

CHERPU BLOCK PANCHAYATH

**INTEGRATED WATERSHED
MANAGEMENT PROGRAMME - IWMP-V**



Detailed Project Report

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I. INTRODUCTION

Natural resources play an important role in the development of a country. The way they affect the economy is by either helping in the development or bringing it into a complete downfall. A country that tends to have more natural resources and has a way to refine it, have a better and stable economy. The most important natural resources are land, water, forest, sun, wildlife, air, mountain, minerals etc. People use these resources for their existence on earth. All living creatures depend on natural resources for their survival, growth, and development. Water supports the life system of human beings, vegetation, animals and birds, living creatures and wildlife. Similarly, forest resources, land resources and mineral resources are essential for our welfare, development, and prosperity. So soil, water and vegetation are the basic resources on which the human being as well as the living being primarily depends upon livelihood and survival. The conservation of natural resource is one of the major concerns. Thus Watershed based management has been considered as a strategy for protecting.

MAIN OBJECTIVES

- To impart scientific and systematic activities to maintain the normal ecological balance between soil, water and biodiversity.
- To implement activities for rainwater harvesting which results in the increase of groundwater level and to ensure the availability of water.
- To prevent the degradation of biodiversity and undertaking activities for environmental regeneration.
- To prevent soil erosion and increase the fertility and water storage capacity of the soil.
- To provide livelihood support for those who depend the natural resources in the watershed areas.
- To create awareness and educate the people on the far-reaching implications of ecological degradation and inspire their mindset for the preservation of biodiversity.
- To enrich bio diversity by renovating and protecting the existing water resources in the area.
- To harness locally available natural resources in an optimum manner to achieve the overall goal of sustainable development.
- To give specific importance to the productivity enhancement of agriculture/horticulture/ animal husbandry activities and livelihood development.
- To promote farming and allied activities while ensuring resource conservation and regeneration.

II.GENERAL DESCRIPTION OF PROJECT AREA

Table 1 General description

District	Thrissur
Block	Cherpu
Taluk	Thrissur
Grama Panchayath	Avinissery,Cherpu,Nenmanikkarara, Thrikkur,Vallachira,Chazhoor, Nadathara,Puthur
Parliament Constituency	Thrissur
Assembly Constituency	Cherpu,Thrissur
Latitude/Longitude	10°24'8.729"N 10°30'50.227"N
	76°10'59.667"E 76°16'35.897"E
Total Proposed Area(Ha)	3427
Approach Road and Distance from Town	12 kilometres south of Thrissur town and is on the Thriprayar road
Distance from District Head Quarters	12 Km from Thrissur Town
Sub Watershed and codes	17k8a,17k9a,17k10a
Main Drainages	Parts of Karuvannur basins (Kole lands) and parts of Chalakudy basins.
River flowing nearby the watershed area	Manali, Karavanur River
Livelihood Options	Agriculture, Animal Husbandry, Brick Making, Wage labour, Govt. jobs.

