INTEGRATED WATERSHED MANAGEMENT PROGRAMME IWMP- V /2012-2013

Commissionerate of Rural Development

Govt. of Kerala

DETAILED PROJECT REPORT

Wandoor Block Panchayat

Technical Supporting Organization
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ABBRIVIATIONS

ADA	Assistant Director of Agriculture
BDO	Block Development Officer
BLCC	Block Level Co-Ordination Committee
BPL	Below Poverty Level
DDP	Desert Development Programme
DPAP	Draught prone areas programme
DPC	District Planning Committee
DPR	Detailed Project Report
EPA	Entry Point Activity
FGD	Focus Group Discussion
GIS	Geographical information system
GPS	Geographical Positioning System
GWD	Ground water Department
IKM	Information Kerala Mission
JBDO	Joint Block Development Officer
JLP	Joint Liability Group
KRWSA	Kerala Rural Water Supply and Sanitation Agency
KWA	Kerala Water Authority
LAP	Livelihood Action Plan
LSGD	Local Self Government Department
LSS	Livelihood Support System
MGNREGA	Mahatma Ghandi national rural employment gurantee act
MIS	Monitoring evaluation system
NHG	Neighbour Hood Groups
NRHM	National Rural Horticultural mission
NRLM	National Rural Livelihood Mission
NRM	Natural Resource Management
PIA	Project Implementing Agency
PLCC	Panchayat Level co-ordination Committee
PNP	Participatory Net Planning
PPR	Preliminary Project Report
PRA	Participatory Rural Agency
PSM	Production System Management
PWD	Public Work Department
SHG	Self Help Group
SLNA	State Level Nodal Agencies
TSO	Technical Support Organization
TSU	Technical Support Unit
UG	User Group
VEO	Village Extension Officer
VFPCK	Vegetable and Fruit Promotional Council -Kerala
WCC	watershed co-ordination Committee
WCDC	Water Cell Data cum Centre
WDF	Watershed Development Fund
WDT	Watershed Development Team

PART - I

CHAPTER -1

INTRODUCTION

1. Project background

A watershed is an area from which run off, resulting from precipitation flows past a single point into a large stream, river, lake or an ocean. Apart from the abstract factors that the watershed experiences, it is comprised of land, water and biomass. Certain delicate balances are maintained in the ever varying interactions among the environmental factors that each individual watershed is exposed to sustain the well being of it. Every watershed has to be identified as a unique watershed ecosystem. These balances are jeopardized due to disproportionate and irrational interventions of the watershed community. Man spearheads and thus watershed deterioration begins. This basically inflicts upon the water cycle. This has resulted in drinking water scarcity, agricultural drought, fall in farm production, denial of hydel power generation, crisis in industries and ecological problems. Main reasons are topography, intensity and duration of rainfall, land use pattern and population. Watershed development is an integration of technology within the natural boundary of a drainage area for optimum development of land, water and plant resources to meet the basic minimum needs of people in a sustained manner. A developed watershed provides food, fuel, fiber, fodder, fruits, drinking water and employment. Thus scientific water management approach is the only tool to develop a watershed.

Watershed management, the process of guiding &organizing, land and other resource usage in a watershed ensuring the sustenance of the environment (mainly the soil and water resources) i.e. Need to recognize the interrelationships between, land use, soil-water, and slope of terrain. Unifying focus in watershed management is in how various human activities affect the relationship between water and other natural resources .Watershed management provides a basis for actions concerning the development and conservation.

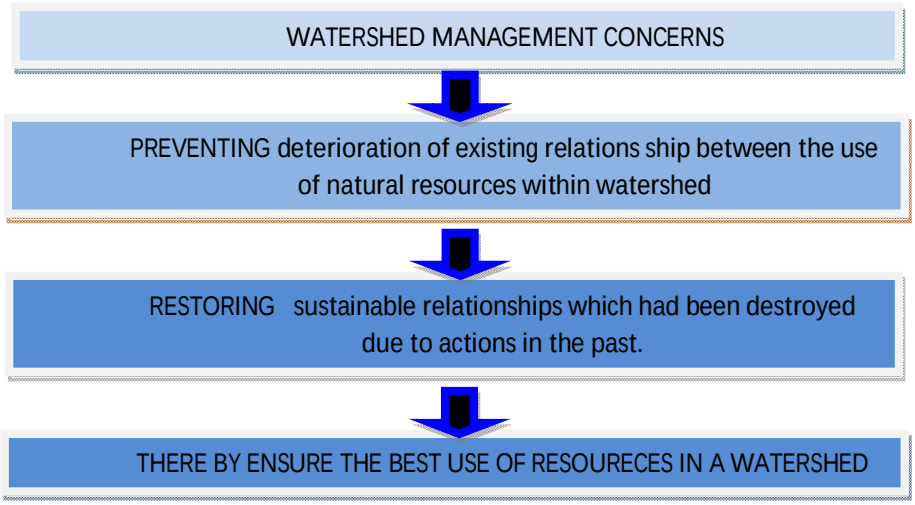
Watershed management is a single window, integrated area development programme. Integrated watershed management cannot perhaps be achieved just by following integration of resources using multidisciplinary approach with the funding or support provided alone under any watershed programme. This may also involve harmonized use of resources available from other ongoing or existing sectoral and development schemes in the area or district. Such resources can be fit together with the watershed programmes that will not only help useful convergence of various schemes and programmes for overall development of the area but also in effective monitoring.

Watershed management is the study of relevant character of a watershed aimed at the sustainable distribution of its resources and the process of creating and implementing plans, programmes, and projects to sustain and enhance watershed functions that affect the plant, animal, and human community within watershed boundaries. Features of a watershed that agencies seek to manage include water supply, water quality, drainage, storm water runoff water rights and the overall planning and utilization of watershed.

Watershed management implies the wise use of soil, water, and bio resources in a watershed to obtain optimum production with minimum disturbance to environment. The basic objective of watershed management is to solve the problems of soil and water based on the concept that all the resources are interdependent and must therefore be considered together. Among all the interventions envisaged in watershed management measures, water resource development and management gain primary importance.

A new concept of training and capacity building in integrated watershed management is most important both for field level project staff and officers. Apart from enhancing technical skill of project staff, this would also provide opportunities for community members to develop their capacity to sustain the programme as the future custodians of the programme at the time of withdrawal.

Programme will be sustainable only if it continues to operate after the withdrawal of monetary or technical supports. In Integrated Watershed Management Programme the participation of local community is assured since the different works on private as well importance of “participation” for sustainability in watershed management programmes. Collective participation of people is very important due to inter dependence of beneficiaries. Transfer of responsibility within their community is a key mandatory for ensuring the sustainability.



2. Need and scope for watershed development

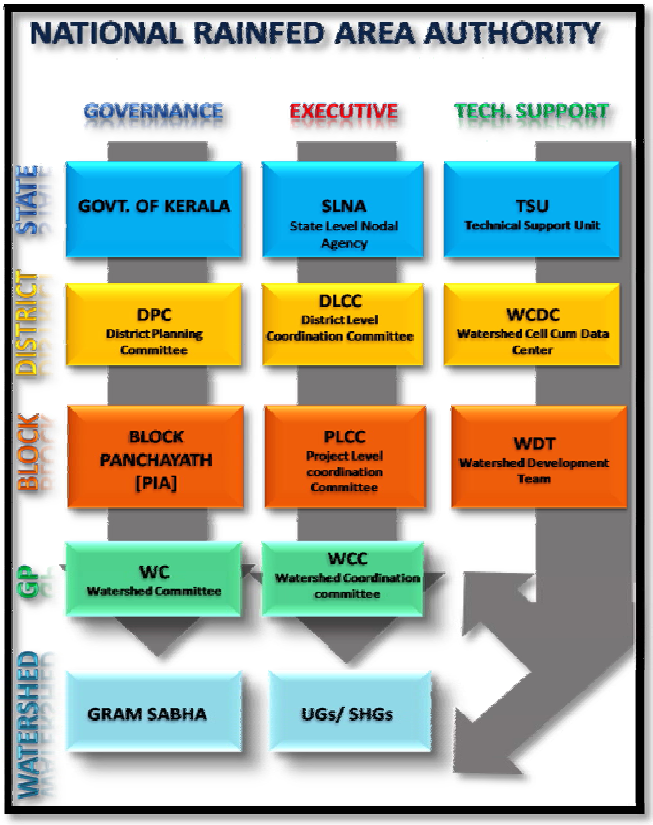
Loss of vegetative cover following by soil degradation through various forms of erosion has resulted into lands which are thirsty in terms of water as well as hungry in terms of soil nutrients. All these regions have predominantly livestockcentered farming systems; less biomass for animals not only reduces animal productivity but also deteriorates the ecological balance.

Watershed management has therefore emerged as a new paradigm for planning, development and management of land water and biomass resources with a focus on social and institutional aspects apart from biophysical aspects. Watershed management becomes increasingly important as a way to improve livelihood of people while conserving and regenerating there natural resource. The role and importance of community participation is now accepted. Watershed management programmes therefore should be intimately linked with the people whose socio economic and cultural backgrounds play a decisive role in meaningful planning, implementation and operations of watershed programmes.

2.1 Main objectives

1. Main objective of IWMP is to preserve and conserve the ecology, restore and develop degraded natural resources by arresting soil loss, improving soil health and soil moisture.
2. Rain water harvesting and recharging of ground water enables multi cropping and introduction of diverse agro based activities help to provide sustainable livelihood to the people residing in watershed area.
3. To promote livestock development, fishery management, and to encourage dairying and marketing of dairy products.
4. Improving the capacity of community to manage common natural resource.
5. Enhancing the efficiency and effectiveness of rain water and runoff use, improve vegetative cover and reduce soil erosion through better rain water management.
6. Conserving as much rain water as possible in the place where it falls and also increasing the ground water level to get water throughout the year and maintaining it for sustainability.
7. Utilizing the available land to its maximum productivity by adopting various or suitable measures according to the land capability and without any environmental degradation.

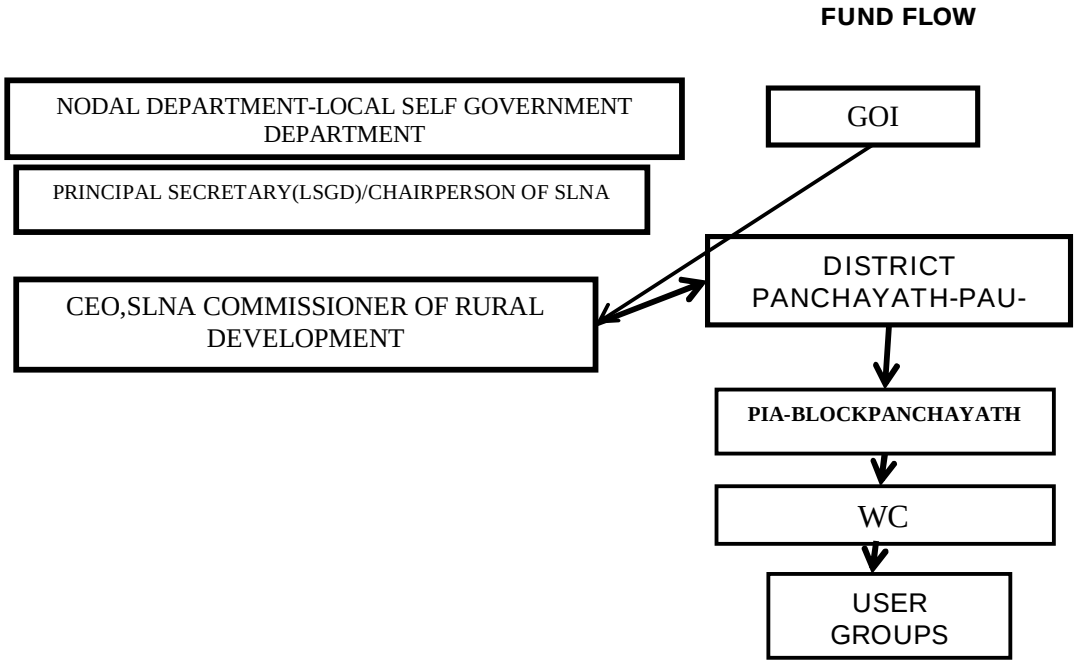
3. Organizational set up



SLNA- State Level Nodal Agency
TSU- Technical Support Unit
DPC- District Planning Committee
DLCC- District Level Coordination Committee
WCDC- Watershed Cell cum Data Centre
PIA- Programme Implementing Agency
BLCC- Block Level Coordination Committee
WDT- Watershed Development Team
WC- Watershed Committee
WCC- Watershed Coordination Committee
UG- User Groups
SHGs- Self Help Groups

4. Funding flow

Institutional Structure



5. Funding pattern

Sl. No.	Particulars	Percentage of Fund	Amount (Rs.)
01.	Administration Cost	10.00	2968500
02.	Monitoring	1.00	296850
03.	Evaluation	1.00	296850
04.	Entry Point Activities	4.00	1187400
05.	Institution & Capacity Building	5.00	1484250
06.	DPR	1.00	296850
07.	Watershed Development Works	56.00	16623600
08.	Livelihood Activities	9.00	2671650
09.	Production System & Micro Enterprises	10.00	2968500
10.	Consolidation Phase	3.00	890550
Total		**100%**	**2,96,85,000/-**

CHAPTER -11

WATERSHED ACTIVITIES

Watershed management as a strategy has been adopted by Government of India especially in the rain fed regions of semi-arid tropics. These regions are characterized by low and undependable rain, low soil fertility, poor infrastructure development, low literacy and high incidence of migration. Several studies have identified that there is a dire need of a systematic and scientific approach to deal with watershed development. The common guidelines generate a fresh and flexible framework for the next generation watershed development.

1. Institution Building and Project Management

The watershed development project has vast potential and scope to empower socially weekend sections of the community. Considering the requirements and priorities of these sections, particular activities were considered to reduce their drudgery. This involved in a skills up gradation programme. People's organizations hold the key in ensuring the exact integration between sustainable development and social equity. Such organizations have representations from socially backward communities and women with separate special interest groups. Within group interactions across group interactions and representation in village level institutions provide a platform for the disadvantaged groups to become a part of mainstream development. It is also essential to note that it was properly ensured that these groups obtain equal opportunities to access the resources developed at the community level.

In order to implement effectively, under the umbrella of State Level Nodal Agency (SLNA) various institutional mechanisms are formed. They are:

- Watershed Cell cum Data Centre (WCDC)
- Project Implementation Agency (PIA)
- Watershed Development Team (WDT)
- Watershed Committee (WC)
- Neighborhood Groups(NHG)
- Self Help Groups (SHGs)
- User Groups (UGs)

2. State Level Nodal Agency

A committed State Level Nodal Agency (SLNA) is constituted by the State Government with Agricultural Production Commissioner as the Chairman and Rural Development Commissioner as the CEO. SLNA is having an independent bank account. The SLNA allow

watershed projects for the State on the basis of approved state perspective and strategic plan as per procedure in vogue and manage all watershed projects in the state within the parameters set out in these Guidelines.

3. Watershed cell cum data Center (WCDC)

In district, a separate dedicated unit, called the Watershed Cell cum Data Centre (WCDC) is established, which oversees the implementation of watershed programme in the district. WCDC has a separate independent account for this purpose. WCDC function in close co-ordination with the District Planning Committee.

3.1 Table: Institution Building at District Level

Si no	Name	Designation
1	Chairman	District Panchayat President
2	Member Secretary	District Collector
3	Convener	Project manager IWMP (project director- PAU)
4	Joint-Programme Co-Ordinator(JDA – Agriculture)	Members
5	District Planning office	Members
6	District Soil survey Officer	Members
7	District Soil conservation officer	Members
8	Deputy Director, Fisheries	Members
9	Executive engineer, Minor Irrigation/LSGD.KWA	Members
10	Divisional forest officers	Members
11	District Officer,GWD	Members
12	Rep. KRWSA	Members
13	District mission co-ordinator,Kudumbasree	Members
14	District Co-ordinator,IKM	Members
15	DistrictCo-ordinator,Horticulture Mission	Members

4. Project implementing agencies

The Block Panchayat having the major area under the programme is selected as the Project Implementing Agency (PIA) by the State Level Nodal Agency (SLNA) for Integrated Watershed Management Programme (IWMP) in Kerala. The PIAs are responsible for implementation of watershed project. In Malappuram district, for the IWMP – C1, the Wandoor Block Panchayat is being selected as the Project Implementing Agency.

The Project Implementing Agency (PIA) provides necessary technical guidance to the Grama Panchayat for preparation of developmental plans for the watershed through Participatory Rural Appraisal (PRA) exercise, under take community organization and

training for the village communities, supervise watershed development activities, inspect and authenticate project accounts, encourage adoption of low cost technologies and build upon indigenous technical knowledge, monitor and review the overall project implementation and set up institutional arrangements for post-project operation and maintenance and further development of the assets created during the project period.

The PIA, after careful scrutiny, shall submit the Action Plan for Watershed Development Project for approval of the DRDA and other arrangements. The PIA shall submit the periodical progress report to DRDA. The PIA shall also arrange physical, financial and social audit of the work undertaken. It will facilitate the mobilization of additional financial resources from other government programmes, such as MGNREGS, BRGF, SGRY, National Horticulture Mission, Tribal Welfare Schemes, Artificial Ground Water Recharging, Greening India, etc.

4.1 Details of Project Implementation Agency (PIA)

Name of The project	**IWMP –V – 2012/13**
PIA	Wandoor Block Panchayat
Implementation Officer	Block Development Officer
Address PIA	Secretary, Wandoor Block Panchayat, Wandoor, 637238
Telephone	Phone: 04931-247074
Email	piawandoor@gmail.com

4.2 Block Level Co-Ordination Committee

Sl no	NAME	Design.	Design.
1	Sreedevi Prakkunnu	Chairman	President, WandoorBlock Panchayat
2	Jayaprakash. J	Secretary	BDO, Wandoor Block Panchayat
3	Saleema. P A	Technical Expert	Assistant Director Agriculture
4	Majeed .V A	Member	PIA , Block Vice President
5	Khairunnisa .K P	Member	Development Standing Committee Chairman Wandoor Block Panchayat
6	Uthaman .G	Member	LSGD Assistant Executive Engineer
7	Maimoona Teacher	Member	President,Thrikkalagode Grama Panchayat
8	Asya Teacher	Member	President,Pandikkad Grama Panchayat
9	Vijaya Kumar. K P	Member	J.BDO Wandoor Block Panchayat
10	Ambika .V M	Member	EO(WW) Wandoor Block Panchayat
11	Mansoor	Member	Representative, WCDC
12	Basila .K	Member	Representative , WDT
13	Subhash.E	Member	Representative, TSO

5. Watershed Development Team

Watershed Development Team is an integral part of the PIA and is set up by the PIA as per the directions of SLNA. WDT has 4 members, broadly with knowledge and experience in agriculture, soil science, water management, social mobilization and institutional building. WDT functions in close collaboration with the team of experts at the district and state level. The expenses towards the salaries of the WDT members are charged from the administrative support to the PIA. WDT guides the Watershed Committee (WC) in the formulation of the watershed action plan. WDT assists Gram Panchayat /watershed GramaSabha in constitution of the Watershed Committee and their functioning. WDT also assist in organizing and nurturing User Groups and Self-Help Groups. WDT undertakes engineering surveys, prepare engineering drawings and cost estimates for any structures to be built. Monitoring, checking, assessing, and undertaking physical verification and measurements of the work done are also done by WDT.

5.1 Details of Watershed Development Team

Name	Age	Sex	Designation	Qualification
Basila. K	24	F	WDT Engineer	B.Tech
Deepthi Mathew	23	F	Agri asst	Bsc
Leena Joseph	29	F	Social Mobilizer	MSW

6. Institutional arrangements at village level

6.1 Watershed Committee

It is a committee that is constituted by Watershed Grama Sabha to implement the watershed project with technical support of WDT in the micro watershed area. The watershed committee has to be registered under the Society Registration Act/1860. The Watershed Grama Sabha of the Panchayath selects the chairman of the watershed committee with the secretary who will be an employee nominated by the Grama Panchayath, preferably the Village Extension Officer. The Watershed Committee (WC) will comprise of at least 10 members, half of the members shall be representatives of SHGs and User Groups, SC/ST community, women and landless persons in the village. One member of the WDT shall also be represented in the Watershed Committee (WC). Where the Grama Panchayath covers more than one village, they would constitute a separate subcommittee for each village to manage the watershed development project in the concerned village. Where a watershed project

covers more than one Grama Panchayath, separate committees will be constituted for each Grama Panchayath.

The Watershed Committee was formed in all the 3 micro watersheds of IWMP-C1 project area. The IWMP-C1 is a cluster of 2 Grama Panchayats coming under 1 Block Panchayat. Watershed Committee members are briefed about the project objectives and a workshop is also conducted in this regard at every Panchayath. The watershed committee has a pivotal role to play during and after the project implementation period. The Watershed Committee has a separate bank account to receive funds for watershed projects and will utilize the same for undertaking its activities.

6.3 Neighbour hood groups

Neighbour Hood Groups are formed in every micro watershed containing 50 households' living as clusters. The overall planning, coordination, management and maintenance of the activities pertaining to the area are implemented through this Group. These families are further subdivided into clusters of 7-8 houses and a person is selected to represent this cluster in the Neighbour Hood Committee ensuring the proper representation on different sections.

6.4 Self help groups

Self Help Groups are self motivated, small homogenous groups organized together through highly successful credit and thrift activities. Self Help Group initiative especially for women helps to uplift their livelihood. The Watershed Committee shall constitute SHGs in the watershed area with the help of WDT from amongst poor, small and marginal farmer households, landless/asset less poor, agricultural labourers, women, and SC/ST persons. These Groups shall be homogenous groups having common identity and interest who are dependent on the watershed area for their livelihood. Each Self Help Group will be provided with a revolving fund of an amount to be decided by the Nodal Ministry SHG initiative in this project was being organized by having a focused group discussion between various homogenous communities of women based on their livelihood separately. Each group discussed their basic problems with their facilitators.

The major problems identified are:

a) Lack of proper credit facilities due to low intervention of formal financial credit institution.

b) Excessive exploitation of weaker section by money lenders

c) Lack of attitude for saving among poor people due to complex and rigid conventional financial institution structures.

d) Lack of small micro-loans without collaterals and high interest rates.

e) Lack of knowledge on credit, thrift activity and banking. With a view point of these problems it was planned to organize these women into a group consisting of 5 to 20 in each groups. It was planned to have some capacity building training regarding SHG activities. It was also proposed to have some livelihood activities which will promote women empowerment. This included Bakery units, Garments making, Mushroom Production, and Vermi compost activities with forward and backward linkage. This will ultimately lead into better human development in the village.

6.4.1 Details of Self Help Groups (SHGs) Working in the Project Area.

Sl.No	Total No of Existing SHGs/ NHGs in the Project Area	No of Men Groups in it	No of Women group in it	Total No of Newly formed for IWMP SHGs/ NHGs in the project area	No of Men Groups in newly formed	No of Women Groups newly formed
1	159	-	58	101	3	65

6.5 User Groups

The watershed committee (WC) shall also constitute user groups in the watershed area with the help of WDT. These shall be homogeneous groups of persons most affected by each work/activity and shall include those having land holdings within the watershed areas. Each user group shall consist of those who are likely to derive direct benefits from a particular watershed work or activity. The Watershed Committee (WC) with the help of the WDT shall facilitate resource-use agreements among the User Groups based on the principles of equity and sustainability. These agreements must be worked out before the concerned work is undertaken. It must be regarded as a pre-condition for that activity. The User Groups will be responsible for the operation and maintenance of all the assets created under the project in close collaboration with the Gram Panchayath and the Gramasabha. The user group collects user charges from their members, oversee the works and manage the benefits.

Some of the points which were considered while forming a user group in the villages of the project are:

a) In case of, Land Leveling, Farm, Roof Well Recharge, Kitchen Garden, Demonstration Plot, Contour Trench, Ring Bund, Soil Bund, Staggered Trenches, etc all the beneficiaries of the individual and community activities who are involved are made user group members.

b) In case of a check dam or Gully Plug, all the beneficiaries of the individual check dam were involved as user group members. Focused group discussion will be conducted between the

user groups to discuss the above conditions and to select potential members. It was decided that each group would formulate certain internal rules and have a feeling of ownership with community spirit. Membership was on voluntary and democratic.

7. Project Management

7.1 Implementation Phases of IWMP Project

Phase	Name	Duration(Years)
I	Preparatory Phase	1 year
II	Watershed Works Phase	3 year
III	Consolidation &Withdrawal Phase	1year

7.2 Preparatory Phase

- Institution building, training and empowerment of institutions like watershed committee.
- Preparation of Detailed Project Report with detailed action plans through participatory exercise(PRA,FGD)
- Entry Point Activity shall be taken up during this phase to establish creditability of the Watershed Development Team (WDT) and create rapport with the village community.

