resource Department	4541.6
Horticulture	925
DRDA	3060
State Plan under PMKSY Watershed Management (IWMP) for Anjaw District	315.33
Total	**Rs 10141.93**

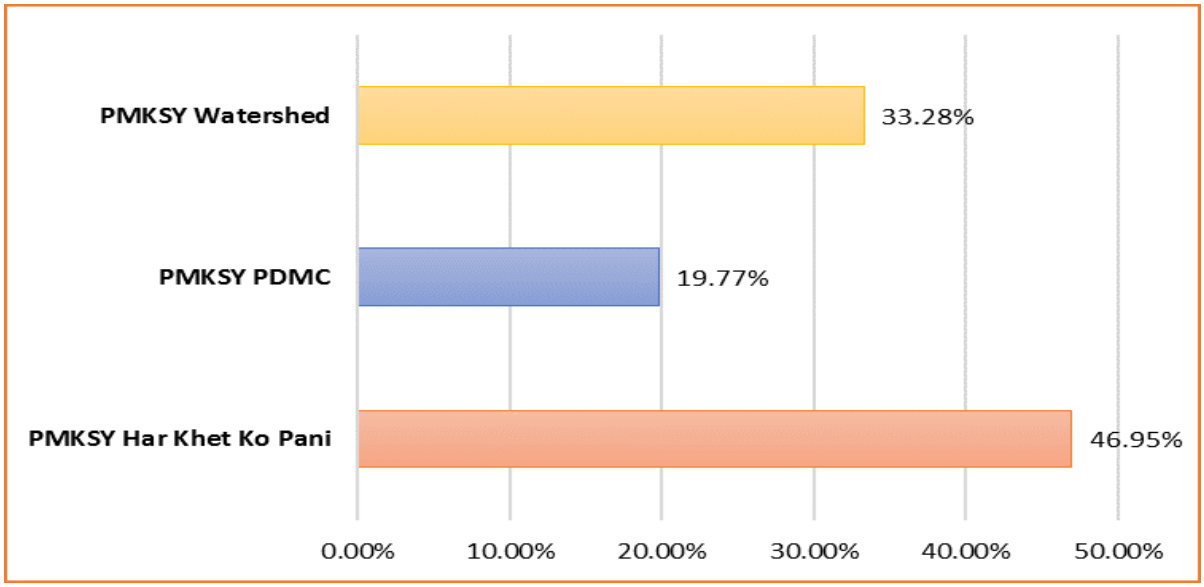
5.3. Component-wise Plan

As discussed above about various components of PMKSY, the plan is prepared accordingly. All the 05 departments like Agriculture, Water Resources Department, Horticulture, DRDA & RD Dept. has proposed 5 year Plan. The details of the component-wise yearly plan for the district irrigation plan is placed in Table-5.3.

The component wise total outlay of the district Irrigation Plan for 5 years is **Rs. 10141.93 lakh**. There is no ongoing projects in the district under AIBP component and, hence, no proposal has been proposed under this component by the department of Water Resources of the district. Har Khet Ko Pani components is to be executed mainly by Water Resource Department (WRD) and Agriculture **Rs. 4761.60 lakh** has been proposed by Water Resources Dept. and Agriculture Dept. for projects under Har Khet Ko Pani component. All the projects proposed by WRD and Agriculture Dept. will be

implemented within a period of 5 years. Per drop more crop component will be executed jointly by Agriculture, Horticulture Department. The department of Agriculture and Horticulture has proposed schemes under the plan such as DPAP Sprinkler, Jalkund, Drip irrigation schemes for all the blocks of the district. Agriculture Dept. has proposed a total fund of **Rs.1300.00 lakh** under PMKSY to be implemented within a period of 5 years, while the Horticulture Department has also proposed for Drip irrigation a total amount of **Rs. 925.00 lakh** under PMKSY for a period of 5 years. Under Watershed Management programme, DRDA has proposed schemes under the projects covering all the blocks of the district with a total fund of **Rs. 3060.00 lakh** and further, RD Dept. (*State level*) has proposed under State Plan Scemes under PMKSY Watershed Management (IWMP) with a total oulay of Rs. 315.33 lakh. It is also important to note that no Irrigation plan has been proposed by DRDA for convergence with MGNREGA under PMKSY. However, all the stakeholders need to have coordination among themselves to have the maximum irrigation efficiency in the district. The percentage share of each component of the district irrigation plan is diagrammatically represented as under:

Figure 5.3: Component-wise Percentage Allocation of Total Outlay of District Irrigation Plan



It is observed that maximum share of 46.95% is for Har Khet Ko Pani component proposed by WRD and Agriculture Department. All these projects are of high priority proposed by ZP members, MP, MLA and farmers of the District. PMKSY Per Drop More Crop component contributes only 19.77% and PMKSY Watershed component with a share of 33.28% to the total outlay.