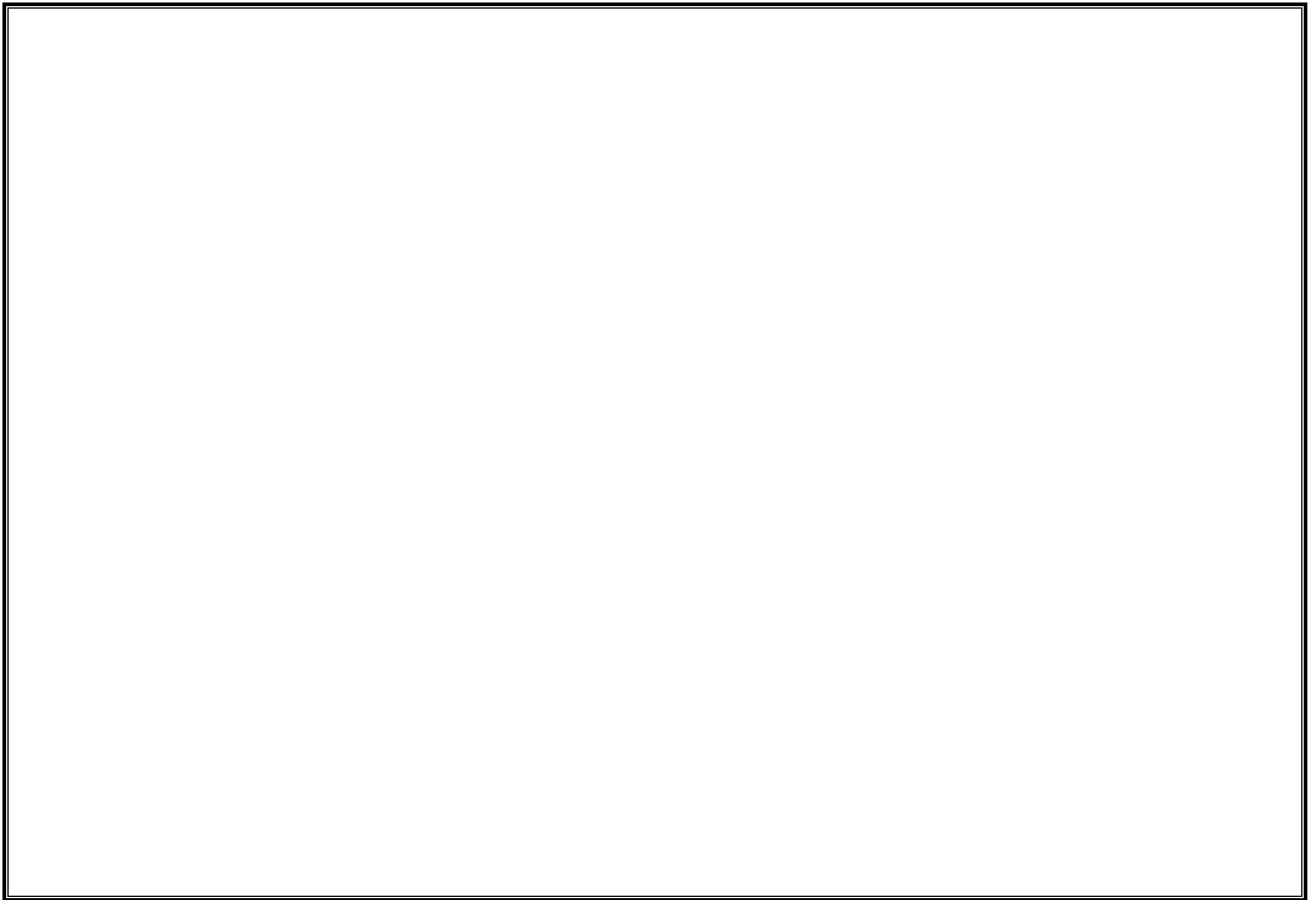


Table 2 Details of Watershed

SL.No	Watershed Code	Geographical Coordinates	Treatable Area	GramaPanchayath &Ward
1	Arattupuzha (17k 8a)	10°26'44.083"N 10°24'8.175"N 76°11'0.654"E 76°14'27.781"E	1475	Cherpu: 9,10,11,12,13,14,15,16,17(F) Vallachira:5,6,7,8,9,10 (F) 11(P) Chazhoor 9(P)
2	Pulakattukkara(17k9a)	10°28'48.233"N 10°25'46.53"N 76°13'1.388"E 76°16'13.698"E	1421	Nenmanikkara 1,2,10,11,12,13,14,15(F) Vallachira 1,2,3,4,12,13,14(F) 11 (P) Avinesseri:6,7,8(F) Cherpu:7(P) Puthur 19 (P)
3	Madavakara (17k10a)	10°30'50.725"N 10°26'54.715"N 76°14'55.194"E 76°16'34.345"E	531	Nenmanikkara:3,4(F) Puthur:17,18,19,20,21,23(F) 22 (P) Nadathara 15,16(F) 14,17 (P) Thrikkur 1(F),2 (P)

III. PHYSIOGRAPHY AND RELIEF

Physiographically the area falls under midland. Lowest elevation is 10 m MSL is at Chazhooor and the highest elevation is 60m MSL at Kadalasseri. The relief is Subnormal to excessive.

Table 3 Agroclimatic details

SL. No	Watershed Code	Name of the watershed	Names of the villages	Name of Agro-Climatic Zone Covers Project area	Topography	Average rainfall in mm
1	17k8a	Arattupuzha	Cherpu Vallachira Chazhooor	Plain	It constitutes the undulating to rolling lands with intermittent flat topped low laterite hillocks broken by broad and narrow valley.	2844mm
2	17k9a	Pulakattukkara	Nenmanikkarara Puthur Avinissery Cherpu Vallachira			
3	17k10a	Madavakkara	Puthur Nadathara Nenmanikkarara Puthur			

DRAINAGE

Watershed is drained by two perennial and five seasonal streams. The details of main drainages in each micro watershed are given below:

Table 4 Drainages in watershed

Sr No	Watershed	Main Drainage	Perennial/Seasonal
1	Arattupuzha(17k 8a)	Chappakayal thodu	Perennial
2	Pulakattukkara(17k9a)	Thalore kayal thodu	Perennial
3	Madavakara(17k10a)	Kalpadathodu	Seasonal

IV. CRITERIA FOR SELECTION

In the selection of watersheds in IWMP certain criteria are adopted. The indicators and scores achieved are given below:

Table 5 Criteria table

No	CRITERIA	SCORE	RANGES & SCORES			
1	Poverty Index (% of poor population)	10	Above 80%(10)	80 to 50% (7.5)	50 to 20%(5)	Below20 % (2.5)
2	% of SC/ST population	10	More than 40%(10)	20 to 40%(5)	Less than 20% (3)	
3	Actual wages	5	Actual wages are significantly lower than minimum wages (5)	Actual wages are equal to or higher than minimum wages (o)		
4	% of small and marginal farmers.	10	More than 80%(10)	50 to 80%(5)	Less than 50% (3)	
5	Ground water status	5	Over exploited (5)	Critical (3)	Sub Critical (2)	Safe (0)
6	Moisture index	15	-66.7 & below(15)	-33.3 to-66.6(10)	0 to -33.2(0)	
	DPAP/DDP Block		DDP Block	DPAP Block	Non DPAP /DDP Block	Above &70 % (Reject)
7	Area under rain-fed agriculture	15	More than 90%(15)	80 to 90%(10)	70 to 80%(5)	Fully covered (0)
8	Drinking Water	10	No source (10)	Problematic village(7.5)	Partially covered(5)	
9	Degraded land	15	High- above 20%(15)	Medium- 10 to 20% (10)	Low less than 10% of TGA(5)	
10	Productivity potential of the land	15	Lands with low production & where productivity can be significantly enhanced with	Lands with moderate production & where productivity can be enhanced with reasonable	Lands with high production& where productivity can be marginally enhanced with reasonable	

			reasonable efforts (15)	efforts.(10)	efforts(5)	
11	Contiguity to another watershed that has already been developed/treated	10	Contiguous to previously treated watershed & contiguity within the micro watersheds in the project(10)	Contiguity within the micro watersheds in the project but non contiguous to previously treated watershed(5)	Neither contiguous to previously treated watershed nor contiguity within the micro watersheds in the project(0)	
12	Cluster approach in the plains (more than one contiguous micro watersheds in the project)	15	Above 6 micro-watersheds in cluster(15)	4 to 6 micro watersheds in cluster(10)	2 to 4 micro watersheds in cluster (5)	
	Cluster approach in the hills (more than one contiguous micro watersheds in the project)		Above 5 micro-watersheds in cluster(15)	3 to 5 micro watersheds in cluster(10)	2 to 3 micro watersheds in cluster (5)	

Average Rainfall Data

The maximum Rainfall ranges from 99.1 mm in May to 1031.8 mm in June 2013. Generally June, July and August received maximum rainfall.

Table 6 Rainfall data

Monthly rainfall (mm) from 2003 to 2014												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2003	0.0	162.1	94.8	23.8	40.3	570.6	492.6	490.1	53.7	276.6	18.2	0.0
2004	0.0	0	8.6	60.2	578.3	786.0	369.6	386.9	208.8	493.2	71.7	0.0
2005	7.6	0.0	0.0	171.4	89.2	711.4	727.5	346.5	416.1	178.4	11.6	3.2
2006	0.0	0.0	95.2	86.2	675.5	608.6	519.0	550.6	522.2	323.7	79.5	0.0
2007	0.0	0.0	0.0	61.0	240.5	826.5	1131.9	549.7	765.9	383.8	24.8	8.7
2008	0.0	29.7	205.3	65.6	11.5	636.7	416.3	321.9	314.2	380.8	21.7	2.6
2009	0.0	0.0	29.0	16.5	199.5	565.0	985.8	421.4	276.0	166.8	180.6	42.7
2010	0.0	0.0	12.9	103.6	123.8	700.4	552.0	224.1	326.7	667.6	282.8	24.5
2011	0.0	77.5	10.0	207.1	198.5	799.6	588.2	713.8	435.2	193.0	240.0	2.4
2012	0.0	0.0	3.5	101.9	117.3	551.5	375.8	616.5	191.8	145.6	46.7	19.8
2013	0.0	84.4	14.6	0.0	99.1	1031.8	932.3	305.9	344.1	369.8	82.0	0.5
2014	0.0	0.0	0.0	61.0	323.6	469.8	768.0					

Source : (Kerala Agriculture University)

Temperature

The maximum temperature ranges from 29.5 to 36.7 C where as the minimum temperature ranges from 23.0 to 25.7C. The average annual maximum temperature is 33.1 C and the average annual minimum temperature is 24.305 C. Generally March and April months are the hottest and November, December, January and February months are the coldest.