7.3 Watershed Works Phase

- This phase is the very important of the programme in which the DPR will be implemented.
- Execution of action plans(NRM works, Agriculture and Allied sectors works, Livestock improvement measures)

7.4 Consolidation and Withdrawal Phase

- In this phase the resource augmented and economic plans developed in Phase II are made the foundation to be create new nature-based, sustained livelihoods and raise productivity levels.
- Bridging the gaps for post project sustainability.
- Building the capacity of the community based organizations to carry out the new agenda items during post project period.
- Preparation of project completion report with details about status of each intervention.
- Documentation of successful experiences as well as lessons learnt for future use.

CHAPTER -III

APPROACH AND METHODOLOGY OF PREPARING THE DETAILED PROJECT REPORT (DPR)

The project comprises of three micro watersheds. A cluster approach has been followed in the preparation of DPR. The common guidelines provide a flexible framework for the preparation of the Detailed Project Report of the projects under IWMP. The methodology for the preparation of the Detailed Project Report of IWMP-C1 of Malappuram District is outlined below: Following steps were followed for the preparation of the plan:

- Delineation of watershed map from the Toposheet
- Collection of cadastral map from revenue department
- Boundary identification
- Identification of EPA activities
- Baseline data collection - survey
- Watershed based PRA
- Identification of public works and field level measurement
- Secondary data collection from various departments
- Consolidation of the data collected from the field
- Preparation of the DPR
- Submission of the DPR to SLNA

1.1 Delineation of watershed map from the Toposheet

Use a toposheet to locate the water bodies, streams and contour (elevation). Determine the direction of drainage in the area and start drawing from the mouth of the watershed which is also the lowest elevation of the watershed, connect all the elevated points. The completed line is the watershed

1.2. Boundary identification

This is the process of action of determining legal position of a cadastral boundary in the land

1.3. Baseline Survey

A detailed baseline survey was conducted covering all households in the project area. The database thus created is expected to facilitate the assessment of the watershed development programme on the project area during and after the implementation of the project. To access the impact of any watershed development programme a detailed baseline survey has to be conducted. This acts a benchmark for any intervention during and post implementation of any development programme. A detailed baseline survey was undertaken which involved household census survey, Bio-physical survey and Village level data collection from all villages. Household census survey includes a detailed questionnaire which had been filled by

visiting each and every household in the village. This gave in the details of the demographic profile of the village, the literacy percentage, SC/ST population, number of BPL household, cattle population, and net consumption rate in the village, average milk production of the cattle and various schemes running and their benefits.

1.4. Secondary Data: The DPR has to be based on a situation analysis of secondary data and information available from various sources. Basic information about the watershed such as History, Climate, location, topography, hydrology, geology, Geomorphology, soils, demographic and socio-economic characteristics of the population, land-use pattern, Cropping pattern and productivity, irrigation, livestock etc. were collected from different sources such as Census of India, development reports, publications of government departments etc.

1.5. Participatory Rural Appraisal

The past experience of watershed has given tremendous input to focus on creating accountability of the stakeholders towards the programme. This has created an emphasis to include all the stakeholder communities and their local and indigenous Technological Knowledge (ITK) while planning for any activity. Participatory approach provides a new path for planning, implementing, and monitoring and post- withdrawal activities with a complete accountability of the stakeholders. Various PRA techniques like resource mapping, social mapping, and season calendars were used to realize the physical and social orientation of the village in general and watershed in specific. These tools put the villagers in simplicity than the complicated questionnaires. Various tools like Matrix ranking, venn diagram were used to identify various local vegetation (apt for afforestation), Fodders crops, various institutions and their significance in the life of the farmers.

PRA programmes were the significant and enthusiastic exercise to enhance the village level planning of IWMP. These exercises were conducted in all watersheds for the internal support to extend and carry out of the progressive characteristics of IWMP programmes. Its initiation has been helped to internalize the features like people cantered Project through the Participatory approach. It has also envisaged the present needs and future thrusts of society. Other noteworthy tips are the Watershed community has realized their strength and capacity to take up such projects without external supports.

- **Significance of the Participatory Rural Appraisal (PRA)**

The study mainly aims to discover the potentials of the area and local needs of the people. It has also internalized the existing crucial issues and constraints in the watershed area. Few drainage line areas of the watersheds is considered as critical area because of its

undulating topography, soil erosion, degradation of the agriculture sector, poor livelihood system and water shortage and unscientific waste management etc. Most of the streams become waste carriers. There is only a bare minimum effort to tackle the issues. So IWMP aims to bring up an integrated approach in the restoration of the ecosystem and environment and finally sustainable development in all sectors. Participatory planning, formulation of the strategies, implementation, monitoring and evaluation are the major strategy to be adopted. To initiate the corrective measures we have to mobilize the baseline information from the ground level.

This information is the main source to finalize the intervention strategies. Apart from these peoples participation can be ensured to analyze the ground reality. First hand and secondary data collection will help us the strategy formulation.

- **Sustainability Assurance Strategies**

The term sustainability describes the ability of a project to maintain and acceptable level of benefit flows through its life. A programme is sustainable if continues to operate after withdrawal of monitoring or technical support of the project Transfer of responsibility of running with in their communities is key requisite for ensuring the sustainability.

❖ **Steps of People's Participation In Watershed Development Programme**

- Take grass root level approach in planning and mobilizing, peoples contribution for the project
- Discuss plans and options with the leaders having influence in the communities
- Appeal to people individual or collective interest
- Organize the stake holders into a water users association and ensure active involvement by making beneficiaries contribute their time and money
- Involve all stake holders in the planning, implementation, monitoring and evaluation

❖ **Benefits of Participatory Approach**

- Access to indigenous expertise or local knowledge
- Identifying the conservation needs of different groups and individual in the project proposal
- Awareness of financial or other limitation to prepare a plan suitable to all
- Identification of sensitive issues and ways to avoid the harmful effects
- Overcoming conflicts to reach a consciousness on project components

Use of GIS and remote sensing for planning

Use of various high science tools has been promoted at various stages of watershed development.

- **GIS**

Geographical Information System (GIS) has been used for prioritization process. Various layer maps were created like Geo-morphological, Soil, Drainage, land use, Ground water Status, Drinking water situation and Slope percent. These were all given proper weight age according to the DoLR specification. This helped in prioritization of various watershed areas.

- **GPS**

Global Positioning System (GPS) has been used for boundary identification and the major bench mark of the watersheds area. After using the GPS, it can connect to Google earth and we can derive data which is taken from the field.

1.6 Remote sensing imageries and toposheet

Remote sensing imageries are used for the identification of physical and anthropogenetic changes in the watershed areas, the temporal changes can be identified with the help of Toposheet and imageries.

1.7 Planning

A action plan matrix was been formulated by taking into account various features like the slope percent, soil depth, soil texture, soil erosion in the area for wasteland, forest land and agricultural land. Global positioning System (GPS) was used to identify each and every water conservation structures available in the project area. This was used to create a map. Contour Map of vertical interval of 1 meter at a scale of 1:8000 was used for identifying various locations for soil and water conservation structures.

1.8 Hydrological modeling

Hydrology modeling technique was used for locating drainage, stream length, flow direction, sink, and Flow accumulation. This model overlaid over cadastral map to calculate the catchment area of each structures like the check dam etc. This has helped to remove the human error which generally occurs while calculating the catchment area of a check dam.

Details of Scientific Planning and inputs in IWMP Projects

List of scientific criteria/ inputs used	Whether scientific criteria was used
(A)Planning	
Cluster approach	Yes
Whether technical back-stopping for the project has been arranged? If yes, mention the name of the Institute.	Yes
Baseline survey	Yes
Hydro-geological survey	Yes
Contour mapping	Yes

Participatory Net Planning (PNP)	Yes
Remote sensing data-especially soil/ crop/run-off cover	
Ridge to Valley treatment	Yes
Online IT connectivity between Project and DRDA cell/ZP	Yes
Availability of GIS layers	
1. Cadastral map	Yes
2. Village boundaries	Yes
3. Drainage	Yes
4. Soil (Soil nutrient status)	Yes
5. Land use	Yes
6. Ground water status	Yes
7. Watershed boundaries	Yes
8. Activity	Yes
Crop simulation models#	
Integrated coupled analyzer/ near infrared visible spectroscopy/ medium spectroscopy for high speed soil nutrient analysis	
Normalized difference vegetation index (NDVI)#	
Weather Stations	yes
(B)Inputs	
1. Bio-pesticides	
2. Organic manures	Yes
3. Vermi compost	
4. Bio-fertilizer	
5. Water saving devices	Yes
6. Mechanized tools/ implements	
7. Bio-fencing	Yes
8. Nutrient budgeting	
9. Automatic water level recorders & sediment samplers	From GWD Mlpm
Any other (please specify)	

1.10Guiding Principles

Livelihood improvement initiative emphasizes on natural resource based activities and conforms to principles of equity, gender sensitivity and transparency. It strives to:-

a. Enhance livelihood opportunities for the poor through investment into asset creation and improvement in productivity and income.

b. Improve access of the marginalized communities, including SC/ST, landless/asset less people, women, etc., to the benefits.

c. Select the beneficiaries in a transparent manner. Livelihood guidelines for landless/ asset less households aims at improved household income, participation and division of labour, access to information, knowledge, appropriate technologies and resources.

1.11Planning and Implementation

- ***Planning for natural resource management***

i. An awareness drive was undertaken at Grama Panchayat level for communication & sensitization of the target beneficiaries

ii. Prepare master plan of NRM based on the ridge to valley system

iii. Apply general works ridge to valley in the cluster area

❖ ***Planning for production system management***

i. An awareness drive was undertaken at Grama Panchayat level for communication & sensitization of the target beneficiaries

ii. Prepare master plan of PSM (agriculture) activities based on the need of the project area

❖ ***Planning for lively hood activities***

i. An awareness drive was undertaken at Grama Panchayath level for communication & sensitization of the target beneficiaries

ii. A "Livelihood Action Plan" (LAP) was prepared for availing the funds under the livelihood component.

iii. The livelihood action plan was prepared by analyzing the socio-economic conditions and existing livelihood capitals of the watershed, during the situation analysis by means of PRA and focus group discussion, in order to facilitate collection of information to feed into the livelihood action planning process. Livelihood action plan contains schedule of activities, interventions, no. of SHGs to be assisted and expected outcome.

iv. To promote convergence, the PIA has worked in close association with other Employment generating programmes such as MGNREGS, NRLM, Kudumbashree, VFPCK, NHM, etc.

1.12Mode of operation

i. The livelihood action plan will be implemented through Self Help Groups and/or their federation. However financial support to enterprising individuals was also be considered subject to a maximum of 10% of the funds under the livelihood component.

ii. Livelihood activities will be carried out either through the existing SHGs having good performance or new SHGs formed with a group of 5-20 persons.

iii. SHGs selected for implementing livelihood action plan will be homogeneous in terms of their existing livelihood capitals, common interest and need.

iv. SHGs can undertake any permissible activity jointly as a group or the group may decide to support individual(s) for the activities under the umbrella of the main SHG. In case of individual support under the SHGs, the individuals will be accountable to the main SHG for finances and performance.

v. The financial support to enterprising individuals who prepare and submit a viable livelihood proposal, will be considered by Watershed Cell cum Data Centre (WCDC) on the recommendation of the Watershed Committee (WC). The plan has to be approved by the

WCDC before extending financial support. However, support to individuals should not exceed a maximum of 10 % of funds under the livelihood component.

1.13 Capacity Building

The capacity building needs of the marginalized communities, including SC/ST, landless/asset less people, women, etc is also be included in the livelihood action plan prepared after the livelihood analysis. The capacity building aims at skill enhancement and not just knowledge and information. The expenditure for the training for livelihood component will be met from 5% of the budget component of the project cost earmarked for institution and capacity building.

Capacity Building Training Programmes

❖ **Community level training in project area**

Sl. No.	Title of training	Objectives	Target group	Duration Day/s	No of participants	No. of batches	Amount (Rs.)
01	Awareness of IWMP	Familiarize the problem	Watershed community	01	40	03	75000
02	Awareness of IWMP LSS and PSM	To motivate the community	SHG and NHG	01	40	10	1,25000
03	Implementation of the programme	Awareness to the user group	User group	01	40	05	75000
04	WC management	Awareness to WC	Watershed committee	01	30	01	15000
05	LSS and PSM	To motivate the community	Farmers, SHG, and watershed community	01	40	03	25000
06	Convergence	Convergence our project with MGNREGS	Mate's and workers	01	40	01	15000
07	Skill Development of NHG & SHG	Skill upgradation	NHG & SHG	02	40	10	250000
08	Training on LSS	To motivate the community	NHG & SHG	01	40	05	50000
09	Training on PSM	To motivate the community	JLG members	01	40	01	8000
10	Maintenance and creation of common Assets	To motivate the community	User Group	01	40	10	75000
11	Refreshment Programme to User group	Refreshment to User group	User Group	01	40	10	75000
Total (Community Level)						**7,88,000/-**	
Total to be trained						**2350 Nos**	

❖ Time Table For Community Level Capacity Building

Title of training	Target group	Duration Day/s	No of participants	No. of batches	Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Awareness of IWMP	Watershed community	01	40	03	2013												**
					2014												
					2015												
					2016												
Awareness of IWMP LSS and PSM	SHG and NHG	01	40	10	2013												
					2014	***											
					2015												
					2016												
Implementation of the programme	User group	01	40	05	2013												
					2014		*										
					2015												
					2016												
WC management	Watershed committee	01	30	01	2013												
					2014		*										
LSS and PSM	Farmers, SHG, and watershed community	01	40	03	2013												
					2014			***									
					2015												
					2016												
Convergence	Mate's and workers	01	40	01	2013												
					2014		*										
					2015												
					2016												
Skill Development of NHG & SHG	NHG& SHG	02	40	10	2013												
					2014									** *		** *	
					2015												
					2016												
Training on LSS	SHG & NHG	01	40	05	2013												
					2014												
					2015	*** **											

					2016												
Training on PSM	JLG	01	40	01	2013												
					2014												
					2015		*										
					2016												
Maintenance and creation of common Assets	User group	01	40	10	2013												
					2014												
					2015									*****	*****		
					2016												
Refreshment Programme to User group	User group	01	40	10	2013												
					2014												
					2015											**	**
					2016	**	**	**									

(* - Number Of Trainings)

❖ **Institution level training in project area**

Sl. No.	Title of training	Objectives	Target group	Duration Day/s	No of participants	No. of batches	Amount (Rs.)
01	Awareness programme of IWMP	To create awareness among the peoples representatives and officials	Block Grama Panchayat Members	01	60	01	15000
02	Awareness programme of IWMP	To create awareness among the peoples representatives and officials	VEO's, EO's, Clerks and other officials	02	30	01	15000
03	TOT and module preparation	Module Preparation	Selected officials	03	20	01	25000
04	Training on MIS	MIS	WDT Clerks, EO's and secretary	02	20	01	25000
05	Training on GIS	GIS	Officials on WDT and Secretary	01	04	01	5000
06	Lively hood activities	Equip Officials to PSM and LSS	VEO's, EO's, WDT	01	08	01	5000
07	Accounting	Accounting	WDT, VEO's, Clerk	01	06	01	5000
08	Convergence with other programme	Convergence	Officials of line departments	01	50	01	18000
09	Monitoring and evaluation	Presentation and evaluation	WDT, VEO's, EO's, and Secretary	02	15	01	10000
Total (Institution Level)							**1,23000/-**
Total to be trained							**185 Nos**

❖ **IEC Programmes in project area**

Sl No	Particulars	Target No/Quantity	Participants	Amount
1	Handbooks and calendar of IWMP	1000		50000
2	Exposure visit	3	20	50000
3	Water purity test	10 Batch	100	75000
4	Need base training	10 Batch	100	50000
IEC PLAN				
5	Purchase of Laptop		01 Nos	40000
6	Purchase of Camera		01 Nos	25000
7	Posters		1000 Nos	20000
8	Exhibition		02 Nos	20000
9	Seminar		05 Nos	25000
	Total			**3,55,000/-**
	Grand Total			**14,84,250/-**

1.14Eligibility for availing the production system funds:

- Individual land holders/owners can avail the benefits of production system on their private land. The small and marginal farming households, women headed farming households, SC & ST farmers will be given preference based on the wealth ranking exercise conducted during PRA. Those households whose land is in close proximity to the developed natural resources may be preferred to make full use of natural resource potential.
- Selection of beneficiaries will be done by PIA, in consultation with WC.
- Beneficiaries having common interest will be organized into User Groups to pool and manage their resources as well as manage aggregating their produce for effective disposal and marketing, besides maintaining their natural resource base. This may also provide a means for deciding resource use arrangements based on equity and sustainability.
- The funds were earmarked for cost intensive farming system based livelihood activities/interventions such as aquaculture, agriculture, horticulture, agro forestry, animal husbandry, agro-processing, value addition, etc.
- The beneficiary contribution of farmers will be 20 percent for general category and 10 percent for SC/ST.

11. Activities proposed

11.1 Entry Point Activities

Entry point activity aims to mobilize the community in support of the subsequent interventions under the project. EPA helps to create rapport with the village community. Entry point activities are identified with a view to showcase them as model intervention which, in turn, would generate the interest of the community in watershed development activities. As noted earlier, community participation is essential to maximize the impact of the project and ensure the sustainability of the project outcomes.

- **Entry Point activities in the project area**

Name Of Watershed	Panchayath	Name Of Work	Ward	Amount (Rs.)	Latitude	Longitude	Area benefited (Ha)/beneficiaries
Chozhiyath (24k23b)	Thrikkalangode	Construction Of VCB at Aryanpullithodu	16	5,80,200/-	N 11 08` 40.5	E076 08` 51.7	*Benifited area 30Ha *Benifited to 50 families
Parakkannithodu (23k23k)	Pandikkad	Construction Of Checkdam at Parakkannithodu	1	3,22,200/-	N 11 07` 28.8	E076 11` 51.4	*Benifited area 20 Ha *Benifited to 40 families
Mundakkanthodu (23k23l)	Pandikkad	Construction Of Side Protection Of Mundakanthodu	23	2,85,000/-	N11 06` 00.8	E076 11`30.0	*Benifited area 15 ha *Benifited to 30 families
Epa total Amount				**1187400/-**			

11.2 Natural resources management

The physical treatments are to be carried on during the watershed development work phase. While implementing the project, it is necessary that the treatments are carried out starting form ridge and progressing towards the valley. This approach is followed with the following objectives:

a) Protect the upper reaches to avoid erosion and reduce runoff

b) Avoid siltation of structures in the middle and lower catchments.

c) Ensure the cost effectiveness of structures in the valley and

d) Improve overall efficacy of the measures.

This phase is the heart of the programme in which the DPR will be implemented. The following are some of the major interventions proposed in this report with a view to conserve and develop the natural resources in the area for bringing out the benefits conceived in the objectives of the project.

11.2.1 Water absorption pit / Rain pit

Pits of appropriate dimensions are made at suitable locations in the watersheds for augmenting recharge of ground water through enhanced percolation of rain water. These pits may also be termed as rain pits. This is an intervention suitable for areas with moderate slopes. Plant Basins can also act as efficient recharge pits. Number and spacing of the pits shall be conducive to the land use in each holding. Rain pits are not recommended for highly elevated area and for locations under water logging.

11.2.2 Terracing

Terracing is, in a way, a practice of leveling land for minimizing soil erosion and excessive run off. The intervention helps in enhancing recharge of ground water. Usually Table top, inwardly inclining and outwardly inclining are the three types of terraces in our areas. Inwardly inclined terracing shall not be practiced in steep slopes and in landslide prone areas. Narrow terraces are recommended for higher slopes and wider terraces are suited in moderate slope. But, practice of forming Terraces in highly sloping areas shall be discouraged for the threat of landslides/slips.

11.2.3 Stone pitched bund

This measure involves construction of horizontal lines of stone pitched contour bunds across the sloping land surface. Contour bunding is practiced to intercept the runoff flowing down the slope by an embankment with either open or closed ends to conserve moisture as well as to reduce erosion. The land treatment in between the bunds is desirable for uniform conservation of moisture.

Detailed estimate

Estimate for a 100 m length:

1. Cleaning grass and other over growth of vegetation etc. complete.

   1*100.00*1.00=100m^2
   Sa y 10m^2 @ Rs.177/100m^2----------Rs.172.00
2. Earth work excavation in ordinary soil for foundation and initial lead up to 50m and left up to 1.50m including breaking clods, watering, Ramming and sectioning of spoil bank etc. complete.
   Foundation=1*100.00*0.30*0.20=6m^3
   Say 6m^3 @ Rs.1115.92/10m3----------Rs.669.55
3. Pitching work with locally available dry rubble and back filling of the bund including all cost of materials and labour charges, conveyance etc. complete.
   1*100*1.00=100.00m2
   Rs. 143.52/m^2.
   143.52 *100.00=Rs.14352.00
   (Rupees fourteen thousand three hundred and fifty two only)

11.2.4 Live fencing

Natural fencing is a multi-purposed method to check soil erosion, improve biomass and for protecting crops by enabling shelter for natural predators of the pest population. The plants suitable for planting along the fences are Cassia, Hibiscus, Lettuce,Gliricidia etc. Annual or quarterly chopping of the leafs will provide biomass to the agriculture land. Gliricidia can fix nitrogen to the soil. This is not a new method but one that has been practiced by farmers elsewhere for long time.

11.2.5 Centripetal terracing

Formation of centripetal terracing is an effective method to enhance conservation of rain water in a tremendous and effective manner. The basins shall be designed on the basis of the tree/plant. However it shall catch maximum water from the canopy. Basins are normally circular. But in sloppy lands it may be crescent shaped. The berms around the basin shall be reinforced with suitable vegetation. Mulching can also be adopted in the plant basins for controlling evaporation loss. This practice will also augment productivity of the trees/plants in a substantial manner.

11.2.6 Gully plugging

Appropriate Gully control measures are to be adopted in the watersheds for checking the loss and deterioration of land resources in the areas. Widening and deepening of gullies, breech of the gully banks, damage caused by gullies to adjoining land etc need to be controlled under the watershed development projects. Cross Bars, Stone Checks, log Checks, Brushwood

Checks, Live Checks, Flow Trap pits/Sinks, side protection measurers etc are to be consider for the purpose. As far as possible, vegetative support is to be provided to the Gully Banks instead of bluntly choosing structural works.

11.2.7 Vegetable cultivation (Kitchen garden)

Keralites are fully depending on other states for vegetables. These vegetables that arrive from the neighboring states are highly contaminated with toxic compounds through the pesticide applications. As a result, the Keralites are increasingly getting affected with diseases. Though Kerala is blessed with suitable environment (rich soil, availability of water, prolonged monsoon, etc) for the production of many vegetables, there is an apparent lacking of interest among people to cultivate vegetables. Vegetable cultivation is an easy job for those who are interested. As home garden agriculture is mainly a need-oriented, self-provisioning system, the use of chemicals is minimal, and the emphasis is more on homemade formulations of biological origin, such as tobacco decoction, neem extracts, and so on. This helps to minimize pesticide pollution of the agricultural environment. The system is, by and large, environmentally clean and sustainable.This component aims that supplying 5 type vegetable seeds and biofertilizer as one unit (Rs. 750/-) for beneficiaries who have an area of 2 cent.

11.2.8 Tuber and Inter crops

These crops especially Tapioca, Sweet potato, amorphophalaus and yams still continue to be major crops contributing significantly to human and animal food apart from findings use in various industrial applications, environments. Tuber crops fit well in to a variety of cropping systems and can be profitably intercropped in coconut based cropping system.

11.2.9 Horticulture

Horticulture promotion is very important in the project area because majority of population buys vegetable and fruits from shops which are grown in other states. Press reports regarding usage of pesticide on vegetables and fruits should be an eye opener. People should be made aware of the health impact of using these vegetables and fruits. This understanding will motivate them to cultivate local fruit plants. This range of food, medicinal, environmental, and social products and services are all fundamental to developing and maintaining human health and well-being. Supply of fruit plants such as Jack fruit, Mango, Pineapple and Papaya for beneficiaries.

11.2.10 Banana Cultivation

Banana cultivation is a promising activity for farmers in the light of new agricultural scenario. Banana has duel potential as a raw fruit and processed items such as Banana powder, chips and other associated products. The organic wastes available from the

household if composted can be used as manure for the crop. The existing waste land can be made productive through banana cultivation. For Kudumbsree units as well as self help groups, this is an appropriate income generation programme. One important point to be emphasized in the cultivation process is to minimize the use of chemical fertilizers and pesticides in the field. The focus should be on organic methods.