Table.5.3 Component-wise Break-up Total Outlay

Component-wise and Department-wise Total Outlay of the District with year-wise Break-up								
Sr. No.	Name of the Component	Name of Department	Year-wise Break-up of the Total Outlay					Component-wise Total Outlay
			2016-17	2017-18	2018-19	2019-20	2020-21	
1	Accelerated Irrigation Benefit Programme (AIBP)	WRD	0	0	0	0	0	0
1	**AIBP Total**		**0**	**0**	**0**	**0**	**0**	**0**
2.	PMKSY Har Khet Ko Pani							
2(a)	PMKSY Har Khet Ko Pani	WRD	908.32	908.32	908.32	908.32	908.32	4541.6
2(b)	PMKSY Har Khet Ko Pani	Agriculture	44	44	44	44	44	220
2	**PMKSY Har Khet Ko Pani Total**		**952.32**	**952.32**	**952.32**	**952.32**	**952.32**	**4761.6**
3.	PMKSY Per Drop More Crop							
3(a)	PMKSY Per Drop More Crop	Agriculture	216	216	216	216	216	1080
3(b)	PMKSY Per Drop More Crop	Horticulture	185	185	185	185	185	925
3©	ATMA (Training & Extension Services)	ATMA (Agriculture)	0	0	0	0	0	0
3	**PMKSY Per Drop More Crop Total**		**401**	**401**	**401**	**401**	**401**	**2005**
4.	PMKSY Watershed							
4(a)	PMKSY Watershed (DRDA)	DRDA	612	612	612	612	612	3060
4(b)	State Plan under PMKSY Watershed Management (IWMP) for Anjaw District	State RD Department	63.066	63.066	63.066	63.066	63.066	315.33
4	**PMKSY Watershed Management Component Total**		**675.066**	**675.066**	**675.066**	**675.066**	**675.066**	**3375.33**
Year-wise Total Outlay under PMKSY (1+2+3+4)			**2028.386**	**2028.386**	**2028.386**	**2028.386**	**2028.386**	**10141.93**

5.4 Year Wise Plan of Participating Departments

The strategic action plan proposed under different departments has been further sub-divided based on year wise allocation of the total outlay. The projects proposed under Strategic Action Plan have been divided into four phases starting from project initiation and planning. Under the first stage, resource allocation will be done by each department for different projects running under their purview. The second phase is the implementation stage when the projects will be executed at the ground level and the third stage is the monitoring and evaluation to determine whether the proposed activities are falling under the objectives of PMKSY and also to complete the ongoing projects. The final stage is of review, under which each project to be executed under different departments will be scrutinized for any lacunae and the same will be completed under this stage. As per PMKSY Guidelines, the Strategic Action Plan shall be made for 5-7 Years taking the year 2016-17 as the base year. However, under Anjaw district all Departments has given their plan for 5 years, and, hence, the total proposed cost of each dept. has been considered and further divided as per yearly fund proposed by each department against different activities under the Irrigation Plan. The details of year-wise break-up of fund proposed by different implementing departments under the District Irrigation Plan is given in Table. 5.4.

Table 5.4. Year-wise Allocation of Outlay of Plan under Different Departments

Name of Department	Year-wise Estimated Cost of the Departments (Rs. in Lakhs)					Grand Total
	2016-17	2017-18	2018-19	2019-20	2020-21	
Agriculture	260	260	260	260	260	1300
WRD	908.32	908.32	908.32	908.32	908.32	4541.6
Horticulture	185	185	185	185	185	925
DRDA	612	612	612	612	612	3060
State Plan under PMKSY Watershed Management (IWMP) for Anjaw District / DRDA	63.066	63.066	63.066	63.066	63.066	315.33
Total	**2028.386**	**2028.386**	**2028.386**	**2028.386**	**2028.386**	**10141.93**

The total estimated outlay for the District Irrigation Plan for the district of Anjaw is **Rs. 10141.93 lakh**. The projected outlay has been proposed by different participating departments phase wise with a target to complete the proposed projects/schemes within a period of 5-7 years.

5.5 Expected Outcome

Table below represents the command area proposed by various department to bring additional land under irrigated cultivation through PMKSY.

Table 5-4: Block-wise Proposed Command Area

Area in Hectare

Block	Command Area (in hectares)
Hawai-Walong	7489.85
Hayuliang	3196.89
Manchal	4862.02
Chaglagam	5072.52
Total	**20621.28**

The following expected outcome are intended from the District Irrigation Plan: -

1. A total of 20621.28 Hectares of Irrigation potential is proposed to be created under the three components of PMKSY being the total gross cropped area of the district only 11196 hactre. Thus, it would boost up the gross crop intensity more significantly as the farmers would be able to go for multiple cropping throughout the year and hence, the district can be brought under the command of assured irrigation in the district.

2. The Water Resources Department of the district has proposed to irrigate a total of 688.5 hectare of land for a total expenditure of Rs.4541.6 lakh, while Agriculture department has proposed to irrigate 260.50 hectares of area for a proposed cost of Rs. 1300 lakh. Horticulture Department proposed 370 Hactre for a proposed amount of Rs. 925 lakhs. DRDA and State RD Deapartment has proposed the amount of Rs. 3060.00 lakh and Rs. 315.33 lakh to irrigate a total area of 17200.08 and 2102.2 Hectare respectively.

In terms of economic benefit, the assured water supply to the farm land will result in enhancement of production and productivity of the crops. This is likely to generate an additional income to the farmers of the district. This is also likely to increase maydays in non-recurring employment as also create livelihood opportunities in agriculture and allied sectors of the economy of the district through increased acreage under crops. The intervention will also contribute both in agriculture and horticulture production and productivity thereby paving the way of generating direct and indirect employment among the local people. Thus, the overall economy of the district would get better and better in the days to come after the contemplated projects get implemented and yield results in terms of enhanced crop production.