Relative Humidity

The humidity is higher during monsoon months from June to October and is around 93% during morning hours and 76% during evening hours.

Evapo-Transpiration

The annual PET for Vellanikara is 1776.3 mm-based on Thornthwaite's method.

Ground Water

The aquifer system in the Watershed area can be broadly divided into hard rock aquifers, the laterite aquifers and sedimentary aquifers. The hard rock and laterite aquifers constitute major aquifer system of the Watershed area while the sedimentary aquifers are seen along the coast and river courses.

WATER SUPPLY AND IRRIGATION

Majority of population in the watershed area having own wells and use their own well for drinking water. But beginning of summer season most of the wells get dried up. Most of the streams are not cleaned and contaminated and in large scale waste is deposited. Around 60 percentage of public well are open and not cleaned. The condition of ponds is not good around 50 percentage of ponds are covered with weeds and wastes. The watershed areas have rare public taps and water connection and few houses are added into water supply schemes. Natural Springs are other sources to meet the water needs of people.

Table 7 Water Source

SL.No	Major Source of Water	Nos
1	Streams	29
2	Ponds	42
3	Public Wells	56

V. SOCIO ECONOMIC DETAILS

Table 8 Institutions

Educational Institute	Nursery School	Primary School	High School	Higher Secondary School	Angawadi
Total	8	12	11	9	98

Table 9 Credit Institute

Credit Institute	Nationalised Bank	Service Cooperative Banks	Private Banks
Total	18	12	13

Table 10 Govt Office

Govt office	Post Office	Registrar Office	KSEB office	KSFE	Village Office	Agriculture Office	Telephone Exchange
Total	10	1	3	3	3	5	5

Table 11 Hospitals

Hospitals	Primary Health Centre	Alopathic Dispensary	Homeo Dispensary	Homeo hospital	Veterinary hospital
Total	9	15	4	3	3

Table 12 Marketing Facilities

Marketing Facilities	VFCK	Block Organic Market
Total	3	1

Table 13 Others

Others	Library	Convent	Police Station	Beverage Outlet	Maveli Store	Ration shop	Gas Agency	Petrol bunk
Total	5	2	3	7	4	7	3	4

Table 14 Pilgrim Centres

PilgrimCenters	Temple	Church	Recreation centre	Ashramam	SNDP Office
Total	40	35	1	5	7

Table 15 Population class

Watershed	APL	BPL	Total
Arattupuzha	6500	2825	9325
Pulakattukara	6000	2750	8750
Madavakara	4000	1600	5600
Total	16500	7175	23675

Table 16 Population Data

Watershed	Families	Population	Male	Female	Boys	Girls
Arattupuzha	8750	35000	15750	19600	2520	3940
Pulakattukara	8525	34100	15345	19096	2455	2865
Madavakara	5600	22400	10080	12320	1613	1848
Total	46550	185370	75970	92081	13140	18420

VI. AGRICULTURE AND PRESENT LAND USE

Table 17 Agriculture and Present Land Use

SI No	Item	Area (ha)	Percentage
1	Coconut	1780	52
2	Paddy	375	12
3	Nutmeg	110	3
4	Banana	550	16
5	Tapioca	90	2
6	Vegetable	29	1
7	Tuber crop	35	1
8	Arecanut	45	1
9	Pepper	13	1
10	Fruits	15	1
11	Mixed Crop	385	10
Total		3427	100

76°8'30"E 76°9'0"E 76°9'30"E 76°10'0"E 76°10'30"E 76°11'0"E 76°11'30"E 76°12'0"E 76°12'30"E 76°13'0"E 76°13'30"E 76°14'0"E 76°14'30"E 76°15'0"E 76°15'30"E 76°16'0"E 76°16'30"E 76°17'0"E 76°17'30"E 76°18'0"E 76°18'30"E 76°19'0"E

CHERPU BLOCK PANCHAYATH (IWMP - V)