11.2.11 Spices cultivation

Spice cultivation is the controlled growth of plants whose harvested parts are high in flavour and are used to season other foods. These include herbs, and may take the form of seeds, leaves, roots, bark, or other plant part

11.2.12 Paddy field bund

Inner bunds of paddy fields help in reducing soil erosion. Presently some of the inner bunds in Ela are not maintained properly. So strengthening of inner bunds is an important work for water harvesting. It also help to promote the paddy cultivation in the project area.

11.2.13 Well Recharging

The broad aim of the programme is to improve the water quantity and quality levels of homestead open dug wells and small homestead ponds. This will contribute to enhanced health and welfare of the community through improved access to drinking water. The reduction of public spending on Tanker Water Distribution to the water stressed regions which is common during summer is also envisaged as a broader goal of the programme.

The specific objectives of the programme are

(i) recharge ground water
(ii) improved drinking water availability across the year
(iii) significantly reduce the impact of drought and consequent public spending on supply of drinking water in tankers to the water stressed regions
(iv) Improved agricultural production and productivity.

The programme would also envisage strengthening of the decentralization programme and the PRIs, in discharging their basic mandate in water sector through community efforts that are cost effective and sustainable.

11.2.14 Check dams

A check dam is a small dam, which can be either temporary or permanent, built across aminor channel, swale, bioswale, or drainage ditch. Similar to drop structures in purpose, theyreduce erosion and gullying in the channel and allow sediments and pollutants to settle.

Theyalso lower the speed of water flow during storm events. Check dams can be built with logs,stone, or sandbags.

11.3 Production System Management

The major interventions suggested under the Production System and Microenterprises based livelihood activities are the following.

11.3.1 Bee Keeping

In Kerala Bee-keeping is done by farmers as a source of additional income. Rubber planters place beehives in rubber plantations and gain a good return from it without any risk. Ayurveda Industry is the major consumer of pure honey. This component aims supplying 5-10 cages to selected beneficiaries as one unit.

11.3.2 Poultry

This component aims supplying 6 layer birds each of 50-60 days old(as one unit) to selected beneficiaries. They can thrive well on kitchen waste so that no additional expenditure on feed cost is necessary. Landless people, SC/ST, OBC, BPL etc. should get the benefits of this. The self-help groups can select the beneficiaries. (6 poultry * 115 Rs = 690/-)

11.3.3 Pisciculture

Fish farming is the principal form of aquaculture, while other methods may fall under Pisciculture. Fish farming involves raising fish commercially in tanks or enclosures, usually for food. There is an increasing demand for fish and fish protein, which has resulted in widespread overfishing in wild fisheries. Fish farming offers fish marketers another source. The self-help groups can select the people who are going for the rabbit keeping.

11.3.4 Rabbit rearing

The rabbit culturing is turning out to be a very lucrative business now as the demand for rabbit meat is ever on the increase. The self-help groups can select the people who are going for the rabbit keeping. Thiscomponent aims supplying 10 number of rabbit each of 40-50 days old (as one unit) to selected beneficiaries

11.3.5 Vermi compost

Vermi-compost is the product or process of composting using various worms, usually red wigglers, white worms, and other earthworms to create a heterogeneous mixture of decomposing vegetable or food waste, bedding materials, and vermicast. Vermicast, also called worm castings, worm humus or worm manure, is the end-product of the breakdown of organic matter by an earthworm. These castings have been shown to contain reduced levels of contaminants and a higher saturation of nutrients than do organic materials before vermi composting.

11.3.6 Biogas plant

In the village area people who are living surroundings of watershed are poor farmers. Now a days and scarcity of log wood which required for cooking purpose the people are suffering too much. Hence by using Natural gas this problem can be minimized. By construction Biogas plant they can make natural gas and use for cooking etc.

11.3.7 Mushroom cultivation

Mushrooms have been valued throughout the world as both food and medicine for thousands of years. They are a rich source of nutrition with less fat and that also consists predominantly of unsaturated fatty acids such as linoleic acid. Hence mushroom is considered as the perfect food for maintaining a healthy heart and cardiovascular system.

11.4 Livelihood support system

The activities proposed under the livelihood action plan below are meant for improving livelihood of the poor and marginalized people in the project area. It is proposed to earmark 9 percent of the total allotted amount for the activities under this plan. Major portion of this component is suggested to give to the SHGs working in the project area as revolving funds for improving their livelihood improvement/income generation activities. For each SHGs in the project area, will give revolving funds of Rs.25, 000/- per SHG during the project period. The beneficiary SHGs will be selected mainly on the basis of criteria currently used to rate the SHGs. If any change in the criteria is required with regard to the selection of beneficiary SHGs, same will be decided at the time of selection considering the suitable factors and according to State level policies.

11.4.1 Goat rearing:

It is an important employment source that can be embraced very profitably by low income group people. As the gestation period is short and the number of the lambs is usually two or more in a single litter, goat rearing can bring in a profit that is two or three times bigger than the invested amount. Women's self-help groups can select the eligible people for goat rearing. This component aims at supplying 5 goats as one unit each of 8 months old to selected beneficiaries.

(5 goats * 6000 Rs = 30000/-)

11.4.2 Coconut climber

In Kerala, it's getting increasingly difficult to hire labour to pluck coconuts. The main reason is that it is very risky. Coconut climbing device is the solution for that problem and

increasing the income from that job. But the use of thisdevice demands special training for the climbing labors. The self-help groups can select the labors for such training.

11.4.3 Dairy

This has much popularity among rural farmers of Kerala as a main sub occupation. Rearing cattle fetches an increase in income from milk production it give cow dung and urine rather. Moreover it leads to biogas production needed for domestic purpose. Cattle rearing have commercial scope as well. This component aims at supplying 2 cows as one unit each of 9 months old to selected beneficiaries. (2 cow * 30000 Rs = 60000/-)

11.4.4 Agriculture nursery

Nursery bed is defined as a prepared area in a nursery where seed is sown or into which seedlings or cuttings are raised. It aims that some important species do not seed ever year. Plantations of these species can be raised annually, only by sowing all available seeds in nursery to raise seedlings to be planted out various years.

11.4.5 Food processing unit

It means that to make small units like pickles making/ bakes making units by using selected SHG groups in the watershed area.

12. Project Period

In this project area first year is going with detailed project report and Implementation of Entry Point activities. From the second year starting NRM, PSM and LSS activities.

13. Convergence

- **Importance of convergence in IWMP**
- Commonness of Items in both the Programmes- Labor Intensive
- Avoids duplication of efforts
- Improves quality of service provided.
- Develops effective linkage with various development initiatives.
- Helps to identify new opportunities and options.
- Ensures transparency and accountability in governance.
- Results in the effective monitoring of outcomes.

An action plan for convergence in IWMP V 2012-13 projects given below,

Sl No	Watershed	Components												
		Vegetable Garden	Banana Cultivation	Spices Cultivation	Tuber Crops	Stone Pitched Bund	Earthen Bund	Contour Terracing	Centripetal Terracing	Mulching	Water Absorption Pit	Live Fencing	Biogas	Pisciculture
1	23K23b	AGRI DEPT (1 Ha)	AGRI DEPT (1 Ha)	AGRI DEPT (1 Ha)	AGRI DEPT (1 Ha)	MGNREGS (5 Ha)	MGNREGS (7 Ha)	MGNREGS (1 Ha)	MGNREGS (10 Ha)	MGNREGS (10 Ha)	MGNREGS (1000 Nos)	MGNREGS (1029 M)	TSC& PIA (10 Nos)	Fisheries Department And PIA (2 Nos)
2	23K23k	AGRI DEPT (1 Ha)	AGRI DEPT (1 Ha)	AGRI DEPT (1 Ha)	AGRI DEPT (1 Ha)	MGNREGS (5 Ha)	MGNREGS (7 Ha)	MGNREGS (1 Ha)	MGNREGS (7 Ha)	MGNREGS (7 Ha)	MGNREGS (800)	MGNREGS 1002	TSC& PIA (5 Nos)	Fisheries Department And PIA (2 Nos)
3	23K23l	AGRI DEPT (0.6 Ha)	AGRI DEPT (1 Ha)	AGRI DEPT (0.4 Ha)	AGRI DEPT (1 Ha)	MGNREGS (4 Ha)	MGNREGS (6 Ha)	MGNREGS (1 Ha)	MGNREGS (6 Ha)	MGNREGS (6 Ha)	MGNREGS (700)	MGNREGS 1006	TSC& PIA (15 Nos)	Fisheries Department And PIA (2nos)
Total Ha		**2.6**	**3**	**2.4**	**3**	**14**	**20**	**3**	**23**	**23**	**2500**	**3037**	**30**	**6**

14. Major ongoing and completed schemes in the project area

SCHEMES / PROJECTS	Brief Description
Centrally sponsored schemes	
Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS)	Aims to enhance livelihood security in rural areas by providing at least 100 days of guaranteed wage employment in a financial year to every household whose adult members volunteer to do unskilled manual work.
Sarva Shiksha Abhiyan (SSA)	Flagship programme run by the Government of India to provide universal access to elementary education for children 6-14 years old.
Integrated Child Development Services (ICDS)	This scheme represents one of the world's largest and most unique programmes for early childhood development. ICDS is the foremost symbol of India's commitment to her children – India's response to the challenge of providing pre-school education on one hand and breaking the vicious cycle of malnutrition, morbidity, reduced learning capacity and mortality, on the other.
Support to State Extension Programmes for Extension Reforms	This is the main scheme to revamp agricultural extension across the country and aims at providing a decentralized and demand driven extension system by way of new institutional arrangements for technology dissemination in the form of an Agricultural Technology Management Agency (ATMA) at district level. Important farmer oriented activities under ATMA includes: (a) training of farmers (b) demonstrations on agriculture and allied sector (c) exposure visit of farmers (d) farmer-scientist interactions (d) farm schools.
Rashtriya Krishi Vikas Yojana (RKVY)	Aims at achieving annual growth in agriculture sector by a holistic development of Agriculture and allied sectors.
State sponsored schemes	

Sustainable Development of Rice-Based Farming System	Aims to sustain rice cultivation and to increase its productivity. It includes group farming, distribution of fertilizer, organic manure and weedicides at subsidized rate.
State Horticulture Mission (SHM)	Area expansion and subsidy for rising banana, pineapple, cocoa, nutmeg, pepper & cut flowers.
Small Farm Mechanization	The objective of the scheme is to provide credit for the purchase of new tractor/new tractor for 2nd time/tractor renovation/ repair/ replacement of spares/small tractors (GOI) scheme/power tiller/ thresher/power sprayer.
Kerasree	Aims at integrated development of coconut holdings through better agro-management practices and promotion of multi-species cropping and farming systems. Works include removing disease affected coconut trees, providing pump set, distributing vegetable seeds, seedlings and organic manure etc.

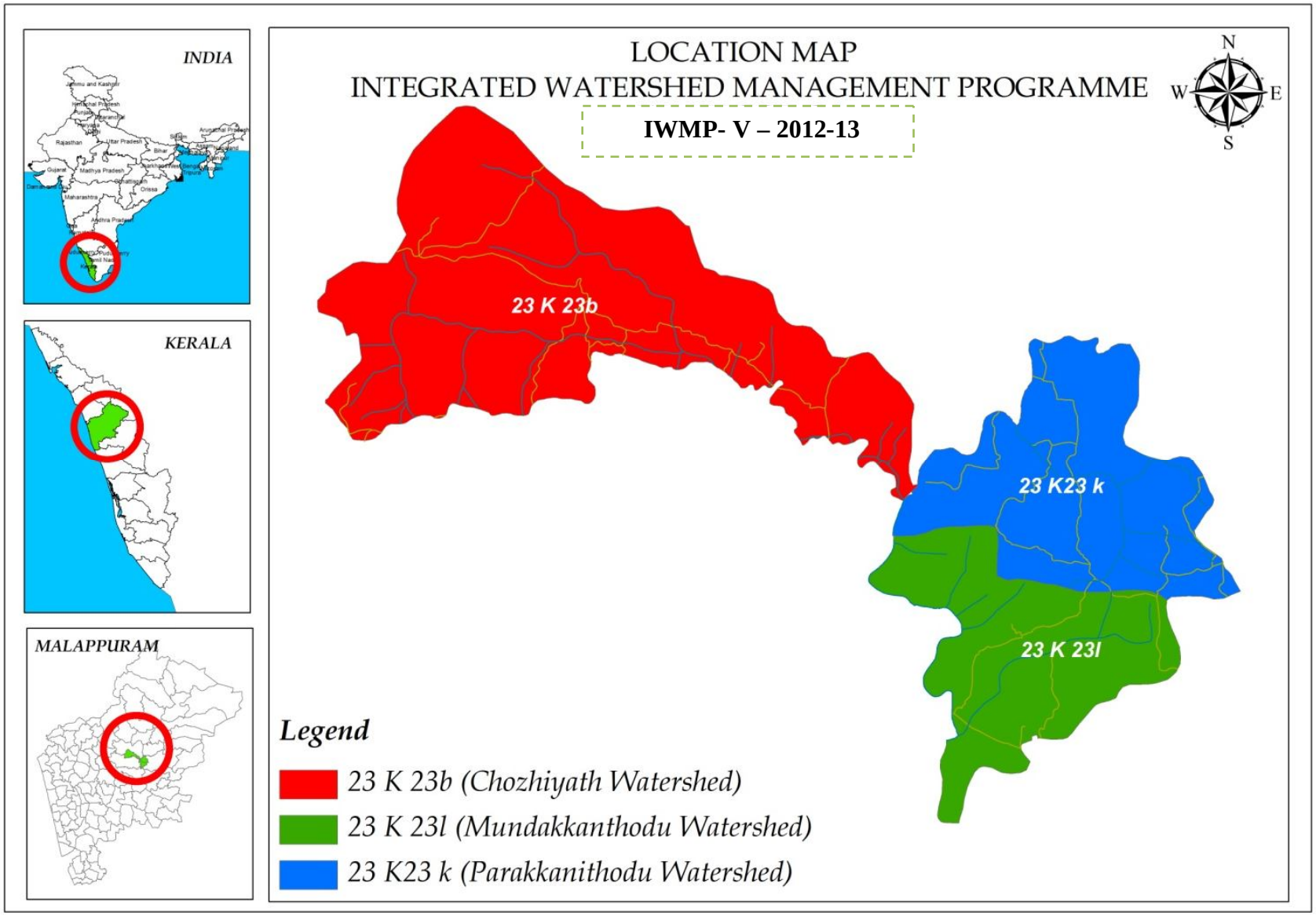
CHAPTER – IV

GENERAL DESCRIPTION OF THE PROJECT AREA

1. Location and extent

The Project area is situated in the Southern part of the Wandoor Block and it is laid on the central portion of the Malappuram district. The Cluster area is situated between 11^0 9'30'' and 11^o 5' 30" North latitude and between$76^0$8'0" and $76^0$13'0" East longitude. The total extent of the cluster is 1979 hectares. The cluster area bounded on the North Thrikkalangod Grama panchayath and Porur Grama Panchayath in Malappuram district, South Manjeri Municipality and Pandikkad Grama Panchayath, in West Thrikkalangod Grama Panchayath and Manjeri Municipality, in the East Pandikkad GramaPanchayat.

1.1 Location Map



2. Basic information of the project area

State	District	Taluk	Block	Project	Micro Watersheds			Grama panchayat	villages	Wards Included		Total Area	Treatable Area	Project Amount
					Name	Code No	Area			Full	Partial			
Kerala	Malappuram	Eranadu	Wandoor	IWMP-V/2012-2013	Chozhiyath	23K23b	967	Trikkalangode	Elankur,Trikalangode	16	13,17,18	2399.96 Ha	1979 Ha	Rs. 29685000/-
					Parakkannithodu	23K23k	537	Pandikkad	Vettikattiri	1	2,22			
					Mundakkanthodu	23K23l	475	Pandikkad	Vettikattiri	23	21,22			

2.1Weightage of the cluster area

No	Name of the project	No of micro watershed to be proposed	Proposed project area	Proposed Cost	Weightage under the criteria													
					1	2	3	4	5	6	7	8	9	10	11	12	13	Average
1	IWMP –V /2012-13	3	1979 Ha	Rs. 29685000/-	5	3	0	10	0	0	11	5	5	12	5	0	10	66

3. Physiography

Physiographically the project area forms part of both the midland and highland units. Descending from the heights of the Western Ghats in the east, the land slopes towards the west forming three distinct – the highlands, the plains and the sea coast. Some of the lofty ridges and peaks extend towards the west by a succession of hills of diminishing altitude. Stretching westwards in gentle slopes the plains succeed forest-clad uplands. Thudiyaan Mala hills and Vaalani hills are the highest elevated point in the watershed area. Olipuzha is passing through the Southern portion of the cluster area. The watershed is blessed with streams like Kakkathodu, Chozhiyaththodu,Mundakkanthodu and Parakkannithodu. In addition to these, there are streams running between the mountain slopes enriching the water resource of the watershed. Agriculture is undertaken during summer by constructing bunds in the streams. Though the watershed receives moderate annual rain fall, some regions face scarcity of water. Half an area of the watershed is comprised of hills and mountains where as major share of the remaining land is field and rest household premises. Rubber plantation is seen in hilly areas where as in the valleys though suitable for paddy cultivation, undertake cultivation of banana, tapioca, coconut, areacanut and other vegetables.

5.1 Relief data in the Project area

Relief	Area in Ha	Area in %
Below 20 mtr	0.18	0.01
20-60 mtr	1127.87	56.99
60-100 mtr	718.40	36.30
100-200 mtr	132.55	6.70
Total	**1979**	**100**

4. Drainage (Major drains in the project area)

Olippuzha	KAKKATHODU
	MUNDAKKANTHODU
	KARAKKURISSI THODU
	MUNDALI THODU
	KOLACHITHODI KAITHODU
	NECHITHALA THODU
	KANJIRATHUTHODI KAITHODU
	MAMPOYIL THODU
	ARIANPULLITHODU
	MANALAYI KAITHODU
	THARIPPAYIL THODU
	THACHOOR THODU
	VADAKKLAPPADI THODU
	CHERUKULAM THODU
	POOCHAPPOYIL THODU
	CHOZHIYATH THODU

(Source: Base line survey- TSO)

5. Slope

Majority of the area is Moderately steep to steep (723hectares) which is 36.53 % of the total area followed by level to Gently sloping area covered 615 hectares which is 31.08%, followed by Moderate sloping to Moderate steep area covered 603 hectares which is 30.47% and Steep to very steep sloping covered 308 hectares which is 1.92% The below table gives the slope of the entire project area.

- **Slope categories of cluster area**

Slope	Area In Ha	Area At %
Level to gently sloping	615	31.08
Moderate sloping to Moderate steep	603	30.47
Moderate steep to steep	723	36.53
Steep to Very steep Slope	38	1.92
Total	1979	100

6. Climate

Climate is one of the important elements in understanding environmental condition of any area. It significantly affects agricultural activity, sediment generation which cause erosion. We shall discuss here two basic elements of climate- temperature and rainfall. After analyzing climate data of duration 11 year (2002-2012) the following conclusions are made.

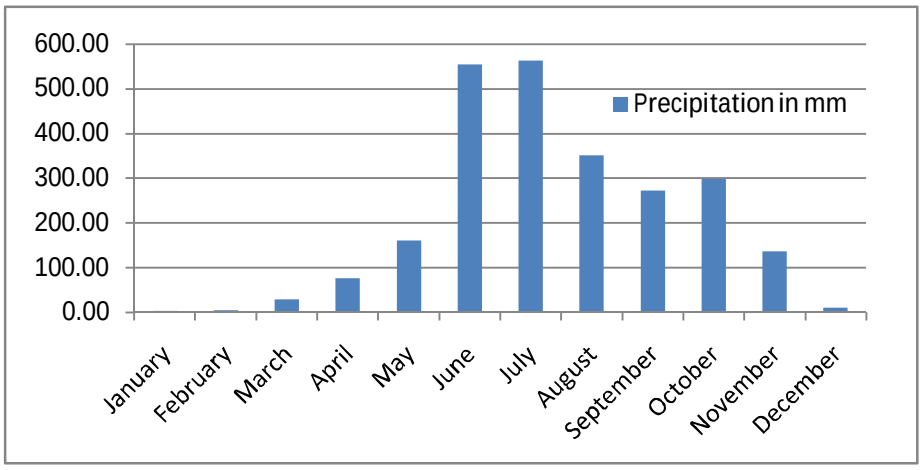
6.1 Temperature

Mean maximum temperature is above 29ºC in all the months. March and April are normally hottest months with mean maximum temperature reaching 35.6º C. In case of mean minimum temperature the lowest of 15.70 is recorded in the month of January and in some years it is in the month of December. Temperature variations may impact crop productivity.

6.2 Rainfall

Rainfall data obtained from the rain gauge station located in Anakkayam for the period from 2002 to 2012 indicates that this area receives annual average rainfall of 2456 mm. During this period2007 was the wettest year with annual rainfall of 3464mm and the year 2012 received the lowest annual precipitation of 1598 mm.The monthly average rainfall varies from 2.25 mm in the month of January to 563 mm in the month of July. It is evident from the Table that the area receives rainfall both during south west and north east monsoons, however all the high rainfall years are supported by high rainfall in the month of July.

Monthly Mean Precipitation (2002-2012)



(Source: Cashew Research Station Anakkayam, Malappuram)

- **Monthly wise mean minimum temperature**

Year	January	February	March	April	May	June	July	August	September	October	November	December
2002	28.50	26.70	27.90	28.80	28.80	22.50	26.50	25.40	28.30	28.60	27.50	*
2004	18.90	21.20	23.60	22.00	22.60	22.40	21.70	21.70	22.40	22.30	21.80	18.40
2005	20.20	21.90	23.70	24.00	24.50	21.90	22.60	22.40	22.60	22.30	22.50	21.00
2006	20.60	20.90	22.80	24.80	30.70	22.70	22.00	22.00	22.00	22.00	22.00	19.00
2007	18.70	26.90	23.30	23.80	23.60	22.50	21.50	21.60	21.60	21.80	19.60	19.50
2008	17.40	21.10	21.10	22.40	22.10	21.40	18.60	21.10	20.40	20.80	20.20	18.60
2009	17.79	19.35	20.85	22.29	21.50	20.80	20.24	20.50	21.20	20.43	20.50	19.03
2010	18.27	17.16	21.37	20.82	20.82	19.74	19.26	19.48	19.04	19.03	18.26	17.81
2011	16.58	16.53	19.37	19.11	20.58	18.65	18.51	18.85	18.45	19.17	17.78	15.27
2012	15.70	17.82	20.09	20.28	23.33	19.30	18.67	18.82	18.53	18.73	19.37	19.11
	15.70	20.96	22.41	22.83	23.85	21.19	20.96	21.19	21.45	21.52	20.95	18.64

(Source: Cashew Research Station Anakkayam, Malappuram)

- **Monthly wise mean maximum temperature**

Year	January	February	March	April	May	June	July	August	September	October	November	December
2002	33.20	31.20	33.80	33.70	32.30	25.10	29.50	28.70	31.10	30.30	30.50	*
2003	32.70	34.50	34.90	33.50	35.00	29.30	27.60	28.70	21.09	29.70	31.10	27.10
2004	34.10	35.80	37.70	35.10	31.90	33.80	30.50	31.10	32.40	32.40	33.10	33.30
2005	34.40	36.40	32.30	36.10	36.60	31.10	29.20	33.00	21.00	31.10	31.50	32.90
2006	34.30	35.90	35.30	36.30	34.80	33.20	30.20	31.20	30.60	32.10	32.40	33.30
2007	34.30	35.70	37.50	37.60	35.80	31.00	29.10	30.80	30.60	32.10	33.70	34.10
2008	36.00	36.70	35.40	35.90	35.10	31.90	31.70	31.60	31.80	32.70	33.70	34.20
2009	34.60	36.17	35.17	35.80	35.60	31.40	30.30	31.50	31.30	32.90	32.30	33.50
2010	34.12	32.30	37.12	35.63	34.13	30.58	30.06	30.06	29.82	30.24	30.34	32.00
2011	33.97	35.00	36.19	35.16	33.91	28.80	27.43	26.88	27.15	28.25	27.18	30.93
2012	33.90	35.17	36.33	36.23	33.00	31.50	30.67	30.41	31.87	33.32	27.15	28.25
	34.14	34.99	35.61	35.55	34.38	30.70	29.66	30.36	28.98	31.37	31.18	31.96

(Source: Cashew Research Station Anakkayam, Malappuram)

- **Monthly wise rainfall**

Month	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Monthly Mean
January	13.10	0.00	0.00	7.40	0.00	0.00	0.00	0.00	4.20	0.00	0.00	2.25
February	0.00	0.00	0.00	0.00	0.00	0.00	34.40	0.00	0.00	11.80	0.00	4.20
March	0.00	10.20	0.00	0.00	68.60	0.00	175.00	48.00	11.60	2.40	0.00	28.71
April	58.00	105.80	119.90	115.20	8.80	25.80	30.80	80.00	58.80	122.00	115.20	76.39
May	249.20	119.60	408.40	25.60	453.70	167.00	108.80	103.40	69.60	51.60	8.80	160.52
June	413.10	534.40	634.00	698.40	689.80	615.10	641.10	332.30	466.00	809.00	269.20	554.76
July	296.40	547.40	281.60	605.90	620.80	1319.00	279.70	965.60	483.40	457.40	331.17	562.58
August	423.00	614.60	374.40	213.20	390.80	455.20	177.80	219.60	237.40	410.60	343.20	350.89
September	57.80	63.40	140.00	299.80	700.60	498.40	293.80	240.30	182.10	371.60	144.10	271.99
October	439.20	281.20	264.40	334.80	251.80	305.60	421.70	290.40	425.20	157.80	107.60	298.15
November	141.20	65.00	71.00	155.40	142.00	78.00	13.20	227.40	232.20	137.80	232.20	135.95
December	*	0.00	0.00	7.80	0.00	0.00	0.00	2.80	46.80	0.00	46.80	10.42
Annual (mm)	**2091.00**	**2341.60**	**2293.60**	**2463.50**	**3326.90**	**3464.10**	**2176.30**	**2509.80**	**2217.30**	**2532.00**	**1598.27**	

(Source: Cashew Research Station Anakkayam, Malappuram)

7. Geology

Major part of the cluster area underlain by crystalline rocks of Archaean Age. Crystalline rocks comprises91.10 % of total project area i.e. about 1803Ha. 8.9Ha of project area comes under sedimentary Rocks. Table showing the distribution of geology in the cluster area are given below:

: Details of Geology in the Project Area

Soil	Area/Ha	Area at %
Crystalline Rocks	1803	91.10
Sedimentary Rocks	176	8.9
Total	1979	100

8. Ground water

Ground Water occurs under phreatic; semi confined and confined conditions along the foliation planes and joints and mainly along the horizontal to low dipping fracture zones and vertical to sub vertical deep seated fractures in the crystalline rocks. The 81.56% portion of the project area is moderately ground water prospered region. Remaining 18.44 % is the good ground water prospered region. The pore space present in the weathered rocks, lithomarge, Laterite and alluvium from potential phreatic aquifers in the area. The meters below ground level of Upland in summer season is 8.30 and in Monsoon 8.13, Mid land 4.98 in Summer and 4.85 in Monsoon and the low land area in summer 4.76 mbgl and in Monsoon 2.95 mbgl (Meters Below Ground Level).