ANNEXURES

5.6 Strategic Action Plan for irrigation in respect of Anjaw District, Arunachal Pradesh under Pradhan Mantri Krishi Sinchayee Yojana (PMKSY)

Annexure-I

Strategic Action Plan of Water Resources Department under PMKSY

Sl No	Name of the District	Name of the Blocks/ Sub Districts	Village Name	Concerned Ministry/ Department	Component	Activity	Activity Details (if any)	Total Number/ Capacity (Cum)	Command Area/ Irrigation on Potential (Ha)	Period of Implementation (5/7 Years)	Estimated Cost (Rs. In lacs)
1	Anjaw	Hawai - Walong	Yakung	MoWR	HKKP	MIP at Yakung (Allangati Nallah)	MIP	1	8	5	20
2	Anjaw	Hawai - Walong	Yakung	MoWR	HKKP	MIP at Yakung (Chofrang Nallah)	MIP	1	8	5	20
3	Anjaw	Hawai - Walong	Yakung	MoWR	HKKP	MIP at Yakung (Kachaktul Nallah)	MIP	1	6	5	15
4	Anjaw	Hawai - Walong	Wallong Town	MoWR	HKKP	MIP at Wallong Town (Pomar Nallah)	MIP	1	9	5	23
5	Anjaw	Hawai - Walong	Taptap under Wallong	MoWR	HKKP	MIP at Taptap under Wallong (Pomar Nallah)	MIP	1	8	5	20
6	Anjaw	Hawai - Walong	Breechk under Wallong	MoWR	HKKP	MIP at Breechk under Wallong (Targong Nallah)	MIP	1	9	5	23
7	Anjaw	Hawai - Walong	Lothi Nallah under Wallong	MoWR	HKKP	MIP at LothiNallah under Wallong (Lohti Nallah)	MIP	1	10	5	25
8	Anjaw	Hawai - Walong	Duthi Nallah under Wallong	MoWR	HKKP	MIP at DuthiNallah under Wallong (Dhuti Nallah)	MIP	1	6	5	15
9	Anjaw	Hawai - Walong	Lawngwang under Kaho	MoWR	HKKP	MIP at Lawngwang under Kaho (Karchu Nallah)	MIP	1	12	5	30
10	Anjaw	Hawai - Walong	Detok under Kaho	MoWR	HKKP	MIP at Detok under Kaho (Khurati Nallah)	MIP	1	11	5	28
11	Anjaw	Hawai - Walong	Kaho village	MoWR	HKKP	MIP at Kaho village (Khurati Nallah)	MIP	1	16	5	40
12	Anjaw	Hawai - Walong	Yealliang village	MoWR	HKKP	MIP at Yealliang village (Yealiang)	MIP	1	8	5	20
13	Anjaw	Hawai - Walong	Lautul village	MoWR	HKKP	MIP at Lautul village (Lautul Nallah)	MIP	1	7	5	18
14	Anjaw	Hawai - Walong	Yalang	MoWR	HKKP	MIP at Yalang (Yaki)	MIP	1	25	5	63

15	Anjaw	Hawai - Walong	Kawai	MoWR	HKKP	MIP at Kawai (Hawai nallah)	MIP	1	9	5	23
16	Anjaw	Hawai - Walong	Tapang (Chachi)	MoWR	HKKP	MIP at Tapang (Chachi)	MIP	1	12	5	30
17	Anjaw	Hawai - Walong	Navil	MoWR	HKKP	MIP at Navil (Navil)	MIP	1	16	5	40
18	Anjaw	Hawai - Walong	Ruti	MoWR	HKKP	MIP at Ruti (Ruti Nallah)	MIP	1	11	5	28
19	Anjaw	Hawai - Walong	Hawatlang	MoWR	HKKP	MIP at Hawatlang (Hawai)	MIP	1	12	5	30
20	Anjaw	Hawai - Walong	Senung	MoWR	HKKP	MIP at Senung (Sung)	MIP	1	9	5	23
21	Anjaw	Hawai - Walong	Serong	MoWR	HKKP	MIP at Serong (Sherong)	MIP	1	12	5	30
22	Anjaw	Hawai - Walong	SakNallah at Wahal village.	MoWR	HKKP	MIP at SakNallah at Wahal village. (Sak Nallah)	MIP	1	12	5	30
23	Anjaw	Hawai - Walong	Blong	MoWR	HKKP	MIP at Blong (Bhai)	MIP	1	7	5	15
24	Anjaw	Hawai - Walong	Chandun	MoWR	HKKP	MIP at Chandun (Rong Bloh)	MIP	1	5	4	15
25	Anjaw	Hawai - Walong	Sung (Prundung)	MoWR	HKKP	MIP at Sung (Prundung)	MIP	1	3	5	8
26	Anjaw	Hawai - Walong	Musai	MoWR	HKKP	MIP at Musai (Musai)	MIP	1	4	5	10
27	Anjaw	Hawai - Walong	Tull (Chandun) under Hawai	MoWR	HKKP	MIP at Tull (Chandun) under Hawai (Rong Bloh)	MIP	1	3	5	10
28	Anjaw	Hawai - Walong	Chirag under Kibithoo	MoWR	HKKP	MIP at Chirag under Kibithoo (Chirag Nallah)	MIP	1	4	5	10
29	Anjaw	Hawai - Walong	Dong under Walong	MoWR	HKKP	MIP at Dong under Walong (Ratham)	MIP	1	3.5	3	10
30	Anjaw	Hawai - Walong	Sapkung	MoWR	HKKP	MIP at Sapkung ((Sapkung)	MIP	1	4	5	10
31	Anjaw	Hawai - Walong	Tilam under Walong	MoWR	HKKP	MIP at Tilam under Walong (Tilam)	MIP	1	4	5	10
32	Anjaw	Hawai - Walong	Tinai	MoWR	HKKP	MIP at Tinai (Tinai)	MIP	1	3	5	15
33	Anjaw	Hawai - Walong	Walong village	MoWR	HKKP	MIP at Walong village (Pomar nallah)	MIP	1	5	5	20
34	Anjaw	Hawai - Walong	Krowti under Kibithoo	MoWR	HKKP	MIP at Krowti under Kibithoo (Krowti nallah)	MIP	1	3	5	10
35	Anjaw	Hawai -	Kundan	MoWR	HKKP	MIP at Kundan (Kundan)	MIP	1	3	5	12