LAND USE MAP

Treatable Area 3427 Hector
1:50,000

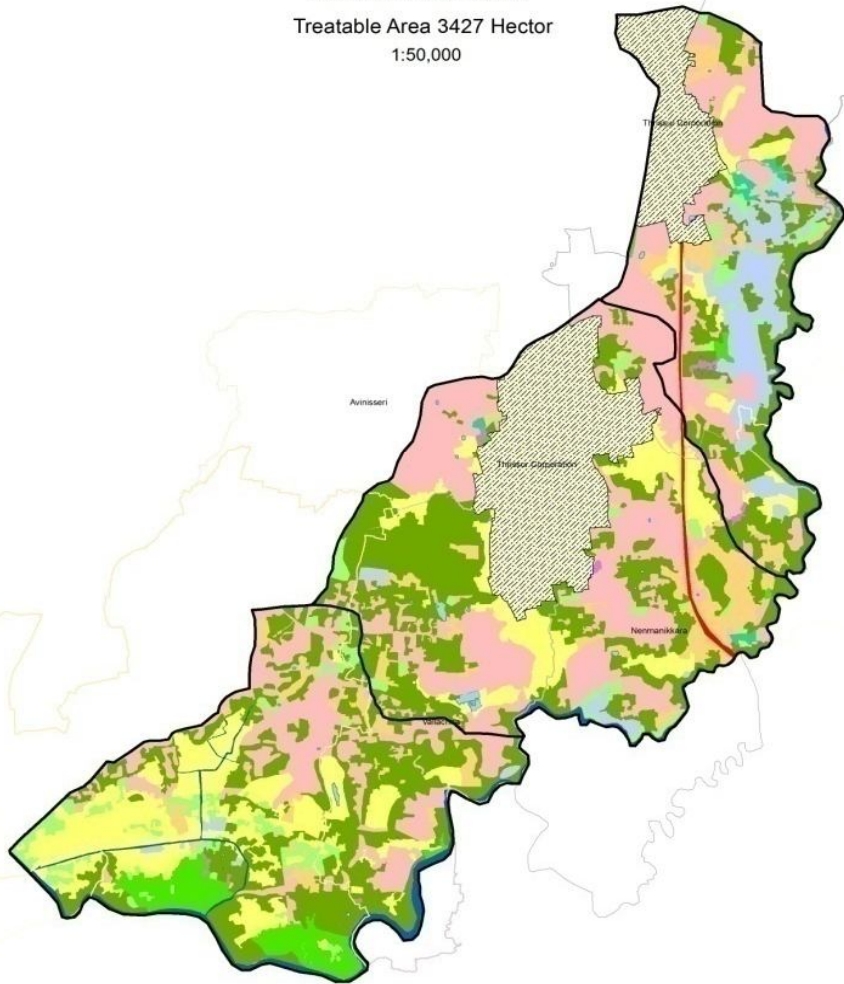


10°31'0"N
10°30'30"N
10°30'0"N
10°29'30"N
10°29'0"N
10°28'30"N
10°28'0"N
10°27'30"N
10°27'0"N
10°26'30"N
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10°31'0"N
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10°27'30"N
10°27'0"N
10°26'30"N
10°26'0"N
10°25'30"N
10°25'0"N
10°24'30"N

Legend

-  NH 47
-  Ponds
-  River
-  Banana
-  Coconut
-  Fallow Land
-  Mixed Crops
-  Mixed Trees
-  Paddy
-  Settlement
-  Waste Land
-  Water Logged Area
-  Watershed Boundary



76°8'30"E 76°9'0"E 76°9'30"E 76°10'0"E 76°10'30"E 76°11'0"E 76°11'30"E 76°12'0"E 76°12'30"E 76°13'0"E 76°13'30"E 76°14'0"E 76°14'30"E 76°15'0"E 76°15'30"E 76°16'0"E 76°16'30"E 76°17'0"E 76°17'30"E 76°18'0"E 76°18'30"E 76°19'0"E

Animal Husbandry and Dairying

Animal husbandry and dairy development play a significant role in rural development. The details of livestock in the watershed areas are shown in the table below. Livestock acquire special importance in watershed management from both socio-economic and ecological considerations. They are an integral part of the farming system. Adoption of suitable technical innovations for improving the livestock productivity is needed in the watershed areas. Proper recycling of organic manure in the area is of utmost importance for maintenance of soil fertility.

Table 18 Animal Husbandry and Dairying

Animal	Cow	Buffalo	Goat	Hen
Total no	3303	453	2687	36530

VII. SOIL SERIES

1. **ANJUR SERIES:** The soils of Anjur Series are moderately shallow, moderately fine textured, reddish, well drained and acidic. These soils are developed on gneissic parent materials and occur on gently sloping to strongly sloping laterite hills with slope of 3-15%, characterized by the presence of abundant laterite gravels in the lower part of the B horizon at an elevation of 5 to 100 m above MSL. These soils are developed on gneissic parent material under humid tropical climate. The surface texture ranges from gravelly sandy clay loam to gravelly clay loam. Medium acidity is noticed.
2. **KORATTY SERIES:** Koratty Series are moderately well drained, moderately fine textured, reddish and acidic soils. They are developed from gneissic material and occur on gently sloping to moderately steep plains and flat topped ridges with 3-15% slope in the south central part of the district at elevation of 10 to 100m above MSL. Textural variation noticed in the Ap horizon, gravelly sandy clay loam to gravelly clay loam and is medium acidic.
3. **KOOTALA SERIES:** The soils of Koottala series are deep, well drained, moderately fine textured, grayish brownish to dark grayish brown and medium acidic. These soils are developed from gneissic parent material and occur on gently sloping to moderately steep slopes and foot slopes of low hills (5-25%). The general elevation is of 20-100 m Above MSL. Texture of surface horizon ranges from sandy clay loam to clay loam.
4. **VELAPPAYA SERIES:** The soils of Velappaya series are deep, well drain, medium to moderately fine textured, reddish and acidic. Velappaya soils are developed on gneissic parent material occurring on gently sloping to strongly sloping (Slope 3-15%) areas in the midland region at an elevation of 20-100m above MSL. The

surface texture ranges from gravelly loam to gravelly clay loam and medium acidity is noticed.