: Ground Water Conditions of the Project Area

GROUND WATER PROSPERITY	AREA IN HA	AREA AT%
Moderately	1614	81.56
Good	365	18.44
Total	1979	100

(Source: Ground water Dept. Malappuram)

LOCATION	DEPTH OF GROUND WATER (MBGL)	
	Summer	Monsoon
Lowland	4.76	2.95
Midland	4.98	4.85
Upland	8.30	8.13

(Source: Ground water Dept. Malappuram)

9. Water supply

WATERSHEDS		
CHOZHIYATH	PARAKKANNITHODU	MUNDAKKANTHODU
1. Aalumkunnu water supply scheme 2. Pilakkunnu water supply scheme 3. Thachoor water supply scheme 4. Chathampatta water supply scheme	1.Podiyattukunnu water supply scheme 2.Kavungal parambu water supply scheme 3. Kattilmoochi water supply scheme	1. Mannathikkundu SC Colony water supply scheme 2. Anakkattiri water supply scheme 3.Vadakkengara SC Colony water supply scheme 4. Cheenikkalppadi water supply scheme 5. Athikkunnu water supply scheme

(Source: base line survey TSO)

10. Irrigation details

WATERSHED	SOURCE									
	OPEN WELL		TUBE WELL		PONDS		STREAMLETS		TOTAL	
	Nos	Area irrigated(ha)	Nos	Area irrigated(ha)	Nos	Area irrigated(ha)	Nos	Area irrigated(ha)	Nos	Area irrigated(ha)
CHOZHIYATH	15	2.98	1	0.20	8	8	11	22	35	33.18
PARAKKANNITHODU	6	0.59	1	0.20	5	5	7	14	19	19.79
MUNDAKKANTHODU	6	0.59	3	1.2	2	2	5	10	16	13.79
TOTAL	27	4.16	5	1.6	15	15	23	46	70	66.76

(Source: base line survey TSO)

11. Socio-Economic condition

Majority of the people here are common folk working as coolies and those who

Sl no.	Watershed	Sources (in numbers)				
		Private well	Public well	Spring well	Public tap	Water connection
1	Chozhiyath	687	257	16	46	17
2	Parakkannithodu	443	40	24	13	5
3	Mundakkanthodu	612	108	15	23	4
	Grand Total	1742	405	55	82	26

SL NO.	WATERSHED	HOUSING PATTERN					
		SMALL HUT	TILE	ASBESTOS	CONCRETE	CONCRETE 2 FLOOR	TOTAL HOUSE
1	CHOZHIYATH	7	735	15	377	50	1184
2	PARAKKANNITHODU	7	461	8	174	36	686
3	MUNDAKKANTHODU	3	444	2	318	70	837
TOTAL		17	1640	25	869	156	**2707**

work on small scale industries. Minority of the population are NRI`s whereas farmers are found in small numbers. Along with them, there are a few Govt. employees and business men. Most of the women are working under the MGNREGS. In general, the community is economically backward. The new generation is trying to acquire good education and is trying to get jobs in the government sector as well as abroad.

11.1 Housing Pattern of the families in the project area

11.2 Demographic profile of the project area

WATERSHED	FAMILY	General			SC			ST			TOTAL		APL	BPL
		M	F	Total	M	F	Total	M	F	Total	M	FM		
CHOZHIYATH	1184	2937	2953	5890	58	67	125	10	12	22	3005	3032	664	520
PARAKKANNITHODU	686	1762	1714	3503	27	31	58	Nil	Nil	Nil	1789	1745	469	368
MUNDAKKANTHODU	837	2168	2007	4175	46	52	98	Nil	Nil	Nil	2122	1955	473	213

(Source: base line survey TSO)

Watershed Name	Small Farmers	Marginal farmers	Land less
CHOZHIYATH	109	84	11
PARAKKANNITHODU	168	41	9
MUNDAKKANTHODU	173	37	18

11.3 Land holding size

Watersheds	0-5 Cents	5-50 Cents	50-250 Cents	250-500 Cents	Above 500 cents	TOTAL
PARAKKANNITHODU	107	470	93	14	2	686
CHOZHIYATH	144	741	264	21	14	1184
MUNDAKKANTHODU	74	491	216	47	9	837

Source: baseline survey

11.4. Age group details in the project area

WATERSHED	AGE GROUP										TOTAL		GRAND TOTAL
	<= 5		6 - 15		16 - 40		41 – 60		>61				
	M	FM	M	FM	M	FM	M	FM	M	FM	M	FM	
CHOZHIYATH	365	361	585	587	1291	1322	561	562	203	200	3005	3032	**6037**
PARAKKANNITHODU	212	260	382	328	778	729	310	309	107	119	1789	1745	**3534**
MUNDAKKANTHODU	198	162	440	407	1002	914	382	383	146	141	2168	2007	**4175**
TOTAL	775	783	1407	1322	3071	2965	1253	1254	456	460	6962	6784	**13746**

(Source: base line survey TSO)

11.5 Basic facilities of the households in the project area

	NAME OF WATERSHED	TOILET		SOCK PIT		EARTHERN PIT		GAS		ELECTRICITY	
		YES	NO	YES	NO	YES	NO	YES	NO	YES	NO
1	CHOZHIYATH	1155	29	549	635	545	639	547	637	1164	20
2	PARAKKANNITHODU	676	10	175	511	193	493	194	492	665	21
3	MUNDAKKANTHODU	807	30	385	452	386	451	387	450	828	9
TOTAL		**2638**	**69**	**1109**	**1598**	**1124**	**1583**	**1128**	**1579**	**2657**	**50**

(Source: base line survey TSO)

11.6 Employment analysis in the project area

Sl.No	EMPLOYMENT	WATERSHED			TOTAL
		Chozhiyath	Parakkannithodu	Mundakkanthodu	
1	Agriculture	879	579	516	1974
2	Business	51	21	32	104
3	Coolie	1439	1016	1224	3679
4	Government	28	24	48	100
5	MGNREGS	697	290	235	1222
6	Pension	403	226	287	916
7	Student	1364	810	1037	3211
8	others	1176	568	796	2540
	TOTAL	6037	3534	4175	13746

(Source: base line survey TSO)

11.7 Infrastructure facilities in the project area

SL NO.	INFRASTRUCTURE	TOTAL	ELECTRICITY	DRINKING WATER FACILITY	TOILET
1	ANGAN WADIES	11	YES	YES	YES
2	LP SCHOOL	10	YES	YES	YES
3	UP SCHOOL	4	YES	YES	YES
4	HIGH SCHOOL	2	YES	YES	YES
6	PHC	2	YES	YES	YES
7	COLLEGE	2	YES	YES	YES
8	POST OFFICE	1	YES	NO	YES
9	RATION SHOP	2	YES	YES	NO
11	TEMPLE	3	YES	YES	YES
13	MOSQUE	22	YES	YES	YES
15	PLAYING GROUND	1	NO	NO	NO
16	CLUBS	9	YES	NO	NO
17	MADRASSA	8	YES	YES	YES
18	SMALL INDUSTRIES	1	YES	YES	YES
19	WATER PARK (SILSILA)	1	YES	YES	YES
21	BRIDGE	12	NO	NO	NO
22	POULTRY FARM	10	YES	NO	NO

(Source: base line survey TSO)

11.8 Details of self help groups and neighbour hood groups

WATERSHED NAME	No of SHGs/UGs	People registered under MGNREGS	No of federations of SHGs
CHOZHIYATH	64	697	Nil
PARAKKANNITHODU	50	290	Nil
MUNDAKKANTHODU	45	235	Nil
TOTAL	159	1222	

(Source: base line survey TSO)

11.9 Transport and communication

Roads are the major means of transport. Nearly 90% of the roads are motorable. Major roads are Manjeri – Elankur - Wandoor road in chozhiyath watershed, Manjeri - Pandikkad road in Mundakkanthodu micro watershed. KSRTC and the private buses are the main means of transportation. But people depend upon conveyance like auto-rickshaws and Jeeps also for their day to day needs. The distance from Wandoor to nearest Airport is 46 Km and nearest railway station is Vaniyambalam, which is 5 Km.

SL. No.	WATERSHED	PUCCA ROAD (From – To)	KATCHA ROAD (From – To)
1	CHOZHIYATH	• Manjeri - Elankur Road • Meemparakkal Road • Cheramkuth – Manjapetta Road • Kozhithala – Vadakkelappadi Road • Manalayippara -Puthuvazhikkadavu Road • Kuttippara-Cherukulam Road • Meemparakkal-Cherukulam Road	• Kozhithala- Vadakkelappadi Road • Ariyanpulli Road • Variyathpalli Road • Cheramkuth-Colony Road • Vettikkuthiyal-Cheramkuth Road • Mampoyil-Vettuvankunnu Road • Vadakkelappadi-Manalayippara Road • Puthuvazhikkadavu-Manjapatta Schoolpadi Road
2	PARAKKANNI THODU	• Chungathukunnu – Peleppuram Road • Manjeri- Chungathukunnu Road • Chungathukunnu – Kodasseri Road • Chungathukunnu – Valluvangadu Road • Chungathukunnu – Charamkavu Road • Chungathukunnu – Cherukode Road • Chungathukunnu – Nadukkundu Road Nadukkundu – Valani Road	• Ellathumpara- Ittalungal Road • Pookkundu Pattathumukku Road • Valani-Vattathippara Road • Peedikakunnu – Nechithodika Colony Road • Kavungal Parambu- Kattilmoochi Road • Kuttipilakkal Thazhathiyil Kurippundu Road • Kuttipilakkal Anganvadi Road
3	MUNDAKKAN THODU	• Pandikkad – Manjeri Road • Amakkad- Thekkemanna Road • Valluvangadu – Thekkemanna Road •	• Valluvangadu- Kalleemoochikkal Road • Kuyyamkunnu Arabic College Road • Kuyyamkunnu – Panankara Road

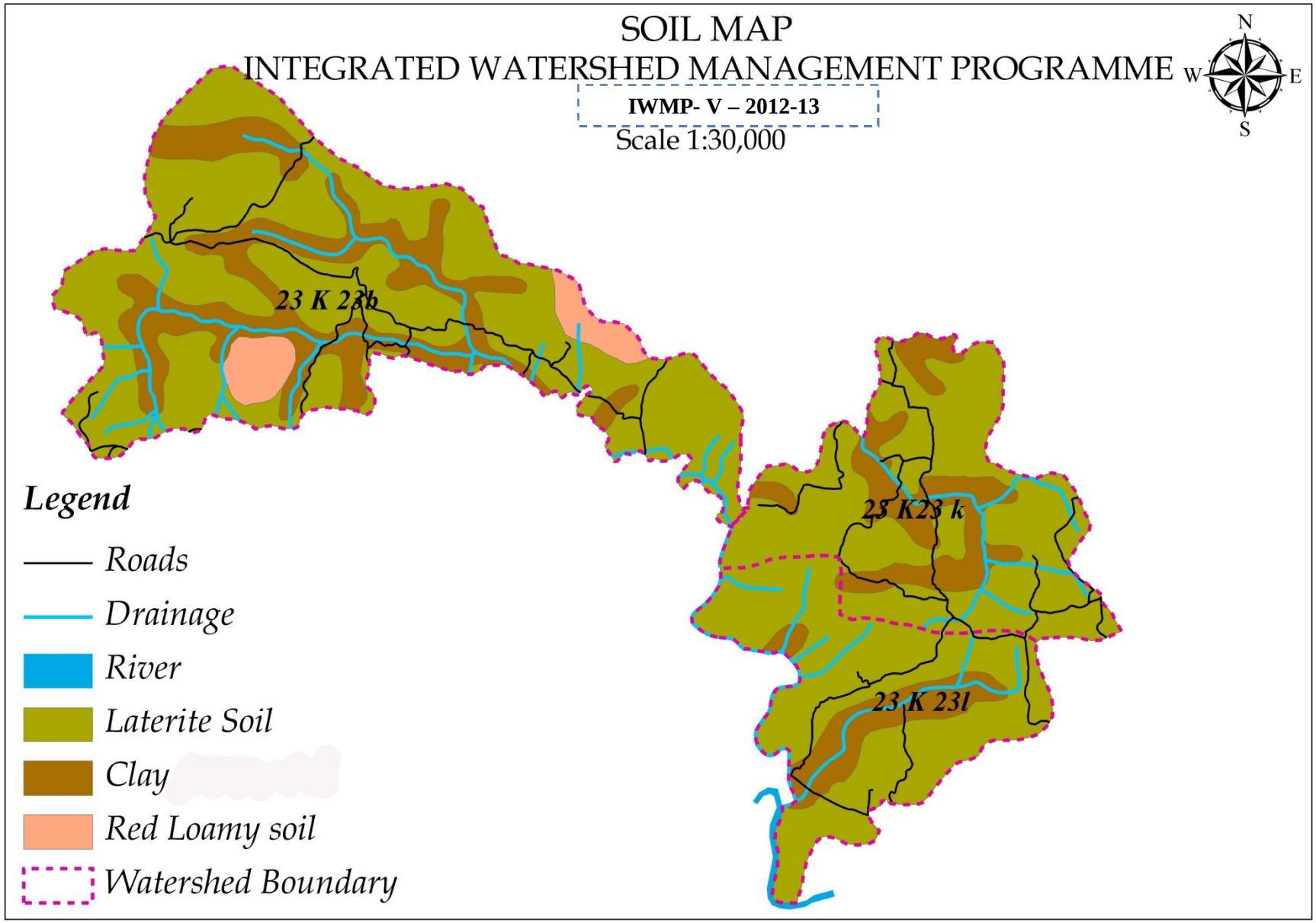
(Source: base line survey TSO)

12. Soil

Soil is the basic natural resource that supports all life on earth's surface. Most of the Cluster area is covered by Laterite Soil (1803Ha) which is about 91.10 % of the total area followed by Clay/Loamy Soil Covered (176Ha) which is about 8.9 % of the total area.

: Details of soil types in the project area

Soil types	23K23b	23K23k	23K23l	AREA/Ha	Area at %
Laterite Soil	707	406	368	1481	74.83
Clay Soil	201	131	107	439	22.18
Red Loamy Soil	59	nil	nil	59	2.98
Total	**967**	**537**	**475**	**1979**	100


SOIL MAP
INTEGRATED WATERSHED MANAGEMENT PROGRAMME
IWMP- V – 2012-13
Scale 1:30,000
N
W
E
S
23 K 23b
23 K23 k
23 K 23l
Legend
Roads
Drainage
River
Laterite Soil
Clay
Red Loamy soil
Watershed Boundary

13. Agriculture

The agriculture sector of this cluster area has been concededly weakened due to lack of labourers, decrease in price of agricultural products and increase in wages. Another problem is the lack of a market to sell these products. However paddy, coconut, Arecanut, pepper, banana, tapioca and vegetables are cultivated here on small scale. Pump sets and sprayers are supplied in the panchayat on subsidy rate along with financial support for well construction for irrigation purposes.

14. Cropping pattern of Project area

Watershed	CROPPING PATTERN								
	Coconut	Rubber	Paddy	Banana	Arecanut	Pepper	Cashew nut	Mixed crop	Total
Chozhiyath	293.7	221	6	117.48	91	2.1	7.4	78.32	817
Parakkannithodu	136	164	4	54.4	54	1.4	0.86	36.34	451
Mundakkanthodu	105.32	104	9	62.62	11	1.42	0.4	51.24	345

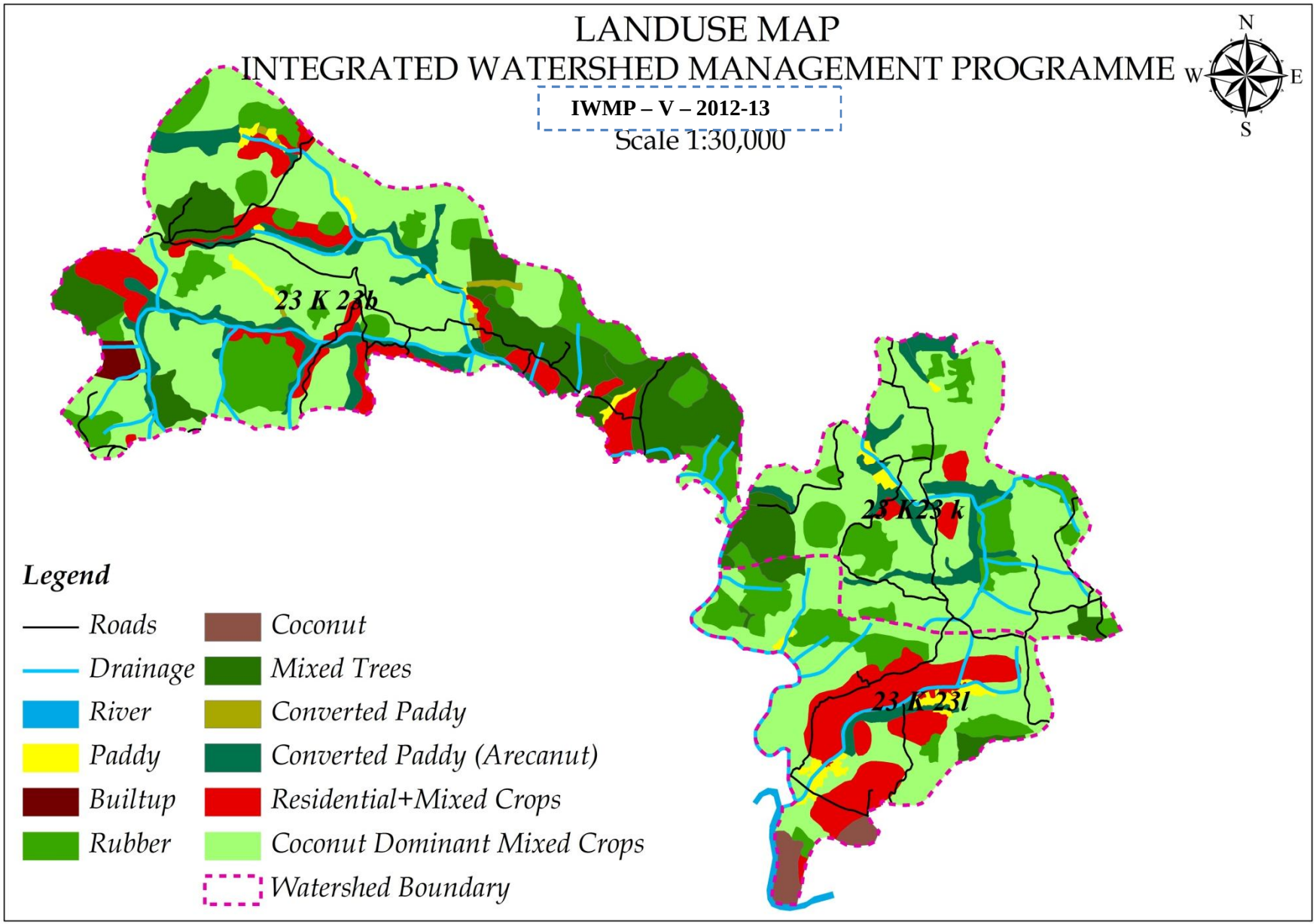
(Source: base line survey TSO)

15. Land use

: Watershed wise Land use details of the project area

LAND USE	23K23b	23K23k	23K23l	AREA/Ha	Area at %
Built up area	11	nil	nil	11	0.56
Coconut dominant mixed crop	376	344	220	940	47.50
Converted Paddy	1	nil	nil	1	0.05
Converted Paddy to Arecanut	91	54	11	156	7.88
Mixed Trees	198	37	21	256	12.94
Paddy	11	5	17	33	1.67
Residential and mixed	107	13	115	235	11.87
Rubber	172	84	72	328	16.57
Coconut	nil	nil	19	19	0.96
Total	**967**	**537**	**475**	**1979**	100

(Source: Kerala state Land Use Board)


LANDUSE MAP
INTEGRATED WATERSHED MANAGEMENT PROGRAMME
IWMP – V – 2012-13
Scale 1:30,000
N
W
E
S
23 K 23b
23 K 23 k
23 K 23l
Legend
Roads
Drainage
River
Paddy
Builtup
Rubber
Coconut
Mixed Trees
Converted Paddy
Converted Paddy (Arecanut)
Residential+Mixed Crops
Coconut Dominant Mixed Crops
Watershed Boundary

CHAPTER- V

PROBLEMS TO BE ADDRESSED

1. Agricultural Sector:

- Lack of Irrigation Facilities in Ela.
- For agriculture purposes there is wide usage of pesticides and hazardous chemicals which lead to destruction of natural enemies of pests. It also creates environmental pollution and directly affects mankind and nature.
- Ignorance about scientific agriculture methods.
- Lack of unskilled of Labours in paddy cultivation, coconut climbing and vegetable cultivation etc.
- Hike in cost of production and lack of getting fair value for crops due to following the traditional agricultural methods.
- Lack of skilled labourers

2. Animal Husbandry Sector:

- Scarcity of hybrid cows and goats.
- Hike in price of cattle feed.
- Lack of proper facilities for milk marketing.
- Lack of scientific, modernized cow shed.
- Production of milk is very poor from dairy farming sector due to the scarcity of fodder grass and grazing land.

3. Water and Soil Conservation Sector:

- Soil erosion from places like Kakkappali, Athikkunnu and Thudiyan mala, Variyamkunnu, Valani, Kurippundilkunnu.
- Soil erosion from places like Variyamkunnu, Kakkappali and Athikkunnu areas.
- Canals and other water reservoirs are being filled with sediments.
- Lack of water and soil conservation activities.
- Commonness of land filling and razing of earth.
- Water bodies are being polluted by waste disposal.
- Over use of chemical fertilizers and insecticides.
- Acute shortage of drinking water is the main problem in the project area

- Ground water depletion is also experienced in some parts due to the large number of bore well

4. Suggestion

- Applying scientific agricultural method.
- Increase irrigation facilities by preservation of canals and ponds.
- Encourage group farming system.
- Production of bio fertilizers and vermicompost.
- Use of bio-insecticides instead of chemical insecticides.
- Construction of new ponds and water reservoirs to encourage, summer vegetable cultivation.
- Encourage “Ottanjar Krishi”.
- Implement school vegetable garden project.
- Implement drip irrigation.
- Encourage reclamation of barren land for cultivation.
- Form labour force to reduce scarcity of labours and provide them with adequate training to understand the latest technology in agriculture. Provide monitory help to buy machinery.
- Extend help for self-employment for “Kudumbasree Members”.
- Encourage mushroom cultivation, apiculture, cattle breeding.
- Plant medical plants and fruit bearing trees on schools and other institution.
- Construction of rain water harvesting pits, and reservoirs and biogas plants.
- Make high yielding cattle available.
- Encourage fodder grass - azolla cultivation.
- Plant Vetiver, Pandanus and brahmi along the boundaries of lakes.
- Undertake floriculture and sericulture.
- Farm vegetative cover along slope areas and thereby form bio belt.
- Protection of side walls of lakes.
- Formation of scientific cowshed and artificial milk machinery.
- Establishment of factories for the production of cattle feed at government level.