		Walong									
36	Anjaw	Hawai - Walong	Bara Kundan	MoWR	HKKP	MIP at Bara Kundan (Kundan)	MIP	1	5	5	15
37	Anjaw	Hawai - Walong	Walong near ALG.	MoWR	HKKP	MIP at Walong near ALG. (Pomar nallah)	MIP	1	2	3	6
38	Anjaw	Hawai - Walong	Sarti village	MoWR	HKKP	MIP at Sarti village (Sarti Nallah)	MIP	1	6	5	20
39	Anjaw	Hawai - Walong	Pangung under Walong	MoWR	HKKP	MIP at Pangung under Walong (Pangung)	MIP	1	2	5	10
40	Anjaw	Hawai - Walong	Seiti under Walong	MoWR	HKKP	MIP at Seiti under Walong (Seiti)	MIP	1	2	5	8
41	Anjaw	Hawai - Walong	Bah under Walong	MoWR	HKKP	MIP at Bah under Walong (Bah)	MIP	1	2	5	10
42	Anjaw	Hayuliang	Amliang	MoWR	HKKP	MIP at Amliang (Ampani)	MIP	1	9	5	23
43	Anjaw	Hayuliang	Mahikung	MoWR	HKKP	MIP at Mahikung ((mahikung nallah)	MIP	1	12	5	30
44	Anjaw	Hayuliang	Chirang	MoWR	HKKP	MIP at Chirang (Chai)	MIP	1	12	5	30
45	Anjaw	Hayuliang	Bagiliang	MoWR	HKKP	MIP at Bagiliang (Bagi)	MIP	1	12	5	30
46	Anjaw	Hayuliang	Khroliang	MoWR	HKKP	MIP at Khroliang (Khroa nllah)	MIP	1	9	5	23
47	Anjaw	Hayuliang	Nunuliang	MoWR	HKKP	MIP at Nunuliang (Nenu nallah)	MIP	1	7	5	18
48	Anjaw	Hayuliang	Supliang	MoWR	HKKP	MIP at Supliang (Kamba nallah)	MIP	1	6	5	15
49	Anjaw	Hayuliang	Braliang	MoWR	HKKP	MIP at Braliang (Brai)	MIP	1	11	5	28
50	Anjaw	Hayuliang	Kaniliang	MoWR	HKKP	MIP at Kaniliang ((Brai)	MIP	1	11	5	28
51	Anjaw	Hayuliang	Palang	MoWR	HKKP	MIP at Palang (Fulung)	MIP	1	9	5	23
52	Anjaw	Hayuliang	Rutilang	MoWR	HKKP	MIP at Rutilang (Ruti Nallah)	MIP	1	10	5	25
53	Anjaw	Hayuliang	Brigung	MoWR	HKKP	MIP at Brigung (Brai)	MIP	1	9	5	23
54	Anjaw	Hayuliang	Room	MoWR	HKKP	MIP at Room (Rum)	MIP	1	9	5	23
55	Anjaw	Hayuliang	Chirang	MoWR	HKKP	MIP at Chirang (Chai)	MIP	1	8	5	20
56	Anjaw	Hayuliang	Goiliang	MoWR	HKKP	MIP at Goiliang (Dha)	MIP	1	7	5	18
57	Anjaw	Manchal	Zong	MoWR	HKKP	MIP at Zong (Tuwat)	MIP	1	9	5	23
58	Anjaw	Manchal	Chilliang	MoWR	HKKP	MIP at Chilliang (Dha)	MIP	1	8	5	20
59	Anjaw	Manchal	Manchal	MoWR	HKKP	MIP at Manchal (Tuwat)	MIP	1	11	5	28
60	Anjaw	Manchal	Kambing	MoWR	HKKP	MIP at Kambing (Kambing)	MIP	1	9	5	23
61	Anjaw	Manchal	Dhanbari	MoWR	HKKP	MIP at Dhanbari (Manjupani)	MIP	1	8	5	20
62	Anjaw	Manchal	Quibang	MoWR	HKKP	MIP at Quibang (Salpani)	MIP	1	9	5	23
63	Anjaw	Manchal	Hamalong	MoWR	HKKP	MIP at Hamalong (Halat)	MIP	1	12	5	30
64	Anjaw	Manchal	New Pitong	MoWR	HKKP	MIP at New Pitong (Tuwok)	MIP	1	11	5	28
65	Anjaw	Manchal	Siet	MoWR	HKKP	MIP at Siet (Awaat)	MIP	1	9	5	23
66	Anjaw	Manchal	Mangeng	MoWR	HKKP	MIP at Mangeng (Halaipani)	MIP	1	10	5	25
67	Anjaw	Manchal	Palong (Pangung)	MoWR	HKKP	MIP at Palong (Pangung)	MIP	1	12	5	30