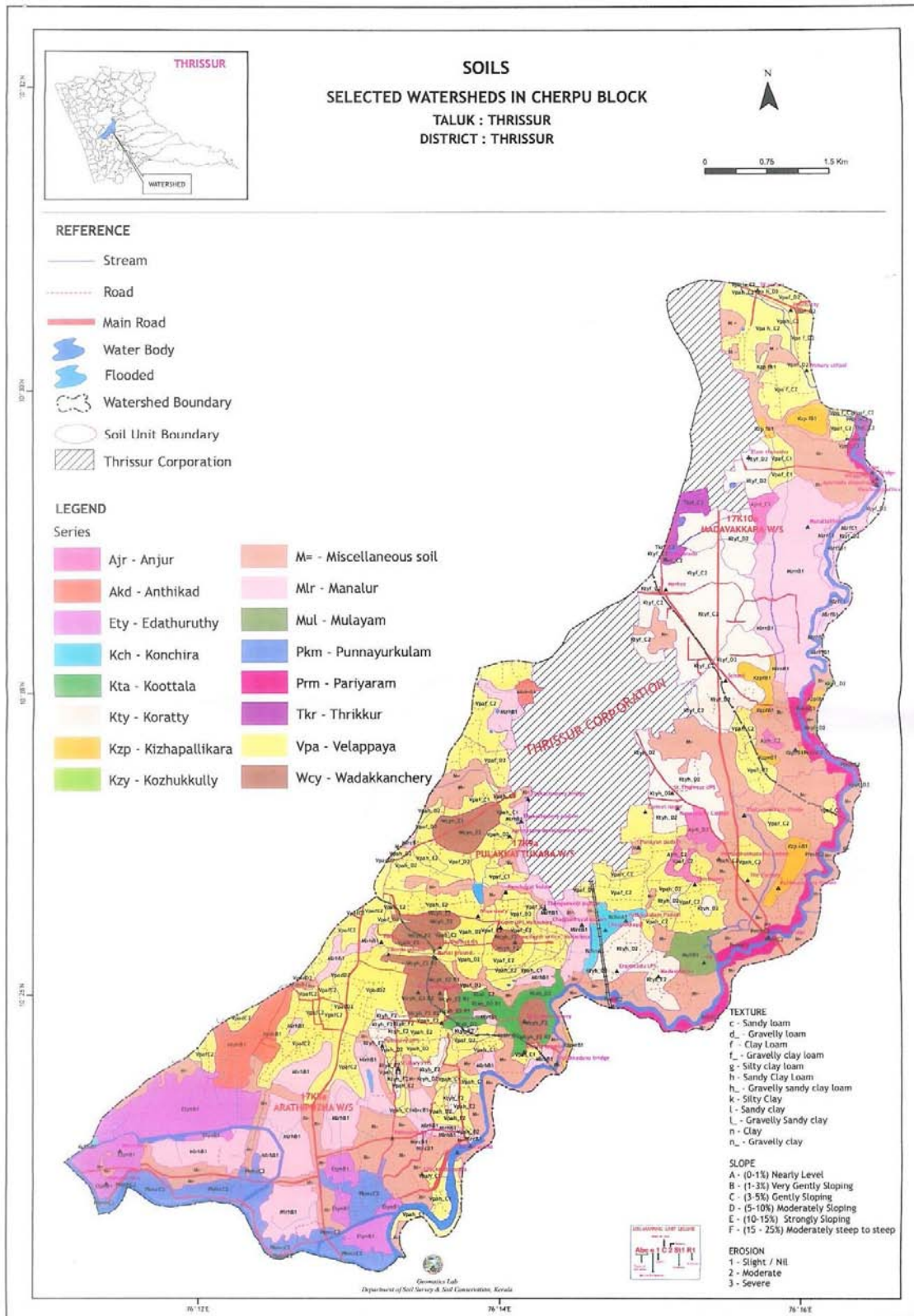
5. **PARIYARAM SERIES:** The soils of Pariyaram are very deep, well drained, moderately fine textured brownish and acidic. The soil is developed from alluvial deposits; occur on the banks of streams and rivers on very gently sloping to moderately sloping lands. The slope ranges from 1 to 10%. The general elevation is 5 to 20 m above MSL. The texture of surface horizon is sandy clay loam to clay. Strong acidity is noticed.
6. **MULAYAM SERIES (Mul):** The soils of Mulayam Series are deep, imperfectly drained, moderately fine to fine textured, brownish and acidic. Mulayam soils are alluvial and colluvial sediments occurring on very gently sloping to gently sloping broad valleys with slope 1-3% .Surface texture ranges from sandy clay loam to sandy clay.
7. **MANALUR SERIES:** The soils of Manalur series are very deep, imperfectly drained, sandy clay loam textured, brownish, very strong to extremely acidic. The soil is developed from alluvial deposits and occurs on flat or nearly level to very gently sloping alluvial plains adjoining upper reaches of Kole lands. The slope ranges from 0 to 3%. The surface texture ranges from sandy loam to sandy clay loam.
8. **KIZHAPALLIKARA SERIES:** The soils of Kizhapallikkara series are deep, imperfectly drained, moderately fine textured and acidic. The soils are developed over colluvio-alluvial sediments on nearly level to very gently sloping valley (0-3% slope) in between low lateriate mounds in the lowlands. The general elevation is below 20 above MSL. Surface texture ranges from clay loam to clay.
9. **ANTHIKAD SERIES:** The soils of Anthikad series are deep, poorly drained, medium textured, dark yellowish brown to dark grayish brown,very strongly acid. The soil is developed from alluvial deposits; occur on nearly level depressional alluvial plain at or below mean sea level. The slope ranges from 1 to 3%. Texture ranges from clay loam to clay.
10. **KONCHIRA SERIES:** Konichira soils are deep, poorly drained, fine textured, brownish to black and very strongly acidic. These soils are formed on alluvial sediments over decomposed organic debris occurring on nearly level depressed alluvial plains of Thrissur district below mean sea level. The texture is silty clay to clay.
11. **THRIKKUR SERIES:** The soils of Thrikkur series are moderately deep, moderately fine textured, well drained, yellowish red to dark reddish brown and medium acidic soils. The soils developed on gneissic parent material occur on gently sloping to moderately slopping foot slopes at an elevation is 10 to 100 m above MSL. The texture ranges from gravelly sandy clay loam .
12. **WADAKKANCHERY SERIES:** Soils of Wadakkanchery series are moderately deep, well drained, moderately fine textured, brownish to red and strongly acidic. The

soils are developed from gneissic parent material and occur on strongly sloping to steep side slopes of low hills. Presence of weathered gneissic stones within the profile and on the surface is a characteristic feature of these soils. The general elevation is 20-100 m above MSL. Surface texture varies from gravelly sandy clay loam to gravelly clay loam.

13. **KOZHUKULLY SERIES:** The soils of Kozhukully series are deep soils, well drained, fine textured, brownish and acidic. These soils are developed from gneissic parent material and occur on moderately sloping to moderately steep side slopes of low hills(5-25%). The general elevation is 20-200 m above MSL. Presence of weathered gneissic stones within the profile and on the surface is a characteristic feature of these soils. The surface texture varies from gravelly sandy clay loam to gravelly clay.
14. **EDATHIRUTHY SERIES:** The soils of Edathuruthy series are deep, imperfectly drained, fine textured, brownish and slightly acid to neutral. The soils are developed from alluvium occur on very gently sloping flood plains. They occur on slope of 1 to 3%. The general elevation is less than 5 m above MSL. Texture ranges from clay loam to clay.
15. **PUNNAYURKULAM SERIES:** The soils of Punnayurkulam series are very deep, well drained, loamy sand textured, brownish, slightly acid to medium acid. They have developed over alluvial sediments under humid tropical climate on nearly level to gently sloping plains. The slope ranges from 0 to 5 %. The surface texture ranges between loamy sand to sandy clay loam.
16. **Miscellaneous Soils:** These are wetlands filled with transported soil and permanently converted for cultivation of perennial crops or non agricultural purposes like construction. The soils have highly heterogeneous character.

Table 19 Soil Series

Watershed	Slope	Soil Type	Erosion	Series	Relief	Depth
Arattupuzha	Very Gently Sloping to Steep	Clay loam Gravelly loam Gravelly Sandy Clay loam Sandy Loam	Moderate	Velappaya Edathunithy Manalur Punnayurkulam	Sub normal	Deep to Very Deep
Pulakattukara	Nearly level to Moderately Steep to steep	Gravelly clay loam Gravelly sandy loam	Moderate	Velappayya- Koottala- Wadakkanchery	Normal	Deep
Madavakara	Very gently sloping to Moderately slopping	Clay Gravelly clay loam Clay loam	Moderate	Manalur- Koratty- Vellappayya	Sub normal	Moderately Deep Very Deep



VIII. METHODOLOGY

The following methodology was adopted as part of preparation of Detailed Project Report of IWMP in Cherpu Block Panchayath. Transect walks, Participatory Resource Mapping, Focus group discussion, Base line survey, drainage line survey, GIS mapping, Institutional and capacity building etc werethe major events in the process.