PART - II

INDIVIDUAL WATERSHEDS

CHOZHIYATH WATERSHED

(23K23b)

1. Introduction

Chozhiyath watershed bearing the code number 23k23b lies in the villages of Elankur and Thrikkalangode in the Grama panchayath of Thrikkalangodu of the Wandoor block in Malappuram district extending to a total area of 967 ha. This watershed shares its boundaries with Kakkathodu on the east, Koomankulam on the west, Cherukulam payyanadu thodu on the south and Manjapetta on the north. The chozhiyath watershed comprises of wards 13, 16, 17 and 18. Major places in this watershed are Cheramkuth, Karimbiniyil, Cherukulam, Manjapetta, Thachur, Chozhiyath and Pottikkallu.

2. Boundaries of micro watershed

Chozhiyath Watershed	North	Manjapetta
	South	Cherukulam payyanadu thodu
	West	Koomankulam
	East	Kakkathodu
	Geographical Cordinates	Latitude: 9' 30" to 11^0 7' 0" N Longitude: $76^0$8'0" to 76^0 11'30"E

3. Phyisiography

Chozhiyath watershed includes hilly, valley, slightly slope areas. The major portion of this watershed area is located in the 20 to 60 meter from above the mean sea level. The south west portion of the watershed area is located in the 100 to 200 above mean sea level.Such as Konganmala, Paruthippattakkunnu, Karuvarakkodukunnu. Scarcity of water and drought are experienced in the months of April and May.

4. Watershed character

The shape of the watershed is Triangularwhich is located in the western portion of the cluster area. Rainfall in places like Konganmala, Paruthippattakkunnu, Karuvarakkodukunnu, Cheriyakottamala, Vettuvankunnumala, Pilakkunnu and chathapettakkunnu reaches Kakkathodu through streams like Thachur thodu, Chozhiyath thodu, Tharippadi thodu, and Mampoyil thodu. Finally Kakkathodu join with Olippuzha. The total length of the streams in this watershed is 22.6 km.

5. Water supply

Sl no.	WATERSHED	Sources (in numbers)				
		Private well	Public well	Spring well	Public tap	Water connection
1	CHOZHIYATH	687	257	16	46	17

(Source: base line survey TSO)

PONDS	STREAMS	WATER SUPPLY SCHEME OF G.P
Variyath Pond	Mampoyil Thodu	1. Aalumkunnu water supply scheme
Elachola pond	Ariyanpulli Thodu	2. Pilakkunnu water supply scheme
Kottammal Pond	Tharippayil Thodu	3. Thachoor water supply scheme
Mannathikkulam	Choorappilankara Thodu	4. Chathampatta water supply scheme
Kozhithala pond	Thachur Thodu	
Karuvarakkode Pond	Cherukulam Thodu	
Eranhikkodu Pond	Chozhiyath Thodu	

(Source: base line survey TSO)

6. Irrigation

WATERSHED	SOURCE									
	OPEN WELL		TUBE WELL		PONDS		STREAMLETS		TOTAL	
	Nos	Area Irrigate(ha)	Nos	Area Irrigated(h)	Nos	Area Irrigated(ha)	Nos	Area irrigated(ha)	Nos	Area irrigated(ha)
CHOZHIYATH	15	2.98	1	0.20	8	8	11	22	35	33.18

(Source: base line survey TSO)

7. Socio economic details

7.1 Housing pattern of the families in the project area

SL NO.	WATERSHED	HOUSING PATTERN					
		SMALL HUT	TILE	ASBESTOS	CONCRETE	CONCRETE 2 FLOOR	TOTAL HOUSE
1	CHOZHIYATH	7	735	15	377	50	1184

(Source: base line survey TSO)

7.2 Demographic profile of the project area

WATERSHED	FAMILY	General			SC			ST			TOTAL		APL	BPL
		M	F	Total	M	F	Total	M	F	Total	M	FM		
CHOZHIYATH	1184	2937	2953	5890	58	67	125	10	12	22	3005	3032	664	520

(Source: base line survey TSO)

7.3 Age group details in the project area

WATERSHED	AGE GROUP										TOTAL		GRAND TOTAL
	0- 5		6 - 15		16 - 40		41 – 60		>61				
	M	FM	M	FM	M	FM	M	FM	M	FM	M	FM	
CHOZHIYATH	365	361	585	587	1291	1322	561	562	203	200	3005	3032	6037

(Source: base line survey TSO) (<= - Below, > - Above)

7.4 Basic facilities of the households in the project area

(Source: base line survey TSO)

8. Agriculture details

CROPPING PATTERN	Area in Ha	Area at %
Coconut	293.7	35.94
Rubber	221	27.1
Paddy	6	0.73
Banana	117.48	14.35
Arecanut	91	11.13
Pepper	2.1	0.25
Cashew nut	7.4	0.9
Vegetables	78.32	9.6
Total	817	100

NAME OF WATERSHED	TOILET		SOCK PIT		EARTHERN PIT		GAS		ELECTRICITY	
	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO
CHOZHIYATH	1155	29	549	635	545	639	547	637	1164	20

(Source: base line survey TSO)

9. Animal husbandry and dairying

WATERSHED	COW	RABBIT	GOAT	POULTRY	DOG	CAT	DUCK	BUFFALO
CHOZHIYATH	96	23	225	2587	23	6	43	45

(Source: base line survey TSO)

10. Problems and suggestions

10.1 Agricultural sector:

1. Lack of Irrigation Facilities.
2. For agriculture purposes there is wide usage of pesticides and hazardous chemicals which lead to destruction of natural enemies of pests. It also creates environmental pollution and directly affects mankind and nature.
3. Ignorance about scientific agriculture methods.
4. Lack of unskilled of Labours in paddy cultivation, coconut climbing and vegetable cultivation etc.
5. Hike in cost of productivity and lack of getting fair value for crops

10.2 Animal husbandry Sector:

1. Scarcity of hybrid cows and goats.
2. Hike in price of cattle feed.
3. Lack of proper possibility for milk selling.
4. Lack of scientific, modernized cow shed.
5. Productivity of milk is very poor from dairy farming sector due to the scarcity of fodder grass and grazing land.

10.3 Water and soil conservation Sector:

1. Soil erosion from places like Variyamkunnu, Kakkappali and Athikkunnu areas.
2. Canals and other water reservoirs are being filled with soil.
3. Lack of water and soil preservation activities.
4. Commonness of land filling and razing of earth.
5. Water reservoirs being made impure by sewage disposal.
6. over use of chemical fertilizers and insecticides.
7. Acute shortage of drinking water is the main problem in the project area.
8. Ground water depletion is also experienced in some parts due to the large number of bore well.

10.4 Suggestion

1. Undertake scientific agricultural method after compulsory soil testing.
2. Increase convenient irrigation facilities by preservation of canals and ponds.
3. Use bio-insecticides instead of chemical insecticides.
4. Construction of new ponds and water reservoirs to encourage, summer vegetable cultivation.
5. Encourage reclamation of barren field for cultivation.

6. From labour force to reduce scarcity of laboures and provide them with adequate training to understand the latest technology in agriculture.
7. Provide monitory help them to buy machinery.
8. Encourage mushroom cultivation, apiculture, cattle breeding.
9. Plant medical plants and fruit bearing trees schools and other institution.
10. Construction of rain water harvesting pits, and reservoirs and biogas plants.
11. Make high yielding cattle available and encourage fodder grass and azolla cultivation.
12. Undertake floriculture and sericulture.
13. Artificial vegetation in slope areas and thereby form bio belt.
14. Protect the side walls of ponds and streams

ESTIMATE

1. Funding pattern of Chozhiyath watershed

Name Of Watershed	Treatable Area (Ha)	EPA Amount (4%)	NRM (56%)	PSM (10%)	LSS (9%)	Administration Cost (10%)	Monitoring (1%)	Evaluation (1%)	Institution & Capacity Building (5 %)	DPR (1%)	Consolidation Phase (3%)	Total Amount (100%)
Chozhiyath	967	580200	8122800	1450500	1305450	1450500	145050	145050	725250	145050	435150	14505000

MASTER PLAN FOR 4 YEAR

CHOZHIYATH WATERSHED

TOTAL TREATABLE AREA - 967 Ha					TOTAL AMOUNT - 967 x 15000/ Ha = Rs.14505000/-						
YEAR	ADMINISTRATION	MONITORING	EVALUATION	ENTRY POINT ACTIVITY	INSTITUTION & CAPACITY BUILDING	DPR PREPERATION	NATURAL RESOURCE MANAGEMENT ACTIVITIES	LIVELIHOOD ACTIVITIES	PRODUCTION SYSTEM 7 MICRO ENTERPRISES	CONSOLIDATION PHASE	TOTAL IWMP PROJECT
FIRST	181312.5	29010	14505	580200	36262.5	145050	0	0	0		986340
%	1.25	0.2	0.1	4	0.25	1	0	0	0		6.8
SECOND	507675	36262.5	36262.5		290100		2901000	507675	580200		5584425
%	3.5	0.25	0.25		2		20	3.5	4		38.5
THIRD	507675	36262.5	36262.5		290100		2901000	507675	580200		5584425
%	3.5	0.25	0.25		2		20	3.5	4	0	38.5
FOURTH	253837.5	43515	58020		108787.5		2320800	290100	290100	435150	2349810
%	1.75	0.3	0.4		0.75		16	2	2	3	16.2
TOTAL	1450500	145050	145050	580200	725250	145050	8122800	1305450	1450500	435150	14505000
%	10	1	1	4	5	1	56	9	10	3	100

2. Entry point activities

Activity**:** Construction of VCB at Aryanpullithodu

Name Of Watershed	Panchayat	Name Of Work	Ward	Amount	Latitude	Longitude	Area benefited (Ha)/beneficiaries
Chozhiyath (24k23b)	Thrikkalangode	Construction Of VCB at Aryanpullithodu	16	5,80,200/-	N 11 08` 40.5	E076 08` 51.7	*Benefited area 30Ha *Benefited to 50 families
EPA TOTAL AMOUNT				5,80,200/-			

The above work under reference has been included in the list of EPA works for the construction of VCB at Aryanpallythodu in Thrikkalangode Grama Panchayath in the year 2013-14 wide under IWMP-V-2012-13 Entry Point Activity works and hence this estimate is prepared. The site is situated in Puliyamparambu-Muthappankundu Road in Thrikkalangode Grama panchayath and there is an approach road to this site leading to a field..Due to the recent heavy downpour, the temporary wooden bridge, linking both sides of the field has collapsed and one part is isolated. These affect the people in the area and thus strongly demanding a permanent cross way and also a drinking water project situated near to the proposed site. So this VCB helps to increase the water level in that drinking water project. In this circumstance the amount allotted vide G.O cited above can satisfy the public demand. Provision in this estimate includes construction of a VCB and Side protection on both up and down stream sides. Detailed site investigations were conducted before deciding the nature of the structure. Foundation provided is decided by considering the soil conditions and all efforts were made to assure the safety of the structure, which is designed according to the site conditions and the public demand.

3. Natural resource management (NRM)

During the first year of IWMP mainly concentrating with DPR preparation and Entry point activities. Natural resource management activities are starting from second year such as afforestation, Horticulture, Agriculture, Medicinal plant cultivation, Soil & moisture conservation, vegetative and engineering structure and water harvesting structures. Item wise annual actions plans are mentioned below as

well as the year wise financial tables. The contribution to WDF shall be minimum 10 % of the cost of NRM works executed on private land. In case of SC/ST, small and marginal farmers, the minimum contribution shall be 5 % of cost of NRM works executed on their land.

3.1 Master plan of natural resource management

CHOZHIYATH WATERSHED							
COMPONENTS	**UNIT**	**CONVERGENCE**	**VOLUME/ UNITS**	**RATE**	**IWMP SHARE/UNIT**	**TOTAL IWMP**	**TOTAL WDF SHARE**
AFFORESTATION							
RAMACHAM	Ha		2.6	12500	12500	32500	
UNGU	Ha		1	6000	6000	6000	
NEEM	Ha		2	6250	6250	12500	
NAMBYARVATTOM	Ha		0.007	800000	800000	5600	
PATHIMUGHAM	Ha		0.8	8000	8000	6400	
HORTICULTURE							
MANGO	Ha		5	5400	5400	27000	
PINEAPPLE	Ha		1	200000	200000	200000	
PAPPAYA	Ha		1	25000	25000	25000	
JACK FRUIT	Ha		4	4000	4000	16000	
AGRICULTURE							
VEGETABLE GARDEN (Seed And Organic manure)	Ha	**AGRI DEPT(1 Ha)**	6	37500	37500	225000	

BANANA CULTIVATION (Tissue culture)	Ha	**AGRI DEPT(1 Ha)**	4.5	50000	50000	225000	
SPICES CULTIVATION (Ginger,Turmeric)	Ha	**AGRI DEPT(1 Ha)**	3	30000	30000	90000	
TUBER CROPS (Tapioca, Sweet potato)	Ha	**AGRI DEPT(1 Ha)**	3	30000	30000	90000	
FODDER GRASS CULTIVATION	Ha		2	6000	6000	12000	
MIXED CROP (Colocacia, Amorphophallus)	Ha		3	30000	30000	90000	
MEDICINAL PLANT CULTIVATION							
1.KATTARVAAZHA	Ha		0.5	50000	50000	25000	
2.LAKSHMI THARU	Ha		1.3	15000	15000	19500	
SOIL & MOISTURE CONSERVATION							
STONE PITCHED BUND		**MGNREGS (5 Ha)**			0	0	
EARTHERN BUND		**MGNREGS (7 Ha)**			0	0	
CONTOUR TERRACING		**MGNREGS(1 Ha)**			0	0	
CENTRIPETAL TERRACING		**MGNREGS (10 Ha)**			0	0	
MULCHING		**MGNREGS (10 Ha)**			0	0	
VEGETATIVE AND ENGINEERING STRUCTURES							
SIDE PROTECTION OF STREAMS USING DRY RUBBLE MASONRY							
1. SIDE PROTECTION OF THACHUR THODU	m		20	83000	83000	83000	
2.ARYAMPULLITHODU (MANJAPETTA PORTION) SIDE PROTECTION	m		44	145000.00	145000.00	145000.00	
LIVE FENCING	m	**MGNREGS**	1018	20	20	20360	
WATER HARVESTING STRUCTURE(NEW CREATED)							
THACHUR THODU CHECK DAM (DR)	Nos		7	54000	54000.00	378000	
ATHIKKUNDU CHECK DAM	Nos		1	475000	475000.00	475000	
CHERUKULAM CHECK DAM	Nos		1	300000	300000.00	300000	

ORAPPENGAL CHECK DAM	Nos		1	282000	282000.00	282000	
VADAKKELAPPADI CHECK DAM (DR)	Nos		6	85000	85000.00	510000	
NJARETHALA CHECK DAM	Nos		1	164500	164500.00	164500	
ARIYANPULLITHODU CHECK DAM (DR)	Nos		1	27500	27500.00	27500	
POTTIKKALLU CHECK DAM (RR)	Nos		6	98000	98000.00	588000	
CHATHANKULAM WELL CONSTRUCTION	Nos		1	351500	351500.00	351500	
WELL RECHARGE	Nos		203	14000	14000.00	2842000	
WATER ABSORBTION PIT	Nos	**MGNREGS (1000)**	0	0	0.00	0	
BRUSH WOOD DAMS IN KOTTAMMAL THODU	Nos		6	114.08	114.08	684.48	
BRUSH WOOD DAMS IN ARIANPULLITHODU	Nos		4	114.08	114.08	456.32	
GULLY PLUGGING IN THACHUR	Nos		6	114.08	114.08	684.48	
BRUSH WOOD DAMS IN THACHUR THODU	Nos		8	114.08	114.08	912.64	
GULLY PLUGGING IN MAMPOYIL- EKKAPPARA	Nos		6	114.08	114.08	684.48	
WATER HARVESTING STRUCTURE(RENOVATION)							
PADDY FIELD BUND	m3		3000	116	116.00	348000	
FARM POND (KOTTAMMAL POND)	Nos		1	397000	397000.00	397000	
DRINKING WATER SUPPLY SCHEME							
THACHUR (WELL REPAIR)			1	100000	100000.00	100000	
ROUNDED FIGURE						17.6	
TOTAL						**8122800**	

3.2 Year wise action plan

NATURAL RESOURCE MANAGEMENT								
ACTION PLAN FOR THREE YEARS								
COMPONENTS	SECOND YEAR		THIRD YEAR		FOURTH YEAR		TOTAL	
	UNIT	AMOUNT	UNIT	AMOUNT	UNIT	AMOUNT	UNIT	AMOUNT
AFFORESTATION								
RAMACHAM	1	12500	1	12500	0.6	7500	2.6	32500
UNGU	0	0	1	6000	0	0	1	6000
NEEM	0.5	3125	1.5	9375	0	0	2	12500
NAMBYARVATTOM	0.007	5600	0	0	0	0	0.007	5600
PATHIMUGHAM	0.8	6400	0	0	0	0	0.8	6400
HORTICULTURE								
MANGO	2	10800	3	16200	0	0	5	27000
PINEAPPLE	0.4	80000	0.6	120000	0	0	1	200000
PAPPAYA	0.4	10000	0.6	15000	0	0	1	25000
JACK FRUIT	4	16000	0	0	0	0	4	16000
AGRICULTURE								
VEGETABLE GARDEN (Seed And Organic manure)	2	75000	2	75000	2	75000	6	225000
BANANA CULTIVATION (Tissue culture)	2	100000	1.5	75000	1	50000	4.5	225000
SPICES CULTIVATION (Ginger,Turmeric)	1	30000	1	30000	1	30000	3	90000
TUBER CROPS (Tapioca, Sweet potato)	1	30000	1	30000	1	30000	3	90000
FODDER GRASS CULTIVATION	0	0	2	12000	0	0	2	12000
MIXED CROP (Colocacia, Amorphophallus)	1	30000	1	30000	1	30000	3	90000
MEDICINAL PLANT CULTIVATION								
KATTARVAAZHA	0		0.5	25000	0	0	0.5	25000

LAKSHMI THARU	0		1.3	19500	0	0	1.3	19500
WELL RECHARGE (GROUND WATER RECHARGE)	0		61 Nos	854000	142 Nos	1988000	203	2842000
PADDY FIELD BUND	1056 m^3	122496	993 m^3	115188	951 m^3	110316	3000	348000
CONVERGENCE								
VEGETABLE GARDEN (Seed And Organic manure)	0.3	AGRI DEPT.	0.4	AGRI DEPT.	0.6	AGRI DEPT.	1	0
BANANA CULTIVATION (Tissue culture)	0.3	AGRI DEPT.	0.4	AGRI DEPT.	1	AGRI DEPT.	1	0
SPICES CULTIVATION (Ginger,Turmeric)	0.3	AGRI DEPT.	0.4	AGRI DEPT.	0.4	AGRI DEPT.	1	0
TUBER CROPS (Tapioca, Sweet potato)	0.3	AGRI DEPT.	0	AGRI DEPT.	1	AGRI DEPT.	1	0
SOIL & MOISTURE CONSERVATION (CONVERGENCE)								
STONE PITCHED BUND	0	MGNREGS	2.5	MGNREGS	2.5	MGNREGS	5	0
EARTHERN BUND	3.5	MGNREGS	3.5	MGNREGS	0	MGNREGS	7	0
CONTOUR TERRACING	1	MGNREGS	0	MGNREGS	0	MGNREGS	1	0
CENTRIPETAL TERRACING	5	MGNREGS	5	MGNREGS	0	MGNREGS	10	0
MULCHING	5	MGNREGS	5	MGNREGS	0	MGNREGS	10	0
LIVE FENCING	500 m	10000	518 m	10360	0	0	1018	20360
WATER ABSORBTION PIT (GROUND WATER RECHARGE)	300 Nos	MGNREGS	400 Nos	MGNREGS	300 Nos	MGNREGS	1000	0
TOTAL		**541921**		**1455123**		**2320816**		**4317860**

3.3 Year wise action plan - Natural resource management (General works)

NRM GENERAL WORKS FOR SECOND YEAR			
Sl.no	**MAJOR INTERVENTIONS**	**UNIT**	**AMOUNT**
WATER HARVESTING STRUCTURE(NEW CREATED)			
1	THACHUR THODU CHECK DAM (DR)	3	162000
2	ATHIKKUNDU CHECK DAM	1	475000
3	CHERUKULAM CHECK DAM	1	300000
4	ORAPPENGAL CHECK DAM	1	282000
5	VADAKKELAPPADI CHECK DAM (DR)	3	255000
6	NJARETHALA CHECK DAM	1	164500
7	ARIYANPULLITHODU CHECK DAM (DR)	1	27500
8	POTTIKKALLU CHECK DAM (RR)	3	294000
9	BRUSH WOOD DAMS IN KOTTAMMAL THODU	4	456.32
10	BRUSH WOOD DAMS IN ARIANPULLITHODU	4	456.32
11	GULLY PLUGGING IN THACHUR	3	342.24
12	BRUSH WOOD DAMS IN THACHUR THODU	4	456.32
13	GULLY PLUGGING IN MAMPOYIL- EKKAPPARA	3	342.24
14	KOTTAMMAL FARM POND SIDE PROTECTION	1	397000
	TOTAL		**2359053.44**
NRM GENERAL WORKS FOR THIRD YEAR			
SIDE PROTECTION OF STREAMS			
	SIDE PROTECTION OF STREAMS USING DRY RUBBLE MASONRY		
	1. SIDE PROTECTION OF THACHUR THODU	20 m	83017.6
	2.ARYAMPULLITHODU (MANJAPETTA PORTION) SIDE PROTECTION	44 m	145000

WATER HARVESTING STRUCTURE(NEW CREATED)			
	THACHUR THODU CHECK DAM (DR)	4	216000
	VADAKKELAPPADI CHECK DAM (DR)	3	255000
	POTTIKKALLU CHECK DAM (RR)	3	294000
	CHATHANKULAM WELL CONSTRUCTION	1	351500
	BRUSH WOOD DAMS IN KOTTAMMAL THODU	2	228.16
	GULLY PLUGGING IN THACHUR (USING DEPT. RUBBLE)	3	342.24
	BRUSH WOOD DAMS IN THACHUR THODU	4	456.32
	GULLY PLUGGING IN MAMPOYIL- EKKAPPARA (USING DEPT. RUBBLE)	3	342.24
DRINKING WATER SUPPLY SCHEME			
	THACHUR (WELL REPAIR)	1	100000
	TOTAL		**1445886.56**
	TOTAL FOR GENERAL WORKS		**3804940**
	NRM GRAND TOTAL		**81,22,800/-**

4. Production System Management

During the first year of IWMP mainly concentrating with DPR preparation and Entry point activities. Production system management activities are starting from second year such as Bee keeping, Poultry, Pisciculture, Rabbit Rearing, Vermicompost, Biogas and Mushroom cultivation. Item wise annual actions plans are mentioned below.