68	Anjaw	Manchal	Sangsham (Kanji)	MoWR	HKKP	MIP at Sangsham (Kanji)	MIP	1	8	5	20
69	Anjaw	Manchal	Khamuk	MoWR	HKKP	MIP at Khamuk (Tuwat)	MIP	1	8	5	20
70	Anjaw	Manchal	Towa village	MoWR	HKKP	MIP at Towa village (Towa nallah)	MIP	1	3	5	12
71	Anjaw	Manchal	Manchal Village	MoWR	HKKP	MIP at Manchal Village (tuwat)	MIP	1	5	5	20
72	Anjaw	Chaglagam	Roiliang	MoWR	HKKP	MIP at Roiliang (Rai nallah)	MIP	1	8	5	20
73	Anjaw	Chaglagam	Payuliang	MoWR	HKKP	MIP at Payuliang (Pai)	MIP	1	8	5	20
74	Anjaw	Chaglagam	Tabretiang	MoWR	HKKP	MIP at Tabretiang (Pai)	MIP	1	9	5	23
75	Anjaw	Chaglagam	Chaipuliang	MoWR	HKKP	MIP at Chaipuliang (Khai)	MIP	1	7	5	18
76	Anjaw	Chaglagam	Mailiang	MoWR	HKKP	MIP at Mailiang (Mailpani)	MIP	1	6	5	15
77	Anjaw	Chaglagam	Tarampa	MoWR	HKKP	MIP at Tarampa (Dalai)	MIP	1	8	5	20
78	Anjaw	Chaglagam	Apumna	MoWR	HKKP	MIP at Apumna (Dalai)	MIP	1	16	5	40
79	Anjaw	Chaglagam	Chirpru	MoWR	HKKP	MIP at Chirpru (Dalai)	MIP	1	9	5	23
80	Anjaw	Chaglagam	Bagigam	MoWR	HKKP	MIP at Bagigam (Dalai)	MIP	1	7	5	18
81	Anjaw	Chaglagam	Polung under Chakka	MoWR	HKKP	MIP at Polung under Chakka (Whupu)	MIP	1	8	5	20
82	Anjaw	Chaglagam	Kakanghagam under Chaglagam	MoWR	HKKP	MIP at Kakanghagam under Chaglagam (Kacho)	MIP	1	4	5	20
83	Anjaw	Chaglagam	Tablagam under Chaglagam	MoWR	HKKP	MIP at Tablagam under Chaglagam (Kacho)	MIP	1	5	5	20
84	Anjaw	Chaglagam	Gramtong under Brailiang	MoWR	HKKP	MIP at Gramtong under Brailiang (Brai)	MIP	1	4	5	16
85	Anjaw	Chaglagam	Kasonglat	MoWR	HKKP	MIP at Kasonglat (Kesang nallah)	MIP	1	5	5	20
86	Anjaw	Chaglagam	Mailiang under Chaglagam	MoWR	HKKP	MIP at Mailiang under Chaglagam (Maipani)	MIP	1	5	5	20
87	Anjaw	Hayuliang CD Block	Spring Devpt	MoWR	HKKP	Spring Devpt	Spring Dev	300		5	1401
88	Anjaw	Changlagam CD Block	Sub-surface Dyke.	MoWR	HKKP	Sub-surface Dyke.	Others	60		5	280.2
89	Anjaw	Walong CD Block	RWH	MoWR	HKKP	RWH	RWH	220		5	1027.4
Total									**688.5**		**4541.6**