Transect Walk

Transect walks were conducted to identify the ridge lines to demarcate the watershed boundary. After delineation, the farmers and other stake holders of watershed walked along the streams. It helped the team members to understand the basic characteristics of watershed area, and to ascertain the mode of treatment according to the geographical specialties in each area.

Participatory Resource Mapping

After conducting the transect walk, the groups made resource maps of the entire watershed showing boundaries of private lands and common lands, details of ownership, land use and other details like location of major gullies, location of water bodies and common lands, types of vegetation and soiltypes in different parts of the watershed etc.

Focused Group Discussion

Focus Group Discussions were conducted in order to gather specific opinions and suggestions withregard to the activities to be included in the DPR.

Base Line survey

A detailed household level socio-economic survey was conducted in the project area to gather relevant information to develop the baseline data for the formulation of DPR.

Drainage line Survey

A team of members and the representatives of the TSO and of other stakeholders visited all prominent drains in the project area as part of surveying the status of the drains.The survey was useful in assessing the state of the drains and to ascertain the need and suitability of various interventions to protect and develop them. People's experience and knowledge attributed much to the process.

Remote Sensing Data and GIS

A remote sensing technique provides easy access to data, on vegetation and topographical features of any geographical area. This data has been used for assessment of

crop coverage, wasteland and hazard prone areas in watershed area. GIS has been widely used in characterization and assessment in this particular watershed area. Basic physical characteristics of a watershed such as the drainage network and flow paths could be derived from readily available Digital Elevation Models (DEM). This has been used for the interpretation of land use and hydro geo morphology of the watershed also.

Preparation of Action Plan and Approval from Gram Sabha

Data gathered through the above process have been compiled, consolidated and analysed to develop a data base to evolve a realistic plan of actions to be implemented in the project area. The draft action plan thus prepared was placed before the concerned gram Sabha for approval. After detailed discussions, the action plan was modified by incorporating valid and feasible suggestions from the gram sabha into it and the same was approved by the Gram Sabha.

IX. INSTITUTION BUILDING AND PROJECT MANAGEMENT

The stipulations with regard to the mobilization and organization of the watershed community as laid down in the Common Guidelines have been followed in the case of this project. The institutions at various higher levels have also been constituted. The details are given below:

State Level Nodal Agency - (SLNA)

Chairman of SLNA is Agricultural Production Commissioner. SLNA has a fulltime Chief Executive Officer (CEO). SLNA consist representatives of NRAA, Central Nodal Ministries, NABARD, Rural Development, Agriculture, Animal Husbandry, Forest, Ground Water, NGOs, Professional from Research Institutes, Representatives of MGNREGS, BRGF. SLNA sanctions the IWMP Projects for the State and looks after the overall performance of the programme in the state. It is supported by a Technical Unit consisted of Experts from related fields. SLNA maintains A State Data Cell too.

District Level Coordination Committee-DLCC

A DLCC, as envisaged in the Guidelines, has been constitutes in the District. The DLCC, Thrissur consists of all district level officers of the line departments. The District Panchayath President is the chairman and the District Collector is the Member Secretary of the DLCC. The DLCC takes up overall responsibility for getting the Project Reports and Action Plans under IWMP properly formulated and presenting the same before the District Planning Committee for approval. A Watershed Cum Data Cell-WCDC- has been constituted under the leadership of the Project Director, PAUs, designated as District Project Manager.

Programme Implementing Agency-PIA

The Project Implementing Agency of this Project is the Block Panchayath, Cherpu.

Watershed Committee (WC)

The Gram Sabha will constitute the Watershed Committee (WC) to implement the Watershed project with the technical support of the WDT. The Gramapanchayath President is chairman of each watershed committee and Convenor is Village Extension Officer of the concerned Gramapanchayath. The Watershed Committee will open a separate bank account to receive funds for watershed projects and will utilise the same for undertaking its activities.

Self Help Groups

SHG's are being formed in project villages. SHG's would constitute members mostly from SC's, ST's, women, landless and members belonging to very poor families. These groups would be homogeneous in nature and will have common goal. They would save money monthly as decided by them and will hold meetings regularly at least once in every month. Basic orientation and skill training will be provided to them under IWMP. They will also be given Revolving fund assistance to enable them to meet their urgent needs for starting micro enterprises.

Table 20 No of SHG & JLG

No of SHG& JLG		
Watershed	JLG	SHG
Arattupuzha	69	382
Pulakattukara	67	303
Madavakara	56	358
Total	192	1043

User Groups

User groups are formed in project area. The members of these will be those persons who are directly benefited by activities under watershed. Members of User Groups would take responsibility to manage the assets created under the project. They will further undertake responsibility for fixing user charges from their members. User Groups would be trained under IWMP so as to enable them to manage their assets created.

X. PROJECT MANAGEMENT

Phase I – Preparatory phase - duration is 1 year

Phase II – Watershed Work Phase –duration is 2 to 3 years

Phase III – Consolidation and Withdrawal phase-1 to 2 years is the duration of this phase.

Various activities envisaged under these Phases are the following:

PREPARATORY PHASE

The preparatory phase of the project will be the first year of the project. The major objective of this phase is to build appropriate mechanisms for adoption of participatory approach and empowerment of local institutions (W.C, S.H.G and U.G). WDT will assume facilitating role during this phase. Major activities during this phase are inauguration, Entry Point Activities (EPA), Capacity Building to stake holders of watershed area, preparation of the DPR (Detailed Project Report) through PRA (Participatory Rural Appraisal) and FGDs (Focused Group discussion).

WATERSHED WORK PHASE

Important part of the project is this phase as all the activities envisaged in the Detailed Project Report are executed here. Activities coming under action plans like watershed development works, livelihood activities, production system and microenterprises implemented in this phase.

CONSOLIDATION AND WITHDRAWAL PHASE

The objective of this phase is to create new nature-based, sustainable livelihoods and raise productivity levels of the augmented resources and economic plans developed during the Watershed Works Phase. The following activities are proposed to be carried out during this stage.

1. **Documentation:** It is proposed to document the activities carried out during the watershed implementation period. It will help to maintain the records and identify and propagate the successful activities carried out under the project.

2. **Up-scaling of Successful Experiments:** It is proposed to identify the best practices carried out during the project period and up-scaling the same as per feasibility and propagate the same among others members of the watershed area.