4.1 Master Plan Of Production System Management

CHOZHIYATH WATERSHED							
SL NO.	COMPONENTS	UNITS	Unit cost	CONVERGENCE	IWMP SHARE/UNIT	TOTAL IWMP	EXPECTING WDF
1	**BEEKEEPING**	10	6000		6000	60000	The contribution of WDF shall be a minimum 20 % of cost of PSM works execute to general category. However, in case of SC/ST, small and marginal farmers, the minimum contribution shall be 10 % of cost of PSM works.
2	**POULTRY**	1160	690		690	800400	
3	**PISCICULTURE**	2		Fisheries department and PIA	0	0	
4	**RABBIT REARING**	28	5000		5000	140000	
5	**VERMICOMPOST**	30	10000		10000	300000	
6	**BIOGAS**	10	13000	TSC& PIA	0	0	
7	**MUSHROOM CUTIVATION**	5	30000		30000	150000	
	TOTAL					1450400	
	ROUNDED FIGURE					100	
	GRAND TOTAL					**14,50,500/-**	

4.2 Year Wise Action Plan

PRODUCTION SYSTEM MANAGEMENT									
ACTION PLAN FOR THREE YEARS									
SL NO	COMPONENTS	SECOND YEAR		THIRD YEAR		FOURTH YEAR		TOTAL	
		UNIT	AMOUNT	UNIT	AMOUNT	UNIT	AMOUNT	UNIT	AMOUNT
1	BEEKEEPING	3	18000	7	42000	0	0	10	60000
2	POULTRY	503	347070	504	347760	153	105570	1160	800400
3	PISCICULTURE	2	0	0	0	0	0	2	0
4	RABBIT REARING	11	55000	10	50000	7	35000	28	140000
5	VERMICOMPOST	10	100000	8	80000	12	120000	30	300000
6	BIOGAS	5	0	5	0	0	0	10	0
7	MUSHROOM CUTIVATION	2	60000	2	60000	1	30000	5	150000
	ROUNDED FIGURE		130		440		-130	0	100
	TOTAL AMOUNT		580200		580200		290100	0	1450500

5. Livelihood Support System

During the first year of IWMP mainly concentrating with DPR preparation and Entry point activities. Livelihood support system activities are starting from second year such as Goat rearing, Floriculture, Agriculture Nursery, Coconut climber, Dairy and Food processing unit . Item wise annual actions plans are mentioned below.

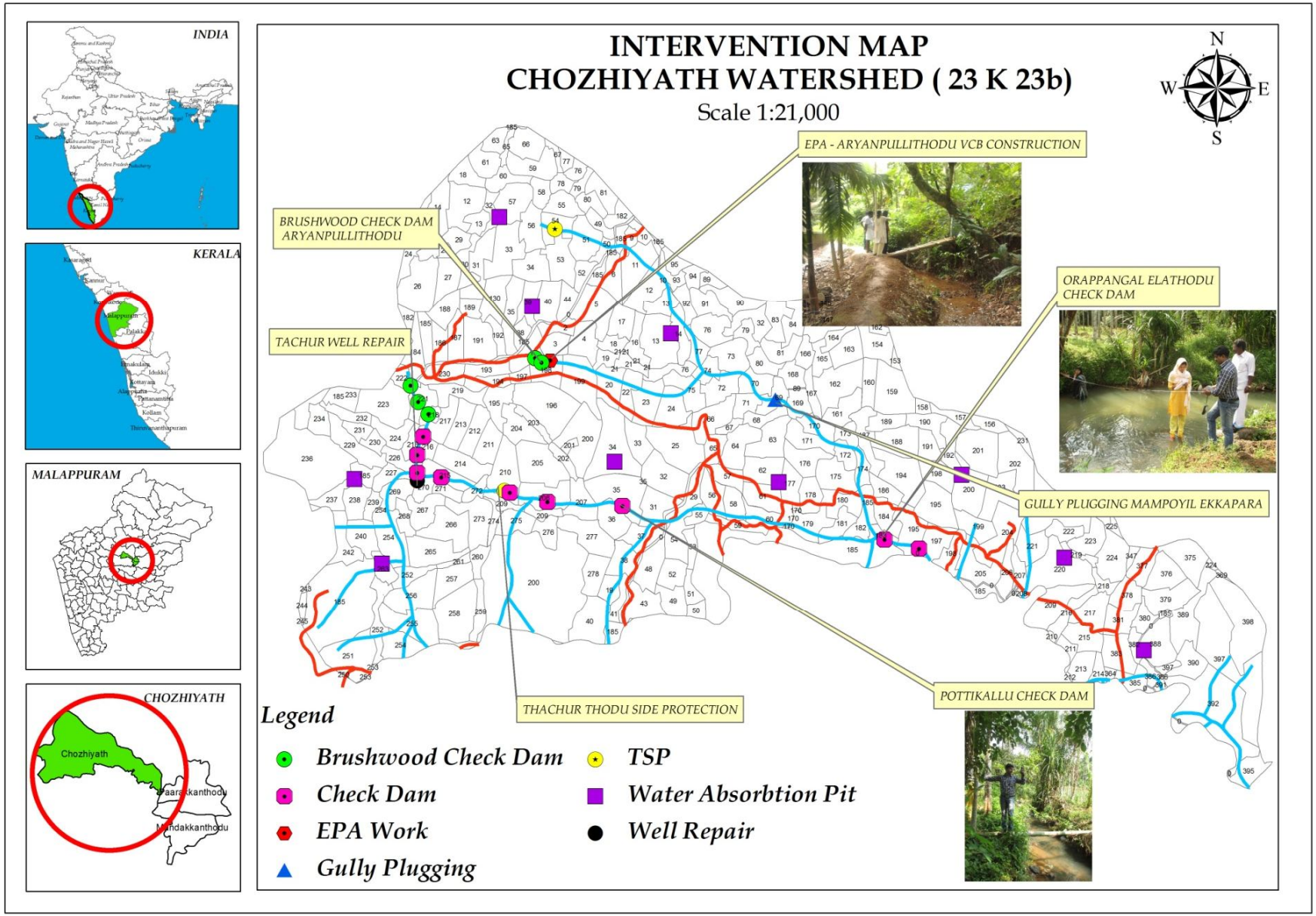
5.1 Master Plan Of Livelihood Support System

SI. NO.	COMPONENTS	UNITS	Unit cost	IWMP SHARE	TOTAL IWMP
1	GOAT REARING	18	30000	30000	540000
2	FLORICULTURE (KUTTIMULLA)	1	40000	40000	40000
3	AGRICULTURE NURSERY	1	276450	276450	276450
4	COCONUT CLIMBER	13	3000	3000	39000
5	DAIRY	6	60000	60000	360000
6	FOOD PROCESSING UNIT (Pickles making Unit & Bakery making Unit)	2	25000	25000	50000
	TOTAL				1305450

5.2 Year Wise Action Plan

LIVELYHOOD SUPPORT SYSTEM									
ACTION PLAN FOR THREE YEARS									
SL NO	COMPONENTS	SECOND YEAR		THIRD YEAR		FOURTH YEAR		TOTAL	
		UNIT	AMOUNT	UNIT	AMOUNT	UNIT	AMOUNT	UNIT	AMOUNT
1	GOAT REARING	7	210000	7	210000	4	120000	18	540000
2	FLORICULTURE (KUTTIMULLA)	0		1	40000	0		1	40000
3	AGRICULTURE NURSERY	1	276450	0		0		1	276450
4	COCONUT CLIMBER	7	21000	6	18000	0		13	39000
5	DAIRY	0		4	240000	2	120000	6	360000
6	FOOD PROCESSING UNIT (Pickles making Unit & Bakery making Unit)	0		0		2	50000	2	50000
	ROUNDED FIGURE		225		-325	0	100	0	0
	TOTAL		507675		507675		290100	0	**1305450**

6. Intervention Map of Chozhiyath Watershed



PARAKKANNITHODU WATERSHED

(23K23k)

1. Introduction

The Parakkanithodu watershed bearing the code number 23k23k situated in the village of Vettikkattiri of the Pandikkad Grama Panchayath in the block of Wandoor in Malappuram district, extending to a total area of 537 ha. The watershed lie down between 11^0 8' 0" to 11^0 6' 30"North latitude and 76^0 11'0" to $76^0$13'0"East longitude. The watershed shares its boundaries with Kattilmoochi on the east, Kakkathodu on the west, Thudiyan mala and Tharippadi on the south and Kakkathodu and Moochithodupalam on the north. The watershed comprises of the wards 1,2 and 22. Major places in this watershed are Vettikkattiri, Chungathukunnu, Palakkakkunnu,Kolothumparambu, Valani and Kuttippilakkal.

2. Boundaries of Micro Watershed

Parakkannithodu Watershed	North	Kakkathodu and Moochithodupalam
	South	Thudiyan mala and Tharippadi
	West	Kakkathodu
	East	Kaattilmoochi
	Geographical Coordinates	Latitude: 11^0 8' 0" to 11^0 6' 30"N Longitude: $76^0$11'0" to $76^0$13'0" E

3. Physiography

Parakkannithodu watershed includes hilly , valley, slightly slope areas. The major portion of this watershed area is located in the 20 to 60 meter from above the mean sea level. The south west portion of the watershed area located in the 139 above mean sea level. Such as Thudiyan mala and Valani. Scarcity of water and drought are experienced in the months of April and May.

4. Watershed Character

The shape of the watershed is Triangularwhich is located in the north east portion of the cluster area. Rainfall in the places like Chungathukunnu, Thudiyanmala, Thennattumala, Nechithalakunnu, Palakkakkunnu, Valani, Varamala, Parayarukunnu and Kurippundilkunnu reaches kakkathodu through canals like Parakkannithodu, Nechithalakkunnu thodu, mundyali thodu, kolothumpadikkal thodu and finally flows in to Kakkathodu.The total length of the streams in the watershed area is 10.1 km.

5. Water Supply

Sl no.	WATERSHED	Sources (in numbers)				
		Private well	Public well	Spring well	Public tap	Water connection
1	PARAKKANNITHODU	443	40	24	13	5

(Source: base line survey TSO)

PONDS	STREAMS	WATER SUPPLY SCHEME OF G.P
Thekkepodiyattu Pond Madathil Pond Parakkanni Pond Chokkath Pond Kurippundil Pond	Kakkathodu Mundali Thodu Nechithala Thodu Kolachithodi Kaithodu Keedakkallu neerchaalu Kuniyengal Kaithodu	1.Podiyattukunnu water supply scheme 2.Kavungal parambu water supply scheme 3. Kattilmoochi water supply scheme

(Source: base line survey TSO)

6. Irrigation

WATERSHED	SOURCE									
	OPEN WELL		TUBE WELL		PONDS		STREAMLETS		TOTAL	
	Nos	Area Irrigated(ha)	Nos	Area Irrigated(ha)	Nos	Area Irrigated(ha)	Nos	Area Irrigated(ha)	Nos	Area irrigated(ha)
PARAKKANNITHODU	6	0.59	1	0.20	5	5	7	14	19	19.79

(Source: base line survey TSO)

7. Socio Economic Details

7.1 Housing Pattern of the Families in the Project Area

SL NO.	WATERSHED	HOUSING PATTERN					
		SMALL HUT	TILE	ASBESTOS	CONCRETE	CONCRETE 2 FLOOR	TOTAL HOUSE
1	PARAKKANNITHODU	7	461	8	174	36	686

(Source: base line survey TSO)

7.2 Demographic Profile of the Project Area

WATERSHED	FAMILY	General			SC			ST			TOTAL		APL	BPL
		M	F	Total	M	F	Total	M	F	Total	M	FM		
PARAKKANNITHODU	686	1762	1714	3503	27	31	58	Nil	Nil	Nil	1789	1745	469	368

(Source: base line survey TSO)

7.3 Age Group Details in the Project Area

WATERSHED	AGE GROUP										TOTAL		GRAND TOTAL
	0- 5		6 - 15		16 - 40		41 – 60		>61				
	M	FM	M	FM	M	FM	M	FM	M	FM	M	FM	
PARAKKANNITHODU	212	260	382	328	778	729	310	309	107	119	1789	1745	**3534**

(Source: base line survey TSO) (<= - Below, > - Above)

7.4 Basic Facilities of the Households in the Project Area

8. Agriculture Details

CROPPING PATTERN	Area in Ha	Area at %
Coconut	136	30.15
Rubber	164	36.36
Paddy	4	0.9
Banana	54.4	12.06
Arecanut	54	11.97
Pepper	1.4	0.31
Cashew nut	0.86	0.19
Vegetables	36.34	8.06

NAME OF WATERSHED	TOILET		SOCK PIT		EARTHERN PIT		GAS		ELECTRICITY	
	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO
PARAKKANNITHODU	676	10	175	511	193	493	194	492	665	21
Total	451		100							

(Source: base line survey TSO)

9. Animal Husbandry and Dairying

WATERSHED	COW	RABBIT	GOAT	POULTRY	DOG	CAT	DUCK	BUFFALO
PARAKKANNITHODU	19	7	109	1033	4	3	27	24

(Source: base line survey TSO)

10. Problems and Suggestions

10.1 Agricultural Sector:

1. Lack of Irrigation Facilities in paddy cultivation areas.

2. For agriculture purposes there is wide usage of pesticides and hazardous chemicals which lead to destruction of natural enemies of pests. It also creates environmental pollution and directly affects mankind and nature.

3. Ignorance about scientific agriculture methods.

4. Lack of unskilled of Labours in paddy cultivation, coconut climbing and vegetable cultivation etc.

5. Hike in cost of productivity and lack of getting fair value for crops due to Following the traditional agricultural methods.

10.2 Animal Protection Sector:

1. Scarcity of hybrid cows and goats.
2. Hike in price of cattle feed.
3. Lack of proper possibility for milk selling.
4. Lack of scientific, modernized cow shed.
5. Productivity of milk is very poor from dairy farming sector due to the scarcity of fodder grass and grazing land.

10.3 Water and Soil Conservation Sector:

1. Soil erosion from places like Thudiyan mala, Valani, Kurippundilkunnu, Parayarukunnu and Thennattu areas.
2. Lack of water and soil preservation activities in valani area.
3. Commonness of land filling and razing of earth.
4. Acute shortage of drinking water is the main problem in the project area.
5. Ground water depletion is also experienced in some parts due to the large number of bore well.

10.4 Suggestions

1. Construction of rain water harvesting pits, and reservoirs and biogas plants
2. Undertake scientific agricultural method after compulsory soil inspection.
3. Increase convenient irrigation facilities by preservation of canals and ponds.
4. Production of bio fertilizers and earthworms compost.
5. Use bio-insecticides instead of chemical insecticides.
6. Implement school vegetable garden in the project area.
7. Implement drip irrigation in the project area for control loss of water.
8. Encourage reclamation of barren field for cultivation.
9. From labour force to reduce scarcity of laboures and provide them with adequate training to understand the latest technology in agriculture.
10. Plant medical plants and fruit bearing trees schools and other institution.
11. Make high yielding cattle available and encourage fodder grass and azolla cultivation.
12. Artificial vegetation in slope areas and thereby form bio belt.
13. Formation of scientific cowshed and artificial milk machinery.
14. Establishment of factories for the production of cattle feed at government level.

ESTIMATE

1. Funding Pattern of Watershed

NAME OF WATERSHED	TREATABLE AREA (Ha)	EPA AMOUNT (4%)	NRM (56%)	PSM (10%)	LSS (9%)	ADMINISTRATION COST (10%)	MONITORING (1%)	EVALUATION (1%)	INSTITUTION & CAPACITY BUILDING (5%)	DPR (1%)	CONSOLIDATION PHASE (3%)	TOTAL AMOUNT
PARAKKANNITHODU	537	322200	4510800	805500	724950	805500	80550	80550	402750	80550	241650	**8055000**

MASTER PLAN FOR 4 YEAR

PARAKKANNITHODU WATERSHED

TOTAL TREATABLE AREA - 537 Ha					TOTAL AMOUNT - 537 x 15000/ Ha = Rs. 80,55,000/-						
YEAR	ADMINISTRATION	MONITORING	EVALUATION	ENTRY POINT ACTIVITY	INSTITUTION & CAPACITY BUILDING	DPR PREPERATION	NATURAL RESOURCE MANAGEMENT ACTIVITIES	LIVELIHOOD ACTIVITIES	PRODUCTION SYSTEM MICRO ENTERPRISES	CONSOLIDATION PHASE	TOTAL IWMP PROJECT
FIRST	100687.5	16110	8055	322200	20137.5	80550	0	0	0		547740
%	1.25	0.2	0.1	4	0.25	1	0	0	0		6.8
SECOND	281925	20137.5	20137.5		161100		1611000	281925	322200		3101175
%	3.5	0.25	0.25		2		20	3.5	4		38.5
THIRD	281925	20137.5	20137.5		161100		1611000	281925	322200		3101175
%	3.5	0.25	0.25		2		20	3.5	4	0	38.5
FOURTH	140962.5	24165	32220		60412.5		1288800	161100	161100	241650	1304910
%	1.75	0.3	0.4		0.75		16	2	2	3	16.2
TOTAL	805500	80550	80550	322200	402750	80550	4510800	724950	805500	241650	8055000
%	10	1	1	4	5	1	56	9	10	3	100

2. Entry Point Activities

Activity**:** Construction of Checkdam at Parakkannithodu

Name Of Watershed	Panchayat	Name Of Work	Ward	Amount	Latitude	Longitude	Area benefited (Ha)/beneficiaries
Parakkannithodu (23k23k)	Pandikkad	Construction Of Checkdam at Parakkannithodu	1	3,22,200/-	N 11 07` 28.8	E076 11` 51.4	*Benifited area 20 Ha *Benifited to 40 families
EPA TOTAL AMOUNT				3,22,200/-			

The above work under reference has been included in the list of EPA works for the Construction ofcheck dam at Parakkannithodu in PANDIKKAD Grama Panchayath during the year 2013-14 , under IWMP wandoor C-1-Entry Point Activity works and hence this esimate is prepared. The site is situated 300m from Kodassery-Nellikkuth Road in Pandikkad Grama panchayath .Due to the recent heavy down pour, there is deterioration of soil and sides of the field has collapsed .Also due to the deficiency of water ,there is a need of check dam for storage of water &side protection on both sides and a leading channel too for irrigation to crops. Due to this people are strongly demanding a check dam to Parakkannithodu. Because of this water also used for irrigation purpose to the agricultural land. The amount allotted vide G.O cited above can satisfy the public demand.Provisions in this estimate includes construction of a check dam ,a leading channel to discharge water to adjacent farm and Side protection on both sides. Detailed site investigations were conducted before deciding the nature of the structure. Foundation provided is decided by considering the soil conditions and all efforts were made to assure the safety of the structure,which is designed according to the site conditions and the public demand. The estimate is prepared based on the current schedule of rates without C.P, and with provision for taxes that were applicable to Beneficiary Committee.

3. Natural Resource Management (NRM)

During the first year of IWMP mainly concentrating with DPR preparation and Entry point activities. Natural resource management activities are starting from second year such as afforestation, Horticulture, Agriculture, Medicinal plant cultivation, Soil & moisture conservation, vegetative and engineering structure and water harvesting structures. Item wise annual actions plans are mentioned below as

well as the year wise financial tables.The contribution to WDF shall be a minimum 10 % of the cost of NRM works executed on private land. In case of SC/ST, small and marginal farmers, the minimum contribution shall be 5 % of cost of NRM works executed on their land.

3.1 Master Plan of Natural Resource Management

Parakkannithodu Watershed							
COMPONENTS	UNIT	CONVERGENCE	VOLUME/UNITS	RATE	IWMP SHARE/UNIT	TOTAL IWMP	TOTAL WDF SHARE
AFFORESTATION							
RAMACHAM	Ha		1.5	12500	12500	18750	
UNGU	Ha		0.2	6000	6000	1200	
NEEM	Ha		0.5	6250	6250	3125	
PATHIMUGHAM	Ha		0.5	8000	8000	4000	
HORTICULTURE							
MANGO	/hectare		2.5	5400	5400	13500	
PINEAPPLE	/hectare		0.5	200000	200000	100000	
PAPPAYA	/hectare		1	25000	25000	25000	
JACK FRUIT	/hectare		2	4000	4000	8000	
AGRICULTURE							
VEGETABLE GARDEN	/hectare	**AGRI DEPT(1 Ha)**	4	37500	37500	150000	
BANANA CULTIVATION (Tissue culture)	/hectare	**AGRI DEPT(1 Ha)**	2.5	50000	50000	125000	
SPICES CULTIVATION (Ginger,Turmeric)	/hectare	**AGRI DEPT(1 Ha)**	1.5	30000	30000	45000	
TUBER CROPS (Tapioca, Sweet potato)	/hectare	**AGRI DEPT(1 Ha)**	1	30000	30000	30000	
FODDER GRASS CULTIVATION	/hectare		1	6000	6000	6000	
MIXED CROP (Colocacia, Amorphophallus)	/hectare		1.5	30000	30000	45000	
MEDICINAL PLANT CULTIVATION							
1.KATTARVAAZHA	/hectare		0.3	50000	50000	15000	
2.LAKSHMI THARU	/hectare		0.7	15000	15000	10500	
SOIL & MOISTURE CONSERVATION							
STONE PITCHED BUND		**MGNREGS (5 Ha)**				0	
EARTHERN BUND		**MGNREGS (7 Ha)**				0	
CONTOUR TERRACING		**MGNREGS (1 Ha)**				0	

CENTRIPETAL TERRACING		**MGNREGS (7 Ha)**				0	
MULCHING		**MGNREGS (7 Ha)**				0	
VEGETATIVE AND ENGINEERING STRUCTURES							
SIDE PROTECTION OF STREAMS USING DRY RUBBLE MASONRY							
1.PARAKKANNITHODU SIDE PROTECTION	m		15	69000	69000	69000	
LIVE FENCING	m	**MGNREGS**	1004	20	20	20080	
WATER HARVESTING STRUCTURE(NEW CREATED)							
FARM POND (KUNNUMMAL POND)	Nos		1	250500	250500	250500	
ITTILINGALPADI CHECK DAM	Nos		1	190000	190000	190000	
MALAYILPADI CHECK DAM	Nos		1	252500	252500	252500	
PALLIPADI CHECK DAM (RR) AND SIDE PROTECTION	Nos		1	115500	115500	115500	
THENNATTMALA CHECK DAM (DR)	Nos		1	42000	42000	42000	
KARINGATTCHOLA CHECK DAM (RR)	Nos		1	108000	108000	108000	
WELL RECHARGE (GROUND WATER RECHARGE)	Nos		119	14000	14000.00	1666000	
CHOKATH WELL CONSTRUCTION (GROUND WATER RECHARGE)	Nos		1	338000	338000	338000	
BRUSH WOOD DAMS IN KOTTALA THODU	Nos		6	114.08	114.08	684.48	
GULLY PLUGGING IN PARAKKANNI (USING DEPT. RUBBLE)	Nos		4	114.08	114.08	456.32	
WATER ABSORBTION PIT (GROUND WATER RECHARGE)	Nos	**MGNREGS (800)**				0	
WATER HARVESTING STRUCTURE(RENOVATION)							
PADDY FIELD BUND	m3		3000	116	116.00	348000	
DRINKING WATER SUPPLY SCHEME							
THUDIYAN MALA DRINKING WATER SCHEME	Nos		1	510000	510000	510000	
THUDIYAN MALA POND RENOVATION AND RAMACHAM PLANTATION		**MGNREGS**				0	
ROUNDED FIGURE						4.2	
GRAND TOTAL						**4510800**	

3.2 Year Wise Action Plan

NATURAL RESOURCE MANAGEMENT								
ACTION PLAN FOR THREE YEARS								
COMPONENTS	SECOND YEAR		THIRD YEAR		FOURTH YEAR		TOTAL	
	UNIT	AMOUNT	UNIT	AMOUNT	UNIT	AMOUNT	UNIT	AMOUNT
AFFORESTATION								
RAMACHAM	1	12500	0.5	6250	0	0	1.5	18750
UNGU	0	0	0.2	1200	0	0	0.2	1200
NEEM	0	0	0.5	3125	0	0	0.5	3125
PATHIMUGHAM	0	0	0.5	4000	0	0	0.5	4000
HORTICULTURE								
MANGO	0	0	1.5	8100	1	5400	2.5	13500
PINEAPPLE	0.5	100000	0	0	0	0	0.5	100000
PAPPAYA	1	25000	0	0	0	0	1	25000
JACK FRUIT	2	8000	0	0	0	0	2	8000
AGRICULTURE								
VEGETABLE GARDEN (Seed And Organic manure)	1	37500	2	75000	1	37500	4	150000
BANANA CULTIVATION (Tissue culture)	1	50000	1	50000	0.5	25000	2.5	125000
SPICES CULTIVATION (Ginger,Turmeric)	0.5	15000	0.5	15000	0.5	15000	1.5	45000
TUBER CROPS (Tapioca, Sweet potato)	0	0	0.5	15000	0.5	15000	1	30000
FODDER GRASS CULTIVATION	0.5	15000	0.5	3000	0.5	3000	1	6000
MIXED CROP (Colocacia, Amorphophallus)	1	30000	1	30000	0	0	1.5	45000
MEDICINAL PLANT CULTIVATION								