Annexure-II

Strategic Action Plan of Agriculture Department under PMKSY

Sl No	Name of the District	Name of the Blocks/Sub Districts	Village Name	Concerned Ministry/ Department	Component	Activity	Activity Details (if any)	Total Number/ Capacity (Cum)	Command Area/ Irrigation on Potential (Ha)	Period of Implementation (5/7 Years)	Estimated Cost (Rs. In lacs)
90	Anjaw	Hayuliang	Jalkund at Kromna	MoA & FW	HKKP	Jalkund at Kromna	Jalkund	1	1	5	15
91	Anjaw	Hawai - Walong	Urban Hawai.	MoA & FW	HKKP	CC Drain & Rain water Storage Tank at Paddy field Urban Hawai.	CC Drain & Rain Water Storage	1	24	5	60
92	Anjaw	Hayuliang	Brigung	MoA & FW	HKKP	Jalkund at Brigung	Jalkund	1	0.5	5	10
93	Anjaw	Hayuliang	Goiliang	MoA & FW	HKKP	Jalkund at Goiliang	Jalkund	1	0.5	5	10
94	Anjaw	Hayuliang	Barfu (Hayuliang)	MoA & FW	HKKP	Jalkund at Barfu (Hayuliang)	Jalkund	2	1	5	30
95	Anjaw	Chaglagam	Roiliang	MoA & FW	HKKP	Jalkund at Roiliang	Jalkund	1	0.5	5	15
96	Anjaw	Chaglagam	Payuliang	MoA & FW	HKKP	Jalkund at Payuliang	Jalkund	1	1	5	20
97	Anjaw	Chaglagam	Chaglagam	MoA & FW	HKKP	Jalkund at Chaglagam	Jalkund	2	1	5	30
98	Anjaw	Chaglagam	Mattiliang	MoA & FW	HKKP	Jalkund at Mattiliang	Jalkund	2	1	5	30
99	Anjaw	Hayuliang		MoA & FW	PDMC	Jalkund	Jalkund	50	50	5	100
100	Anjaw	Chaglagam		MoA & FW	PDMC	sprinkler WRD	Sprinkler	60	60	5	180
101	Anjaw	Manchal		MoA & FW	PDMC	Jalkund	Jalkund	60	60	5	120
102	Anjaw	Hawai - Walong		MoA & FW	PDMC	sprinkler WRD	Sprinkler	60	60	5	180
103	Anjaw	Hawai - Walong		MoA & FW	PDMC (Supplementary water management activities)	Drought Proofing through Check Dams/ Water Harvesting Structures	WHS	100		5	500
Total									**260.50 Ha**		**1300**

Annexure-III

Strategic Action Plan of Horticulture Department under PMKSY

Sl No	Name of the District	Name of the Blocks/Sub Districts	Village Name	Concerned Ministry/ Department	Component	Activity	Activity Details (if any)	Total Number/ Capacity (Cum)	Command Area/ Irrigation on Potential (Ha)	Period of Implementation (5/7 Years)	Estimated Cost (Rs. In lacs)
104	Anjaw	Manchal		Horticulture	PDMC	Drip WRD System in L. Cardamom Plantation	Drip	50 Units	50	5	125
105	Anjaw	Manchal		Horticulture	PDMC	Drip WRD System in Orange Plantation	Drip	20 Units	20	5	50
106	Anjaw	Hayuliang		Horticulture	PDMC	Drip Irriation System in L. Cardamom Plantation	Drip	70 Units	70	5	175
107	Anjaw	Hayuliang		Horticulture	PDMC	Drip WRD System in Orange Plantation	Drip	20 Units	20	5	50
108	Anjaw	Chaglagam		Horticulture	PDMC	Drip WRD System in L. Cardamom Plantation	Drip	100 Units	100	5	250
109	Anjaw	Hawai-Walong		Horticulture	PDMC	Drip WRD System in L. Cardamom Plantation	Drip	100 Units	100	5	250
110	Anjaw	Hawai-Walong		Horticulture	PDMC	Drip WRD System in Kiwi Plantation	Drip	10 Units	10	5	25
Total									**370 Ha**		**Rs 925**

Annexure-IV

Strategic Action Plan of DRDA under PMKSY

Strategic Action Plan for DRDA Under PMKSY, Anjaw District											
Sl No	Name of the District	Name of the Blocks/Sub Districts	Village Name	Concerned Ministry/ Department	Component	Activity	Activity Details (if any)	Total Number/ Capacity (Cum)	Command Area/ Irrigation on Potential (Ha)	Period of Implementation (5/7 Years)	Estimated Cost (Rs. In lacs)
111	Anjaw	Hawai-Walong		DRDA	PMKSY Watershed	1. Plantation of Cardamom	Watershed / Others	30	1200	5	180
112	Anjaw	Hawai-Walong		DRDA	PMKSY Watershed	2. Plantation of Orange	Watershed / Others	30	1200	5	180
113	Anjaw	Hawai-Walong		DRDA	PMKSY Watershed	3. Land Protection	Watershed / Others	20	1333.34	5	200
114	Anjaw	Hawai-Walong		DRDA	PMKSY Watershed	4. Land Development	Watershed / Others	20	533.34	5	80
115	Anjaw	Hawai-Walong		DRDA	PMKSY Watershed	5. Community Plantation (Social Forestry)	Watershed / Others	30	266.67	5	40
116	Anjaw	Hawai-Walong		DRDA	PMKSY Watershed	6. Livelihood Activity (Mithun rearing, Pig Rearing etc.)	Watershed / Others	30		5	60
117	Anjaw	Hawai-Walong		DRDA	PMKSY Watershed	7. Production System & Micro-enterprise	Watershed / Others	30		5	60
118	Anjaw	Hawai-Walong		DRDA	PMKSY Watershed	8. Nallah Bund	Watershed / Others	15	600	5	90
119	Anjaw	Hawai-Walong		DRDA State	PMKSY Watershed (State) IWMP - 2	IWMP at Kibithoo, Kundun , Dhanbari, Musai, Dong , Tenai and Tilam under Hawai-Walong Block proposed by Directorate of Rural	Watershed / Others	1	1856	5	278.4