3. **Evaluation:** Evaluation is a very important activity to assess the success of implementation of the project. It is proposed to carry out evaluation at the following levels.

a. **Social Audit:** It is proposed to conduct the social audit of the programme at the watershed level where the Gram Sabah will evaluate the programme where the beneficiaries should explain their benefits and current status of the activity. The Watershed Committee should place the books of accounts of watershed programme for approval.

b. **Evaluation by External Agency:** An external agency with evaluation of the programme.

With these works, all of the watershed starting from ridge to valley can be covered for water conservation / harvesting. Under MNREGA, the eligibility area is individual land of SC/ ST/BPL and common land. To cover left over area, under this work i.e., individual land of other than SC / ST/ BPL can be substituted under the ongoing programme of IWMP. Repair, restoration and renovation works of water resources and better utility of these activities can be done under IWMP in convergence with MNREGS.

XI.CAPACITY BUILDING PLAN

Capacity building is the key mechanism to introduce participatory approach for planning, implementation and management of watershed activities. It is proposed to carry out the following institutional based training and capacity building programmes in the first two years of the project period, in order to equip various stakeholders to participate and implement the project. It is the major means by which Panchayat Raj Institutions and project staff shall be enabled to successfully undertake their work, with the communities of the project areas including women and other vulnerable sections of the society. Capacity building of all the stakeholders is essential to build their conceptual, managerial, technical and operational capabilities. The plan proposed for the entire project period is given below:-

Table 21 Capacity Building Plan

Sl. No	Participants	Faculty/Trainers	Numbers	Days	Amount
1	Training of Trainers	3	14	1	5150
2	Capacity building plan to Self Help Group members	3	12000	12	819000
3	Capacity building plan to Watershed Committees	1	97	1	16550
4	Orientations on IWMP to president of GP's, Ward members, AO's, VEO's	1	80	1	20000
5	Orientation on IWMP on gender in watershed development	2	12000	1	819000
6	Formulations training on the basis of findings from status study	0	80	4	12000
7	User Groups	1	97	1	16550
8	Field Visit	0	100	1	190000
9	Training for Horticulture	2	97	1	52650
10	Training for Veterinary	2	97	1	52650
11	Training for Nursery	2	97	1	52650
	Total				2056200

XII. ENTRY POINT ACTIVITIES (EPA)

Introduction of any new schemes and external interference of new groups, are not easily accepted by the community. So the EPA activities under IWMP help to build up a rapport with the village community. Well recharging, spring renovation, new well digging, drainage line treatment, community water tank are the proposed works as entry point activities in watershed areas. These particular activities are selected because water scarcity is the main problem in the areas. It is for speedy community organization and trust building among beneficiaries.

The proposed EPA activities are given below:

Table 22 EPA Activities

Sl No	Name of EPA Activity	Grama Panchayath	Ward No	Nos	Total Estimate
1	Well Cleaning and Repairing –Anjaangadi	Cherpu	15	1	42000
2	Well Cleaning &Net- SC Colony	Cherpu	13	1	35000
3	Well Cleaning &Net-Health Centre	Cherpu	10	1	46000
4	Chittengara Chal Construction	Vallachira	9,10		600000
5	Well Cleaning &Net- Laksham Veedu Colony	Cherpu	17	1	46000
6	Nenmanikkara Perinjerypadam Sluice Shutter & Thodu side protection.	Nenmanikkara	9	1	247000
7	Distribution of Banana Suckers			9000	126000
8	Kalpada Thodu [Sluice Canal] and Side Protection (100 m)	Puthur	23	1	236000
9	Bhagavathi Thodu –Sluice Canal	Nadathara	15	1	35500
10	Mampili Padavu-Sluize Canel-Repair	Chazoor	9	1	31376
11	Distribution of Banana Suckers	Vallachira & Nenmanikkara		10000	140000
12	Well renovation kalarikkal road	Vallachira	7	1	60000
	Unforeseen Amount				84
	Total				1644960

Agriculture Demonstration Plot

SL No	Item	Rate/Unit	Unit	No	Amount
1	Banana (Nanderan)	14	No	19000	266000

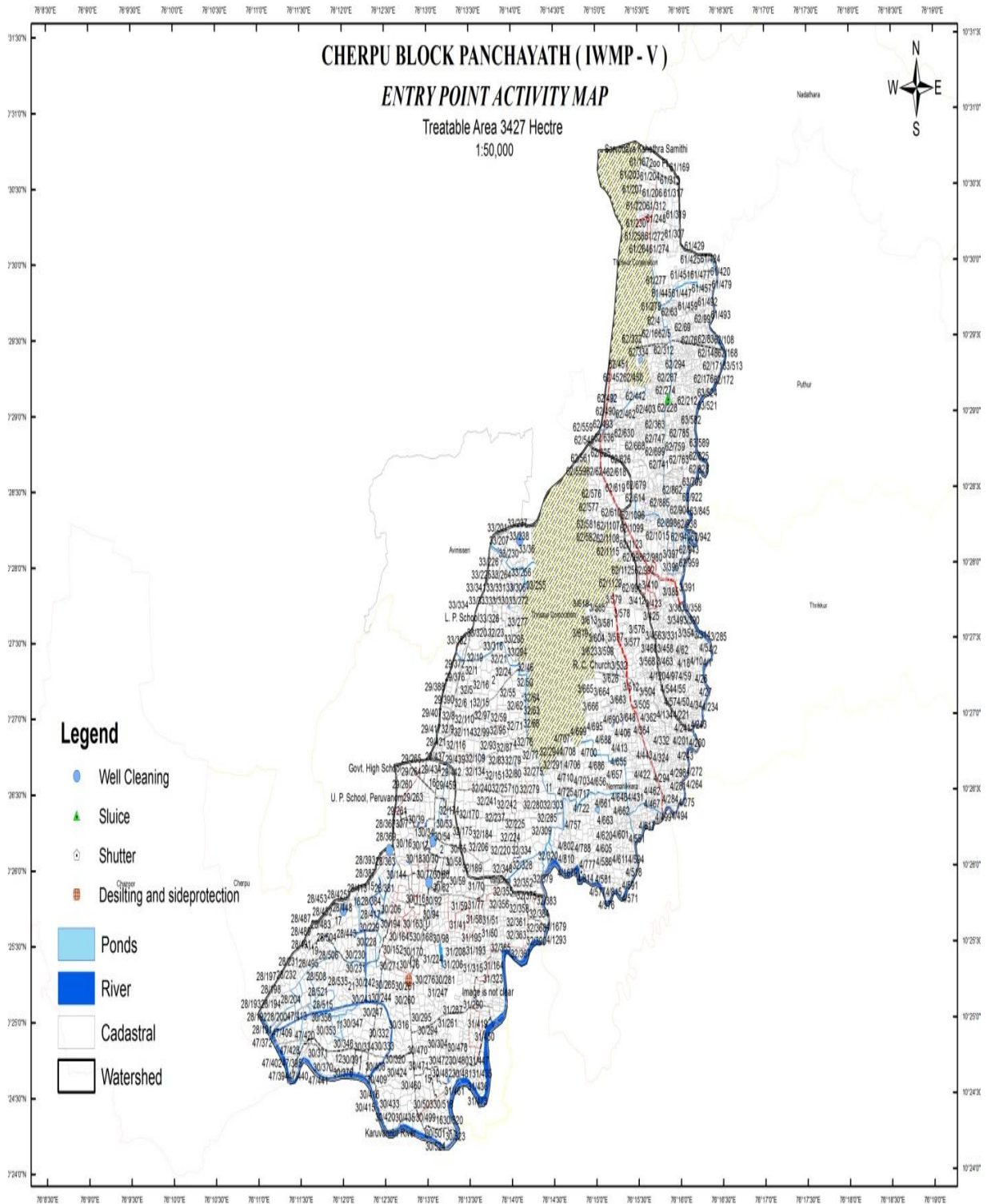
(Rate: KAIKO)