KATTARVAAZHA	0	0	0.3	15000	0	0	0.3	15000
LAKSHMI THARU	0	0	0.7	10500	0	0	0.7	10500
WELL RECHARGE (GROUND WATER RECHARGE)	17 Nos	238000	30	420000	72 Nos	1008000	119	1666000
PADDY FIELD BUND	1500 m^3	174000	1000 m^3	116000	500 m^3	58000	3000	348000
CONVERGENCE								
VEGETABLE GARDEN (Seed And Organic manure)	0.3	AGRI DEPT.	0.4	AGRI DEPT.	0.3	AGRI DEPT.	1	AGRI DEPT.
BANANA CULTIVATION (Tissue culture)	0.3	AGRI DEPT.	0.4	AGRI DEPT.	0.3	AGRI DEPT.	1	AGRI DEPT.
SPICES CULTIVATION (Ginger,Turmeric)	0.3	AGRI DEPT.	0.4	AGRI DEPT.	0.3	AGRI DEPT.	1	AGRI DEPT.
TUBER CROPS (Tapioca, Sweet potato)	0.3	AGRI DEPT.	0.4	AGRI DEPT.	0.3	AGRI DEPT.	1	AGRI DEPT.
SOIL & MOISTURE CONSERVATION (CONVERGENCE)								
STONE PITCHED BUND	0	MGNREGS	2.5	MGNREGS	2.5	MGNREGS	5	MGNREGS
EARTHERN BUND	3.5	MGNREGS	3.5	MGNREGS	0	MGNREGS	7	MGNREGS
CONTOUR TERRACING	1	MGNREGS	0	MGNREGS	0	MGNREGS	1	MGNREGS
CENTRIPETAL TERRACING	3.5	MGNREGS	3.5	MGNREGS	0	MGNREGS	7	MGNREGS
MULCHING	3.5	MGNREGS	3.5	MGNREGS	0	MGNREGS	7	MGNREGS
LIVE FENCING	246 m	4920	466 m	9320	292 m	5840	1004	20080
WATER ABSORBTION PIT (GROUND WATER RECHARGE)	240	MGNREGS	320 Nos	MGNREGS	240 Nos	MGNREGS	800	MGNREGS
TOTAL		**679920**		**781495**		**1172740**		**2634155**

3.3 Action Plan - Natural Resource Management (General Works)

NRM GENERAL WORKS FOR SECOND YEAR			
Sl.no	MAJOR INTERVENTIONS	UNIT	AMOUNT
	WATER HARVESTING STRUCTURE(NEW CREATED)		
1	ITTILINGALPADI CHECK DAM	1	190000
2	MALAYILPADI CHECK DAM	1	252500
3	THENNATTMALA CHECK DAM (DR)	1	42000
4	KARINGATTCHOLA CHECK DAM (RR)	1	108000
5	CHOKATH WELL CONSTRUCTION (GROUND WATER RECHARGE)	1	338000
6	BRUSH WOOD DAMS IN KOTTALA THODU	3	342.24
7	GULLY PLUGGING IN PARAKKANNI (USING DEPT. RUBBLE)	2	230
	TOTAL		931072.24
NRM GENERAL WORKS FOR THIRD YEAR			
SIDE PROTECTION OF STREAMS USING DRY RUBBLE MASONRY			
	1.PARAKKANNITHODU SIDE PROTECTION	15	69000
WATER HARVESTING STRUCTURE(NEW CREATED)			
	FARM POND (KUNNUMMAL POND)	1	250500
DRINKING WATER SUPPLY SCHEME			
	THUDIYAN MALA DRINKING WATER SUPPLY SCHEME	1	510000
	THUDIYAN MALA POND RENOVATION AND RAMACHAM PLANTATION		MGNREGS
	TOTAL		829500
NRM GENERAL WORKS FOR FOURTH YEAR			
	WATER HARVESTING STRUCTURE(NEW CREATED)		
	PALLIPADI CHECK DAM (RR) AND SIDE PROTECTION	1	115500
	BRUSH WOOD DAMS IN KOTTALA THODU	3	342.24
	GULLY PLUGGING IN PARAKKANNI (USING DEPT. RUBBLE)	2	230.52
	TOTAL		116072.76
	TOTAL FOR NRM GENERAL WORKS		1876645
	NRM GRAND TOTAL		**4510800**

4. Production System Management

During the first year of IWMP mainly concentrating with DPR preparation and Entry point activities. Production system management activities are starting from second year such as Bee keeping, Poultry, Pisciculture, Rabbit Rearing, Vermicompost, Biogas and Mushroom cultivation. Item wise annual actions plans are mentioned below.

4.1 Master Plan of Production System Management

PARAKKANNITHODU WATERSHED							
SL NO.	COMPONENTS	UNITS	Unit cost	CONVERGENCE	IWMP SHARE/UNIT	TOTAL IWMP	EXPECTING WDF
1	**BEEKEEPING**	5	6000		6000	30000	The contribution of WDF shall be a minimum 20 % of cost of PSM works execute to general category. However, in case of SC/ST, small and marginal farmers, the minimum contribution shall be 10 % of cost of PSM works.
2	**POULTRY**	667	690		690	460230	
3	**PISCICULTURE**	2		Fisheries department and PIA	0	0	
4	**RABBIT REARING**	15	5000		5000	75000	
5	**VERMICOMPOST**	15	10000		10000	150000	
6	**BIOGAS**	15	13000	TSC& PIA	0	0	
7	**MUSHROOM CUTIVATION**	3	30000		30000	90000	
	TOTAL					805230	
	ROUNDED FIGURE					270	
	GRAND TOTAL					**805500**	

4.2 Year Wise Action Plan

PRODUCTION SYSTEM MANAGEMENT									
ACTION PLAN FOR THREE YEARS									
SL NO	COMPONENTS	SECOND YEAR		THIRD YEAR		FOURTH YEAR		TOTAL	
		UNIT	AMOUNT	UNIT	AMOUNT	UNIT	AMOUNT	UNIT	AMOUNT
1	BEEKEEPING	3	18000	2	12000	0	0	5	30000
2	POULTRY	317	218730	217	149730	133	91770	667	460230
3	PISCICULTURE	2	0			0	0	2	0
4	RABBIT REARING	5	25000	10	50000	0	0	15	75000
5	VERMICOMPOST	6	60000	5	50000	4	40000	15	150000
6	BIOGAS	5	0	5	0	5	0	15	0
7	MUSHROOM CUTIVATION	0	0	2	60000	1	30000	3	90000
	ROUNDED FIGURE		470		470		-670	0	270
	TOTAL AMOUNT		322200		322200		161100	0	805500

5. Livelihood Support System

During the first year of IWMP mainly concentrating with DPR preparation and Entry point activities. Livelihood support system activities are starting from second year such as Goat rearing, Coconut climber, Dairy and Food processing unit . Item wise annual actions plans are mentioned below.

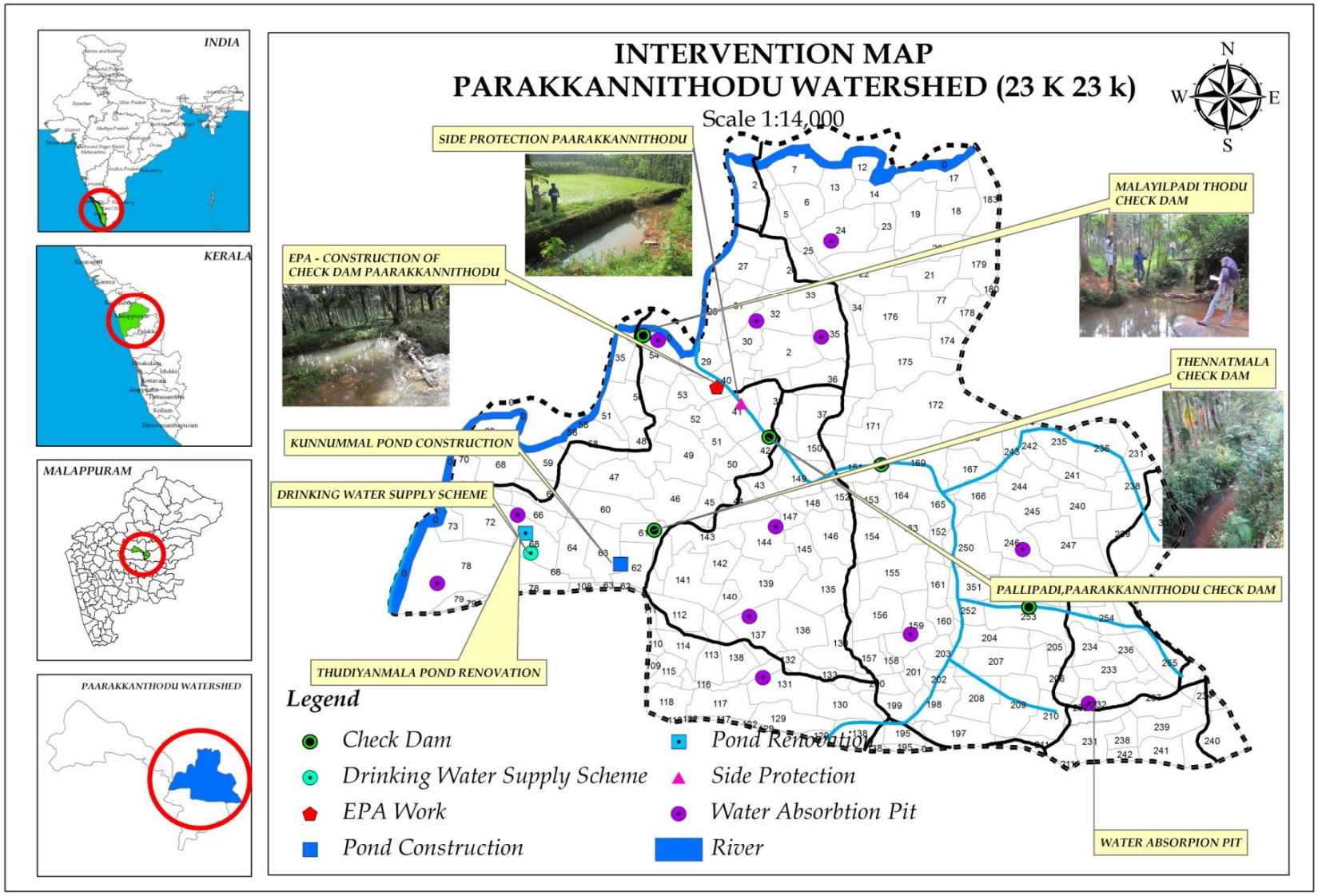
5.1 Master Plan of Livelihood Support System

PARAKKANNITHODU WATERSHED					
Sl. NO.	**COMPONENTS**	UNITS	Unit cost	IWMP SHARE	TOTAL IWMP
1	**GOAT REARING**	12	30000	30000	360000
2	**COCONUT CLIMBER**	13	3000	3000	39000
3	**DAIRY**	5	60000	60000	300000
4	**FOOD PROCESSING UNIT (Bakery making Unit)**	**1**	25000	25000	25000
	TOTAL				724000
	ROUNDED FIGURE				950
	GRAND TOTAL				**724950**

5.2 Year Wise Action Plan

LIVELYHOOD SUPPORT SYSTEM									
ACTION PLAN FOR THREE YEARS									
SL NO	COMPONENTS	SECOND YEAR		THIRD YEAR		FOURTH YEAR		TOTAL	
		UNIT	AMOUNT	UNIT	AMOUNT	UNIT	AMOUNT	UNIT	AMOUNT
1	GOAT REARING	5	150000	4	120000	3	90000	12	360000
2	COCONUT CLIMBER	4	12000	6	18000	3	9000	13	39000
3	DAIRY	2	120000	2	120000	1	60000	5	300000
4	FOOD PROCESSING UNIT(**Bakery making Unit)**			1	25000			1	25000
	ROUNDED FIGURE		-75		-1075		2100	0	950
	TOTAL		281925		281925		161100	0	724950

6. Intervention Map Of Parakkannithodu Watershed



MUNDAKKANTHODU WATERSHED

(23K23l)

1. Introduction

The Mundakkanthodu watershed bearing the code number 23k23l situated in the village of Vettikkattiri in the Grama Panchayath of Pandikkad in the Wandoor block in Malappuram district extends to a total area of 475 ha. The watershed lie down between 11^0 7' 0" to 11^0 5' 30" North latitude and $76^0$11'0" to 76^0 13'0"East longitude.The watershed shares its boundaries with Tharippadi in the east, Kakkathodu in the west, Olippuzha on the south and Thudiyanmala on the north. The watershed comprises of the wards 21,22,23 of the panchayath. Major places in this watershed are Valluvangadu, Pallippadi, Tharippadi, Parampanpoola and Cheenikkalppadi.

2. Boundaries of Micro Watershed

Mundakkanthodu Watershed	North	Thudiyanmala
	South	Olippuzha
	West	Kakkathodu
	East	Tharippadi
	Geographical Cordinates	Latitude: 11^0 7' 0" to 11^0 5' 30" N Longitude: $76^0$11'0" to 76^0 13'0"E

3. Physiography

Mundakkanthodu watershed includes hilly , valley, slightly slope areas. The major portion of this watershed area is located in the 20 to 60 meter from above the mean sea level. The south east portion of the watershed area(Athikkunnu) located in the 110 above mean sea level. Scarcity of water and drought are experienced in the months of April and May.

4. Watershed Character

The shape of the watershed is Triangularwhich is located in the south east portion of the cluster area. Rainfall in the places like Variyamkunnu, Purayamkunnu, Cholakkunnu and Athikkunnu reaches kakkathodu through canals like mundakkanthodu, karakkurissithodu, parakkuzhichola and finally flows in to river Olippuzha.

5. Water Supply

Sl no.	WATERSHED	Sources (in numbers)				
		Private well	Public well	Spring well	Public tap	Water connection
1	MUNDAKKANTHODU	612	108	15	23	4

(Source: base line survey TSO)

PONDS	STREAMS	WATER SUPPLY SCHEME OF G.P
Kolayi Pond Vadakkengara Pond	Olippuzha Mundakkanthodu Karingattuchola kaithodu Kavungalparambu kaithodu Karakkurissi Thodu	1. Mannathikkundu SC Colony water supply scheme 2. Anakkattiri water supply scheme 3.Vadakkengara SC Colony water supply scheme 4. Cheenikkalppadi water supply scheme 5. Athikkunnu water supply scheme

(Source: base line survey TSO)

6. Irrigation

WATERSHED	SOURCE									
	OPEN WELL		TUBE WELL		PONDS		STREAMLETS		TOTAL	
	Nos	Area Irrigated(ha)	Nos	Area irrigated(ha)	Nos	Area irrigated(ha)	Nos	Area irrigated(ha)	Nos	Area irrigated(ha)
MUNDAKKANTHODU	6	0.59	3	1.2	2	2	5	10	16	13.79

(Source: base line survey TSO)

7. Socio Economic Details

7.1 Housing Pattern of the Families in the Project Area

SL NO.	WATERSHED	HOUSING PATTERN					
		SMALL HUT	TILE	ASBESTOS	CONCRETE	CONCRETE 2 FLOOR	TOTAL HOUSE
1	MUNDAKKANTHODU	3	444	2	318	70	837

(Source: base line survey TSO)

7.2 Demographic Profile of the Project Area

WATERSHED	FAMILY	General			SC			ST			TOTAL		APL	BPL
		M	F	Total	M	F	Total	M	F	Total	M	FM		
MUNDAKKANTHODU	837	2168	2007	4175	46	52	98	Nil	Nil	Nil	2122	1955	473	213

(Source: base line survey TSO)

7.3 Age Group Details in the Project Area

WATERSHED	AGE GROUP										TOTAL		GRAND TOTAL
	0-5		6 - 15		16 - 40		41 – 60		>61				
	M	FM	M	FM	M	FM	M	FM	M	FM	M	FM	
MUNDAKKANTHODU	198	162	440	407	1002	914	382	383	146	141	2168	2007	**4175**

(Source: base line survey TSO) (<= - Below, > - Above)

7.4 Basic Facilities of the Households in the Project Area

NAME OF WATERSHED	TOILET		SOCK PIT		EARTHERN PIT		GAS		ELECTRICITY	
	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO
MUNDAKKANTHODU	807	30	385	452	386	451	387	450	828	9

(Source: base line survey TSO)

8. Agriculture Details

CROPPING PATTERN	Area in Ha	Area at %
Coconut	105.32	30.52
Rubber	104	30.02
Paddy	9	2.6
Banana	62.62	18.05
Arecanut	11	3.2
Pepper	1.42	0.4
Cashew nut	0.4	0.11
vegetables	51.24	15.1
Total	345	100

(Source: base line survey TSO)

9. Animal Husbandry and Dairying

WATERSHED	COW	RABBIT	GOAT	POULTRY	DOG	CAT	DUCK	BUFFALO
MUNDAKKANTHODU	15	12	123	683	6	2	85	16

(Source: base line survey TSO)

10. Problems and Suggestions

10.1 Agricultural Sector:

1. Lack of Irrigation Facilities in Karakkurissi and Valluvangadu padasekharam.

2. For agriculture purposes there is wide usage of pesticides and hazardous chemicals which lead to destruction of natural enemies of pests. It alsocreates environmental pollution and directly affects mankind and nature.

3. Lack of unskilled of Labours in paddy cultivation, coconut climbing and vegetable cultivation etc.

4. Hike in cost of productivity and lack of getting fair value for crops due tofollowing the traditional agricultural methods.

10.2 Animal Protection Sector:

1. Scarcity of hybrid cows and goats.

2. Hike in price of cattle feed.

3. Lack of proper possibility for milk selling.

4. Lack of scientific, modernized cow shed.

5. Productivity of milk is very poor from dairy farming sector due to the scarcity of fodder grass and grazing land.

10.3 Water and Soil Preservation Sector:

1. Soil erosion from places like Variyamkunnu, Kakkappali and Athikkunnu areas.

2. Canals and other water reservoirs are being filled with soil.

3. Lack of water and soil preservation activities.

4. Commonness of land filling and razing of earth.

5. Water reservoirs being made impure by sewage disposal.

6.Acute shortage of drinking water is the main problem in the project area.

7. Ground water depletion is also experienced in some parts due to the large number of bore well.

10.4 Suggestions

1. Undertake scientific agricultural method after compulsory soil inspection.

2. Increase convenient irrigation facilities by preservation of canals and ponds.

3. Production of bio fertilizers and earthworms compost.

4. Construction of new ponds and water reservoirs to encourage, summer vegetable cultivation.

5. Encourage reclamation of barren field for cultivation.

6. Encourage mushroom cultivation, apiculture, cattle breeding.

7. Plant medical plants and fruit bearing trees schools and other institution.

8. Construction of rain water harvesting pits, and reservoirs and biogas plants.

9. Make high yielding cattle available and encourage fodder grass and azolla cultivation.

10. Artificial vegetation in slope areas and thereby form bio belt.

11. Formation of scientific cowshed and artificial milk machinery.

1. Funding Pattern of Mundakkanthodu Watershed

NAME OF WATERSHED	TREATABLE AREA (Ha)	EPA AMOUNT (4%)	NRM (56%)	PSM (10%)	LSS (9%)	ADMINISTRATION COST (10%)	MONITORING (1%)	EVALUATION (1%)	INSTITUTION & CAPACITY BUILDING (5%)	DPR (1%)	CONSOLIDATION PHASE (3%)	TOTAL AMOUNT
MUNDAKKANTHODU	475	285000	3990000	145050	641250	145050	71250	71250	356250	71250	213750	7125000

MASTER PLAN FOR 4 YEAR											
MUNDAKKANTHODU WATERSHED											
TOTAL TREATABLE AREA - 475 Ha					TOTAL AMOUNT - 475 x 15000/ Ha = 7125000						
YEAR	ADMINISTRATION	MONITORING	EVALUATION	ENTRY POINT ACTIVITY	INSTITUTION & CAPACITY BUILDING	DPR PREPERATION	NATURAL RESOURCE MANAGEMENT ACTIVITIES	LIVELIHOOD ACTIVITIES	PRODUCTION SYSTEM 7 MICRO ENTERPRISES	CONSOLIDATION PHASE	TOTAL IWMP PROJECT
FIRST	89062.5	14250	7125	285000	17812.5	71250	0	0	0		484500
%	1.25	0.2	0.1	4	0.25	1	0	0	0		6.8
SECOND	249375	17812.5	17812.5		142500		1425000	249375	285000		2743125
%	3.5	0.25	0.25		2		20	3.5	4		38.5
THIRD	249375	17812.5	17812.5		142500		1425000	249375	285000		2743125
%	3.5	0.25	0.25		2		20	3.5	4	0	38.5
FOURTH	124687.5	21375	28500		53437.5		1140000	142500	142500	213750	1154250
%	1.75	0.3	0.4		0.75		16	2	2	3	16.2
TOTAL	712500	71250	71250	285000	356250	71250	3990000	641250	712500	213750	**7125000**
%	10	1	1	4	5	1	56	9	10	3	100

2. Entry Point Activities

ACTIVITY**:** Construction of side protection of mundakanthodu

Name Of Watershed	Panchayat	Name Of Work	Ward	Amount	Latitude	Longitude	Area benefited (Ha)/beneficiaries
Mundakkanthodu (23k23l)	Pandikkad	Construction Of Side Protection Of Mundakanthodu	23	2,85,000/-	N11 06` 00.8	E076 11`30.0	*Benifited area 15 ha *Benifited to 30 families
EPA TOTAL AMOUNT				2,85,000/-			

The above work under reference has been included in the list of EPA works for theConstruction of Side protection at Mundakkanthodu in PANDIKKAD Grama Panchayath in the year 2013-14 vide under IWMPwndoor C-1-Entry Point Activity works and hence this estimate is prepared. The site is situated in Pandikkad-Manjeri Road near Kakkathodupalam in Pandikkad Grama panchayath and there is an agricultural land besides the site.Due to the recent heavy down pour,there is deterioration of soil and sides of the field has collapsed .Due to this people are strongly demandinga side protection to Mundakkanthodu.Because this water also used for irrigation purpose to the agricultural land. The amount allotted vide G.O cited above can satisfy the public demand.Provisions in this estimate includes construction of Side protection on both sides.Detailedsite investigations were conducted before deciding the nature of the structure.Foundation provided is decided by considering the soil conditions and all efforts were madeto assure the safety of the structure,which is designed according to the site conditions and the public demand.The estimate is prepared based on the current schedule of rates with out C.P, and with provision for taxes that were applicable to Beneficiary Committee.

3. Natural Resource Management (NRM)

During the first year of IWMP mainly concentrating with DPR preparation and Entry point activities. Natural resource management activities are starting from second year such as afforestation, Horticulture, Agriculture, Medicinal plant cultivation, Soil & moisture conservation, vegetative and engineering structure and water harvesting structures. Item wise annual actions plans are mentioned below as well as the year wise financial tables.The contribution to WDF shall be a minimum 10 % of the cost of NRM works executed on private land. In case of SC/ST, small and marginal farmers, the minimum contribution shall be 5 % of cost of NRM works executed on their land.