						Development.					
Hawai-Walong Block Total								**206**	**6989.35**	**5 years**	**1168.4**
120	Anjaw	Hayuliang		DRDA	PMKSY Watershed	1. Plantation of Cardamom	Watershed / Others	40	666.67	5	100
121	Anjaw	Hayuliang		DRDA	PMKSY Watershed	2. Plantation of Orange	Watershed / Others	25	533.34	5	80
122	Anjaw	Hayuliang		DRDA	PMKSY Watershed	3. Land Protection	Watershed / Others	20	666.67	5	100
123	Anjaw	Hayuliang		DRDA	PMKSY Watershed	4. Land Development	Watershed / Others	20	333.34	5	50
124	Anjaw	Hayuliang		DRDA	PMKSY Watershed	5. Community Plantation (Social Forestry)	Watershed / Others	40	266.67	5	40
125	Anjaw	Hayuliang		DRDA	PMKSY Watershed	6. Livelihood Activity (Mithun rearing, Pig Rearing etc.)	Watershed / Others	30		5	60
126	Anjaw	Hayuliang		DRDA	PMKSY Watershed	7. Production System & Micro-enterprise	Watershed / Others	45		5	60
127	Anjaw	Hayuliang		DRDA	PMKSY Watershed	8. Nallah Bund	Watershed / Others	10	200	5	30
128	Anjaw	Hayuliang		DRDA State	PMKSY Watershed (State) IWMP - 1	IWMP at Paya, Takaliang, Mahikong and Machma under Hayuliang Block proposed by Directorate of Rural Development.	Watershed / Others	1	246.2	5	36.93
Hayuliang Block Total								**231**	**2912.89**	**5 years**	**556.93**
129	Anjaw	Manchal		DRDA	PMKSY Watershed	1. Plantation of Cardamom	Watershed / Others	30	1000	5	150
130	Anjaw	Manchal		DRDA	PMKSY Watershed	2. Plantation of Orange	Watershed / Others	30	1200	5	180
131	Anjaw	Manchal		DRDA	PMKSY Watershed	3. Land Protection	Watershed / Others	20	1333.34	5	200
132	Anjaw	Manchal		DRDA	PMKSY Watershed	4. Land Development	Watershed / Others	20	533.34	5	80
133	Anjaw	Manchal		DRDA	PMKSY Watershed	5. Community	Watershed /	30	266.67	5	40

						Plantation (Social Forestry)	Others				
134	Anjaw	Manchal		DRDA	PMKSY Watershed	6. Livelihood Activity (Mithun rearing, Pig Rearing etc.)	Watershed / Others	30		5	60
135	Anjaw	Manchal		DRDA	PMKSY Watershed	7. Production System & Micro-enterprise	Watershed / Others	30		5	60
136	Anjaw	Manchal		DRDA	PMKSY Watershed	8. Nallah Bund	Watershed / Others	15	266.67	5	40
Manchal Block Total								**205**	**4600.02**	**5 years**	**810**
137	Anjaw	Chaglagam		DRDA	PMKSY Watershed	1. Plantation of Cardamom	Watershed / Others	40	1866.67	5	280
138	Anjaw	Chaglagam		DRDA	PMKSY Watershed	2. Plantation of Orange	Watershed / Others	25	1200	5	180
139	Anjaw	Chaglagam		DRDA	PMKSY Watershed	3. Land Protection	Watershed / Others	20	666.67	5	100
140	Anjaw	Chaglagam		DRDA	PMKSY Watershed	4. Land Development	Watershed / Others	20	533.34	5	80
141	Anjaw	Chaglagam		DRDA	PMKSY Watershed	5. Community Plantation (Social Forestry)	Watershed / Others	40	266.67	5	40
142	Anjaw	Chaglagam		DRDA	PMKSY Watershed	6. Livelihood Activity (Mithun rearing, Pig Rearing etc.)	Watershed / Others	30		5	60
143	Anjaw	Chaglagam		DRDA	PMKSY Watershed	7. Production System & Micro-enterprise	Watershed / Others	45		5	60
144	Anjaw	Chaglagam		DRDA	PMKSY Watershed	8. Nallah Bund	Watershed / Others	10	266.67	5	40
Chaglagam Block Total								**230**	**4800.02**	**5 years**	**840**
Total plan for DRDA under PMKSY, Anjaw District									**19302.28**		**3375.33**

Annexure-V: Thematic Maps of Anjaw District

WATERSHED MAP

Administrative

District Boundary

Water Resource

Watershed Boundary

N

Scale 1: 790000

0 10 mi

SLOPE MAP

Administrative

District Boundary

Terrain

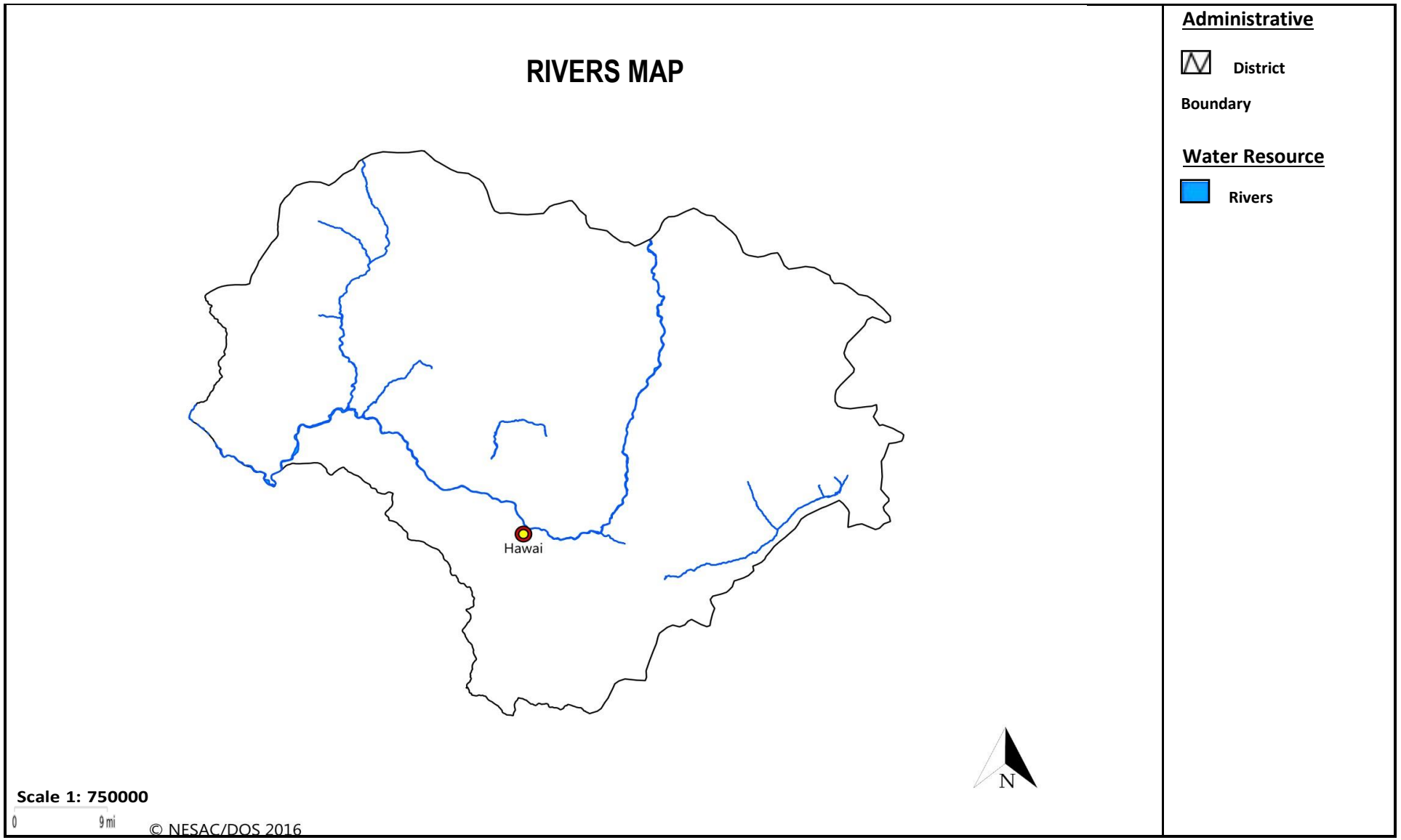
Slope

- < 1
- 1 - 3
- 3 - 8
- 8 - 15
- 15 - 30
- 30 - 45
- > 45

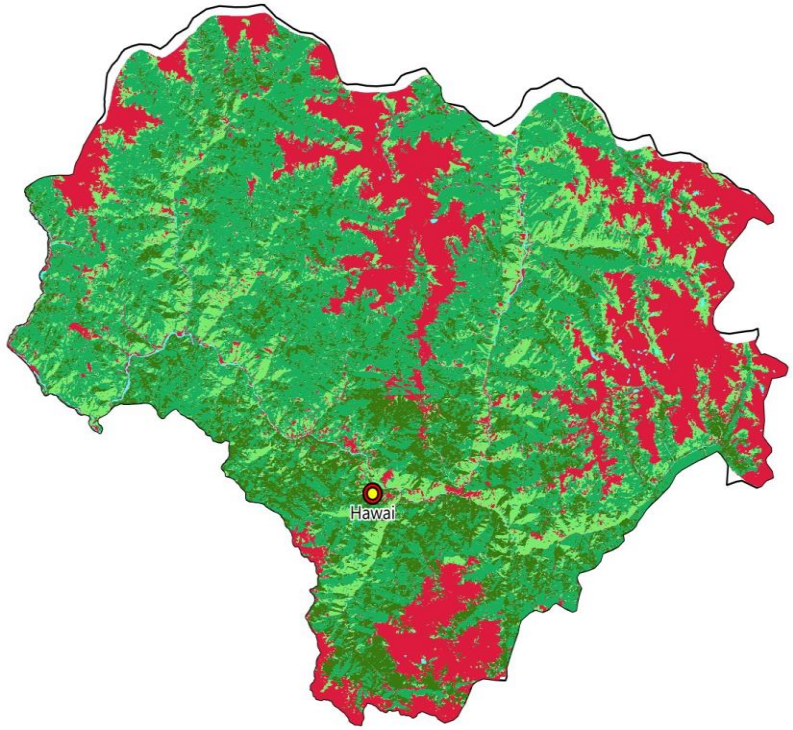
N

Scale 1: 790000

0 10 mi


RIVERS MAP
Hawai
N
Scale 1: 750000
0
9 mi
© NESAC/DOS 2016
Administrative
District
Boundary
Water Resource
Rivers

FOREST COVER MAP



Administrative

District Boundary

Land Resource

Forest Cover
Moderately Dense forest
Open Forest
Scrubs
Very Dense Forest
Waterbodies
Non Forest

N

Scale 1:

0 10 mi

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