3.1master Plan of Natural Resource Management

MUNDAKKANTHODU WATERSHED							
COMPONENTS	UNIT	CONVERGENCE	VOLUME/UNITS	RATE	IWMP SHARE/UNIT	TOTAL IWMP	TOTAL WDF SHARE
AFFORESTATION							
RAMACHAM	Ha		1	12500	12500	12500	
UNGU	Ha		0.4	6000	6000	2400	
NEEM	Ha		1	6250	6250	6250	
PATHIMUGHAM	Ha		1	8000	8000	8000	
HORTICULTURE							
MANGO	/hectare		4	5400	5400	21600	
PINEAPPLE	/hectare		0.5	200000	200000	100000	
PAPPAYA	/hectare		2	25000	25000	50000	
JACK FRUIT	/hectare		3	4000	4000	12000	
AGRICULTURE							
VEGETABLE GARDEN (Seed And Biofertilizer)	/hectare	AGRI DEPT(0.6 Ha)	4	37500	37500	150000	
BANANA CULTIVATION (Tissue culture)	/hectare	AGRI DEPT(1 Ha)	2	50000	50000	100000	
SPICES CULTIVATION (Ginger,Turmeric)	/hectare	AGRI DEPT(0.4 Ha)	1	30000	30000	30000	
TUBER CROPS (Tapioca, Sweet potato)	/hectare	AGRI DEPT(1 Ha)	1	30000	30000	30000	
FODDER GRASS CULTIVATION	/hectare		1	6000	6000	6000	
MIXED CROP (Colocacia, Amorphophallus)			1	30000	30000	30000	
MEDICINAL PLANT CULTIVATION							

1.KATTARVAAZHA	/hectare		0.4	50000	50000	20000	
2.LAKSHMI THARU	/hectare		1	15000	15000	15000	
SOIL & MOISTURE CONSERVATION							
STONE PITCHED BUND		MGNREGS (4 Ha)					
EARTHERN BUND		MGNREGS (6 Ha)					
CONTOUR TERRACING		MGNREGS (1 Ha)					
CENTRIPETAL TERRACING		MGNREGS (6 Ha)					
MULCHING		MGNREGS (6 Ha)					
VEGETATIVE AND ENGINEERING STRUCTURES							
SIDE PROTECTION OF STREAMS USING DRY RUBBLE MASONRY							
1.MUNDAKKANTHODU SIDE PROTECTION	m		54		260000	260000	
2.MUNDAKKANTHODU SIDE PROTECTION	m		30		110500	110500	
3. VADAKKENGARA SC COLONY SIDE PROTECTION (SOIL CONSERVATION)	m		20		109000	109000	
LIVE FENCING	m	MGNREGS	1022	20	20	20440	
WATER HARVESTING STRUCTURE(NEW CREATED)							
MUNDAKKANTHODU CHECK DAM (RR)	Nos		1		106500	106500	
MUNDAKKANTHODU CHECK DAM (DR)	Nos		8		27000	216000	
MUNDAKKANTHODU CHECK DAM (RR)	Nos		1		121000	121000	
KARAKKURISSI WELL CONSTRUCTION	Nos		1		330000	330000	
ATHIKKUNNU WELL CONSRUCTION	Nos		1		337000	337000	
WELL RECHARGE (GROUND WATER RECHARGE)	Nos		100	14000	14000.00	1400000	
WATER ABSORBTION PIT (GROUND WATER RECHARGE)		MGNREGS (700)				0	
BRUSH WOOD DAMS IN MUNDAKKANTHODU	Nos		14	114.08	114.08	1597.12	
GULLY PLUGGING IN KARAKKURISSI (USING DEPT. RUBBLE)			8	114.08	114.08	912.64	
WATER HARVESTING STRUCTURE(RENOVATION)							
PADDY FIELD BUND	m3		2300	116	116.00	266800	
WELL REPAIR (VADAKKENGARA SC COLONY)	Nos		1		116500	116500	
ROUNDED FIGURE						0.24	
GRAND TOTAL						**3990000**	

3.2 Year Wise Action Plan

NATURAL RESOURCE MANAGEMENT								
ACTION PLAN FOR THREE YEARS								
COMPONENTS	SECOND YEAR		THIRD YEAR		FOURTH YEAR		TOTAL	
	UNIT	AMOUNT	UNIT	AMOUNT	UNIT	AMOUNT	UNIT	AMOUNT
AFFORESTATION								
RAMACHAM	0.5	6250	0.5	6250	0	0	1	12500
UNGU	0	0	0.4	2400	0	0	0.4	2400
NEEM	1	6250	0	0	0	0	1	6250
PATHIMUGHAM	1	8000	0	0	0	0	1	8000
HORTICULTURE								
MANGO	2	10800	2	10800	0	0	4	21600
PINEAPPLE	0.5	100000	0	0	0	0	0.5	100000
PAPPAYA	2	50000	0	0	0	0	2	50000
JACK FRUIT	3	12000	0	0	0	0	3	12000
AGRICULTURE								
VEGETABLE GARDEN (Seed And Organic manure)	1	37500	2	75000	1	37500	4	150000
BANANA CULTIVATION (Tissue culture)	0.5	25000	1	50000	0.5	25000	2	100000
SPICES CULTIVATION (Ginger,Turmeric)	0.5	15000	0.5	15000	0	0	1	30000
TUBER CROPS (Tapioca, Sweet potato)	0	0	1	30000	0	0	1	30000
FODDER GRASS CULTIVATION	0	0	1	6000	0	0	1	6000
MIXED CROP (Colocacia, Amorphophallus)	0.5	15000	0	0	0.5	15000	1	30000
MEDICINAL PLANT CULTIVATION								
KATTARVAAZHA	0	0	0.4	20000	0	0	0.4	20000
LAKSHMI THARU	0	0	1	15000	0	0	1	15000
WELL RECHARGE (GROUND WATER RECHARGE)	25 Nos	350000	14 Nos	196000	61 Nos	854000	100	1400000
PADDY FIELD BUND	997 m^3	115652	550 m^3	63800	753 m^3	87348	2300	266800
CONVERGENCE								

VEGETABLE GARDEN (Seed And Organic manure)	0.18	AGRI DEPT.	0.24	AGRI DEPT.	0.18	AGRI DEPT.	0.6	AGRI DEPT.
BANANA CULTIVATION (Tissue culture)	0.3	AGRI DEPT.	0.4	AGRI DEPT.	0.3	AGRI DEPT.	1	AGRI DEPT.
SPICES CULTIVATION (Ginger,Turmeric)	0.12	AGRI DEPT.	0.16	AGRI DEPT.	0.12	AGRI DEPT.	0.4	AGRI DEPT.
TUBER CROPS (Tapioca, Sweet potato)	0.3	AGRI DEPT.	0.4	AGRI DEPT.	0.3	AGRI DEPT.	1	AGRI DEPT.
SOIL & MOISTURE CONSERVATION (CONVERGENCE)								
STONE PITCHED BUND	0	MGNREGS	2	MGNREGS	2	MGNREGS	4	MGNREGS
EARTHERN BUND	3	MGNREGS	3	MGNREGS	0	MGNREGS	6	MGNREGS
CONTOUR TERRACING	1	MGNREGS	0	MGNREGS	0	MGNREGS	1	MGNREGS
CENTRIPETAL TERRACING	3	MGNREGS	3	MGNREGS	0	MGNREGS	6	MGNREGS
MULCHING	3	MGNREGS	3	MGNREGS	0	MGNREGS	6	MGNREGS
LIVE FENCING		MGNREGS	505 m	10100	517 m	10340	1022	20440
WATER ABSORBTION PIT (GROUND WATER RECHARGE)	210	MGNREGS	280 Nos	MGNREGS	210 Nos	MGNREGS	700	MGNREGS
TOTAL		**751452**		**500350**		**1029188**		**2280990**

3.3 Action Plan- Natural Resource Management (General Works)

MUNDAKKANTHODU WATERSHED			
NRM GENERAL WORKS FOR SECOND YEAR			
Sl.no	**MAJOR INTERVENTIONS**	UNIT	AMOUNT
	WATER HARVESTING STRUCTURE(NEW CREATED)		
1	MUNDAKKANTHODU CHECK DAM (RR)	1	106500
2	MUNDAKKANTHODU CHECK DAM (DR)	4	108000
3	MUNDAKKANTHODU CHECK DAM (RR)	1	121000
4	ATHIKKUNNU WELL CONSRUCTION	1	337000
5	BRUSH WOOD DAMS IN MUNDAKKANTHODU	5	570.4
6	GULLY PLUGGING IN KARAKKURISSI (USING DEPT. RUBBLE)	4	456.32
	TOTAL		**673526.72**

	NRM GENERAL WORKS FOR THIRD YEAR		
1	SIDE PROTECTION OF STREAMS USING DRY RUBBLE MASONRY		
2	MUNDAKKANTHODU SIDE PROTECTION	54	260000
3	VADAKKENGARA SC COLONY SIDE PROTECTION (SOIL CONSERVATION)	20	109000
	WATER HARVESTING STRUCTURE(NEW CREATED)		
4	MUNDAKKANTHODU CHECK DAM (DR)	4	108000
5	KARAKKURISSI WELL CONSTRUCTION	1	330000
6	BRUSH WOOD DAMS IN MUNDAKKANTHODU	6	684.48
7	GULLY PLUGGING IN KARAKKURISSI (USING DEPT. RUBBLE)	4	456.56
8	WELL REPAIR (VADAKKENGARA SC COLONY)	1	116500
	TOTAL		**924641.04**
	NRM GENERAL WORKS FOR FOURTH YEAR		
	SIDE PROTECTION OF STREAMS USING DRY RUBBLE MASONRY		
1	MUNDAKKANTHODU SIDE PROTECTION	30	110500
	WATER HARVESTING STRUCTURE(NEW CREATED)		
2	BRUSH WOOD DAMS IN MUNDAKKANTHODU	3	342.24
	TOTAL		**110842.24**
	TOTAL FOR NRM GENERAL WORKS		**1709010**
	NRM GRAND TOTAL		**3990000**

4. Production System Management

During the first year of IWMP mainly concentrating with DPR preparation and Entry point activities. Production system management activities are starting from second year such as Bee keeping, Poultry, Pisciculture, Rabbit Rearing, Vermicompost, Biogas and Mushroom cultivation. Item wise annual actions plans are mentioned below.

4.1 Master Plan of Production System Management

MUNDAKKANTHODU WATERSHED							
SL NO.	COMPONENTS	UNITS	Unit cost	CONVERGENCE	IWMP SHARE/UNIT	TOTAL IWMP	EXPECTING WDF
1	BEEKEEPING	5	6000		6000	30000	The contribution of WDF shall be a minimum 20 % of cost of PSM works execute to general category. However, in case of SC/ST, small and marginal farmers, the minimum contribution shall be 10 % of cost of PSM works.
2	POULTRY	554	690		690	382260	
3	PISCICULTURE	2		Fisheries department and PIA	0	0	
4	RABBIT REARING	12	5000		5000	60000	
5	VERMICOMPOST	15	10000	_	10000	150000	
6	BIOGAS	15	13000	TSC& PIA	0	0	
7	MUSHROOM CUTIVATION	3	30000		30000	90000	
	TOTAL					712260	
	ROUNDED FIGURE					240	
	GRAND TOTAL					**712500**	

4.2 Year Wise Action Plan

PRODUCTION SYSTEM MANAGEMENT									
ACTION PLAN FOR THREE YEARS									
SL NO	COMPONENTS	SECOND YEAR		THIRD YEAR		FOURTH YEAR		TOTAL	
		UNIT	AMOUNT	UNIT	AMOUNT	UNIT	AMOUNT	UNIT	AMOUNT
1	BEEKEEPING	3	18000	2	12000			5	30000
2	POULTRY	307	211830	222	153180	25	17250	554	382260
3	PISCICULTURE	2	0					2	0
4	RABBIT REARING	5	25000			7	35000	12	60000
5	VERMICOMPOST	3	30000	9	90000	3	30000	15	150000
6	BIOGAS	5	0	5	0	5	0	15	0
7	MUSHROOM CUTIVATION			1	30000	2	60000	3	90000
	ROUNDED FIGURE		170		-180		250	0	240
	TOTAL AMOUNT		285000		285000		142500	0	**712500**

5. Livelihood Support System

During the first year of IWMP mainly concentrating with DPR preparation and Entry point activities. Livelihood support system activities are starting from second year such as Goat rearing, Coconut climber, Dairy and Food processing unit . Item wise annual actions plans are mentioned below.

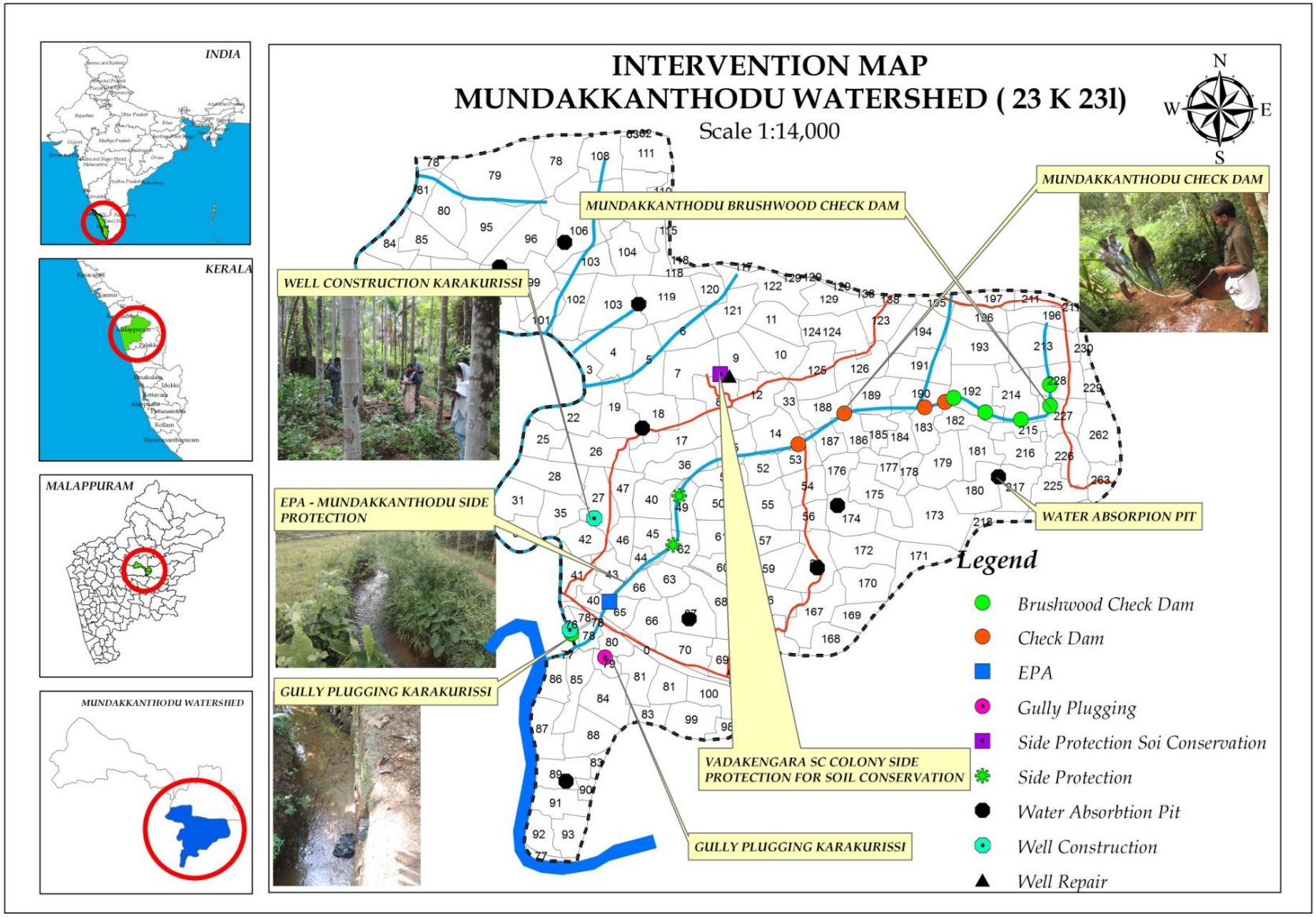
5.1master Plan Of Livelihood Support System

Mundakkanthodu Watershed					
Sl. NO.	**COMPONENTS**	UNITS	Unit cost	IWMP SHARE	TOTAL IWMP
1	GOAT REARING	10	30000	30000	300000
2	FLORICULTURE (KUTTIMULLA)	1	40000	40000	40000
3	COCONUT CLIMBER	12	3000	3000	36000
4	DAIRY	4	60000	60000	240000
5	FOOD PROCESSING UNIT**(Bakery making Unit)**	1	25000	25000	25000
	TOTAL				641000
	ROUNDED FIGURE				250
	GRAND TOTAL				**641250**

5.2 Year Wise Action Plan

LIVELYHOOD SUPPORT SYSTEM									
ACTION PLAN FOR THREE YEARS									
SL NO	COMPONENTS	SECOND YEAR		THIRD YEAR		FOURTH YEAR		TOTAL	
		UNIT	AMOUNT	UNIT	AMOUNT	UNIT	AMOUNT	UNIT	AMOUNT
1	GOAT REARING	4	120000	6	180000			10	300000
2	FLORICULTURE (KUTTIMULLA)			1	40000			1	40000
3	COCONUT CLIMBER	3	9000	2	6000	7	21000	12	36000
4	DAIRY	2	120000			2	120000	4	240000
5	FOOD PROCESSING UNIT**(Bakery making Unit)**			1	25000			1	25000
	ROUNDED FIGURE		375		-1625		1500	0	250
	TOTAL		249375		249375		142500	0	**641250**

6. Intervention Map of Mundakkanthodu Watershed



PART – III

1. Expected Outcomes

Projects under IWMP are a multi disciplinary which include Natural Resource Management, Production System, Micro enterprises and Livelihood activities. The project conceives to bring in holistic and sustainable development in the concerned areas. This programme mainly focus on activities which create employment opportunities, enhance income, decrease migration, increase productivity, which would ensure sustainable livelihood opportunities for the community. The expected outcomes are given in the table below.

INTERVENTIONS	ACTIVITIES	OUTCOMES
1. WATERSHED DEVELOPMENT WORKS A. LAND DEVELOPMENT	Adoption of suitable land development works like, **AFFORESTATION** Ramacham – 5.1 Ha Ungu - 1.6 Ha Neem - 3.5 Ha Pathimugham - 0.8 Ha **HORTICULTURE** Mango - 11.5 Ha Pineapple - 2 Ha Pappaya - 4 Ha Jack Fruit - 9 Ha **AGRICULTURE** Vegetable Garden - 16.6 Ha Banana Cultivation - 12 Ha Spices Cultivation - 7.9 Ha Tuber Crops - 8 Ha Fodder Grass Cultivation - 4 Ha Mixed Crop - 5.5 Ha **MEDICINAL PLANTS** Kattarvazha - 1.2 Ha Lakshmi Tharu - 3 Ha	Organic crop production from an extent of about 97.2 ha of the watershed area can be enhanced substantially. Soil erosion is significantly reduced as tree plantations prevent run off after heavy rains. In addition, trees bring soils together which prevents soil erosion in the project area. Water infiltration is increased, and runoff and erosion are consequently decreased. Compaction is reduced so roots can freely explore the soil for nutrients and water, increasing yields in the area. creates 1120 man labour days every year.
B. SOIL AND MOISTURE CONSERVATION	Adoption of suitable soil and moisture conservation measures like , Paddy field bund – 8300 m Stone Pitched Bund - 14 Ha	Rain water will be conserved to recharge Ground Water Level. Valuable Top Soil source in about 1104ha of land will be protected

	Earthen Bund - 20 Ha Contour Terracing - 3 Ha Centripetal Terracing - 23 Ha Mulching – 23 Ha Live Fencing – 3044 M	from soil erosion. Strengthen outer bunds by planting fodder grass along the slope facing era`s and reduce the soil erosion. Employment for around 860 landless or asset less poor every year.
C. VEGETATIVE AND ENGINEERIG STRUCTURE	Gully Plugging - 24 Nos Brushwood Checks – 38 Nos Streams Side Protection – 119 M Pond side protection – 2 Nos	Water conservation in about 1012 ha ofthe project area, control soil erosion and Problem of drinking water in the watershed area gets substantially solved.
D. WATER HARVESTING STRUCTURE	Well Recharge – 422 Nos Check Dams - 77 Nos Public Well Renovation – 3 Nos Well Construction – 3 Nos Water Absorption Pit – 2500 Nos Check Dams - 77 Nos	Water conservation in about 1012 ha of the project area. Problem of drinking water in the watershed area gets substantiallysolved.112 M3 of rain water will be additionally collected in the project area. Depth to WT to be reduced by 1m in Mid lands and 1-1.5 m in High lands.
2. PRODUCTION SYSTEM AND MICRO ENTERPRISES	Beekeeping - 20 Unit Poultry - 2381 Unit Pisciculture - 6 Unit Rabbit Rearing - 55 Unit Vermicompost – 60 Unit Biogas Plant – 40 Unit Mushroom Cultivation – 11 Unit	By supplying 14286 nos poultry for 2381 families in the project area. Egg production in backyard system is a cheap and easy alternative to commercial egger farms which can augment the production and reduce the dependency on other states for our food. Promotion of non conventional energy for daily cooking needs. Employment for around 230 land less or asset less poor every year

3.LIVELIHOOD ACTIVITIES	Goat Rearing - 40 unit Floriculture - 2 unit Agriculture Nursery – 1 unit Coconut Climber – 38 unit Dairy – 15 unit Food Processing Unit – 4 unit	To empower land less, asset less Poor people. 25% Increase in milk production. 95 SHGs will get aid for strengthening their livelihood activities in every year. Generate employment opportunities for minimum 100people every year.

2. Watershed Development Fund (WDF)

One of the mandatory conditions for the selection of villages for watershed projects is people's contribution towards the Watershed Development Fund (WDF). The contribution of WDF shall be a minimum 10 % of cost of NRM works executed on private land only. However, in case of SC/ST, small and marginal farmers, the minimum contribution shall be 5 % of cost of NRM works executed on their land. These contributions would be acceptable either in cash at the time of execution of works or voluntary labour. A sum equivalent to the monetary value of the voluntary labour would be transferred from the watershed project account to the WDF bank account that will be distinct from the Watershed Committee (WC) bank account. Income earned form the assets created under the project on common property resources shall be credited to WDF.

3. Exit Protocol

The main source of financial assistance for the post implementation period is Watershed Development Fund (WDF). One of the mandatory conditions for the selection of villages for watershed projects is people's contribution towards WDF. The Contribution to WDF shall be a minimum 10 % of the cost of NRM works executed on private land only. However, in case of SC/ST, small and marginal farmers, the minimum contribution shall be 5 % of cost of NRM works executed on their land. These contributions would be acceptable either in cash at the time of execution of works or voluntary labour. A sum equivalent to the monetary value of the voluntary labour would be transferred from the watershed project account to the WDF bank account that will be distinct from the Watershed Committee (WC) bank account. User charges, sales proceeds and other contributions, disposal amounts of intermediate usufruct rights shall also be deposited in the WDF bank account. Income earned from assets created under the project on common property resources shall also be credited to WDF. For other cost intensive

farming system based livelihood activities/interventions such as Aquaculture, Horticulture, Agro-Forestry, Animal Husbandry etc. on private land directly benefiting the individual farmers, the contribution of farmers will be 20 percent for general category and 10 percent for SC/ST beneficiaries and the project funds will 96 meet the cost of farming system activity to a maximum limit of an amount equal to double of the unit cost of the project for watershed development (i.e. Rs 12,000/15,000 per ha, as the case may be). Farmers' contribution i.e. 20 percent for general category and 10 percent for SC/ST of this amount (i.e. a maximum of Rs 4800/6000 and Rs 2400/3000 as the case may be, respectively for general category and SC/ST beneficiaries) will go to WDF. The Secretary, Watershed Committee (WC) shall maintain a completely separate account of the income and expenditure of the WDF. Rules for operation of the fund should be prepared by the Watershed Committee (WC) and ratified by the Gram Sabha. The WDF bank account should be operated by the President of the Gram Panchayath and any member from the SHG nominated by the Gram Sabha. Alternatively, the guidelines for the management and utilization of the WDF may be evolved by the concerned Nodal Ministry. After completion of Phase II, at least 50% of the WDF funds shall be reserved for maintenance of assets created on community land or for common use under the project. Works taken up on private land shall not be eligible for repairing/ maintenance out of this fund. The remaining money may be used as a revolving fund to advance loans to the villagers of the project area who have contributed to the fund. Individuals as well as charitable institutions should be encouraged to contribute generously to this fund.

4. Project Summary and Conclusion

The Watershed cluster is located in Wandoor Block of the Malappuram District. Thrikkalangode and Pandikkad Panchayat areas included in the watershed. The cluster is comprised of three micro watershed namely Chozhiyath, Parakkannithodu and Mundakkanthodu. Wandoor Block is part of the Western Ghats, which is recently declared as a world heritage site by IUCN. Total area of the watershed is 1979 hectares. There are 2707 households in the project area and the total population is 13746. The total project cost is 296.85 lacks. State Department of Rural Development is the nodal department for the implementation of IWMP in Kerala. State Level Nodal Agency (SLNA) is coordinating and providing guidelines for the effective planning and implementation of the individual IWMP projects. District Planning Committee (DPC) is responsible for approving the DPR at the district level. A District Level Coordination Committee-DLCC- has been constituted to facilitate integration of technology as required under IWMP. A Watershed Cell Cum Data Centre (WCDC) is working under the Project Manager(PD, PAU) at the district level to assist the DLCC in the matter. The

Wandoor Block Panchayat is the Programme Implementing Agency (PIA) of the project. A Block Level Coordination Committee (BLCC) has been formed for ensuring the coordination of line technologies and for the timely implementation of the project and to provide help to the PIA in technical and administrative matters related to the project. A separate Watershed Development Team (WDT) has been formed under the PIA. Rajiv Youth Foundation is the Technical Support Organisation (TSO).

Preparation of the DPR involved village level meetings and participatory discussions with people, elected representatives, officials and other stakeholders. A situational analysis was undertaken using secondary data and information collected from different sources. A Logical Framework Analysis was done at the project level for identifying the important problems (through problem tree analysis) as well as for the purpose of assessing the present situation. PRA techniques like transect walk, social mapping, resource mapping, seasonal calendar, etc., were employed in each micro watershed area. GIS and remote sensing devices have been made use of in the preparation of DPR. GIS Software was used for the preparation of maps. In depth interviews with officials, farmers, labourers, entrepreneurs of micro-enterprises etc. were also undertaken. Field level verification of the identified interventions was undertaken by the DPR preparation team. Most of the micro watersheds in the project area share common problems because of the similarities existing among the micro watersheds. The interventions proposed for the area covered under this project of IWMP are expected to help in restoring the ecological balance of the project area, in conserving the natural resources and in improving the livelihood opportunities of the people.