CHERPU BLOCK PANCHAYATH (IWMP - V)

ENTRY POINT ACTIVITY MAP

Treatable Area 3427 Hectre

1:50,000



Legend

- Well Cleaning
- Sluice
- Shutter
- Desilting and sideprotection
- Ponds
- River
- Cadastral
- Watershed

Table 23 Major Problems in Watershed Area

SL No	Grama Panchayath	Ward	Problems	Stream/Well/Pond/ Padashekaram	Status	Solution
1	Nenmanikkara	10	It consists of 28 Ha of paddy and 15 Ha Nandra Banana. The area is filled with Weed. During rainy season the flood destroys the agriculture. Water is stored in Large scale in pits which was digged by Tiles company.	Madavakara-Arakapaddam	It is seasonally used	Remove Weeds Contour bunds at all necessary places. Build canals to remove excess amount of water stored during rainy season.
2	Nenmanikkara	1,2	It consists of 30 Acre –Water logging is the major problem. 4 to 5 acres of pits are available,	Thalore- Back side of Sree Narayanan Tiles Factory	Water logging	If new canal is constructed from Manali river the land is used for agriculture purpose. Fallow land is used for Banana cand vegetables ultivation.
3	Nenmanikkara	11	It consist of 20 acres . l Pits are formed by Tiles company.	Arkapadam	Used partially.	Clean Small canal and Deepen the Ponds . Leveling the land, and connect it with Manali River
4	Nenmanikkara	10	It Consists of 50 ha of land- large no of Pits are formed. Paddy filed is below the level the normal level	Thalore Kayal	Used partially.	Remove the weeds
5	Nenmanikkara	10	It consists of 8 Ha of Land . Large no of pits are formed	Shakarachal	Used partially.	
6	Nenmanikkara	15	It consists of 16 acres of land. Not used for agriculture purpose from last 20 years. Water Logging is major problem. Leech problem. The canal near chitichata temple is destroyed. Waste is stored in large scale in Therupadamr Stream	Vadakkepadam	Not used	Construct the canal near chitichata temple. Remove waste from Therupadamr Stream.
7	Vallachira	12	Stream is broken and not properly	Pullani padam Thangamuchi	Perennial	Stream side wall protection and

			maintained	Thodu (stream)		sluice. If the side is protected the water directly reaches the field and its benefits farmers in large scale.
8	Vallachira	6,7,8,9,1 1,14	Drinking water	Wells	Reddish Colour	Well Recharging
9	Vallachira	12	The area are filled with silts and waste materials.	Chapakayal to puthankulam	Not cleaned	Desilting
10	Vallachira	12	The area are filled with silts and waste materials.	Chapakayal to puthankulam	Not cleaned	Desilting

XIII. NATURAL RESOURCE MANAGEMENT

Natural Resource Management under the IWMP can broadly be divided into three:

a) Soil Conservation Measures

It aims at utilizing the land as per its capability and manages it for maximizing production on sustained basis, without deterioration of natural resources. The contour bunds, Tree plantations, Bio fencing and gully plugging etc are the proposed activities under the soil conservation measures, in the watershed areas.

Contour stone bunds

These are particularly suited to areas where stones are available. This will lead to the rehabilitation of degraded lands and reduced soil erosion.

Tree planting

The Agro forestry system in cultivated land has to be taken up with active involvement and participation of farmers. Tree planting is the process of planting saplings for land reclamation or landscaping purposes.

Gully Plugging

Gully plugging is provided in the uppermost reaches of streams. These can be small earthen bunds, protected on top with stone revetment or grass. Water is allowed to flow over it. It conserves rolling silt, and arrests formation of deep gullies or ravines. The Gully plugs are required in small streams to control the velocity of flow, reduce the erosion and improve the ground water recharge. This will be made of loose rocks and stones available locally around the vicinity.

Bunds along Streams

Providing small bund banks (both side) will further stabilizes the stream bank against erosion. These bunds will stop the erosive surface runoff and protect the sliding of stream bank sides. The outer edges of the bunds will be stabilized with vegetative hedges, whereas grass stabilization will be provided on the top and inner sides.

Well Renovation

The activity of well renovation can be divided into 3 parts such as repairing, cleaning and deepening.

Repairing: the renewal or reconstruction of the existing well or the repairing or replacing of pumping equipment.

Cleaning: removing of rust, algae, sand, gravel or any other obstruction from an existing well.

Deepening: digging the existing well, to an increased depth to secure normal supply of water.

a) Water conservation measures

Well recharging, spring protection, Check dams, Rainwater harvesting structure, Silpaulin pond are the proposed works for water conservation. Rain water conservation treatments in watershed catchment areas and social fencing, will improve the productivity and production of grasses. Irrigation with harvested rain water also increase biomass productivity and fodder availability for feeding of animals.

Well Recharging

Open wells have a major role to play in the artificial recharge of ground water. Roof top rainwater and surface water can be filtered and allowed to recharge the open wells through pits taken near the wells.

Silpaulin Pond

Rain water, roof water or runoff water can be collected in UV resistant plastic lined dug out ponds, in a cost effective way. Generally trapezoidal shaped storage tank are constructed, by excavating soil and dumping the excavated soil at the four sides of the tank. For hindering the seepage and percolation losses, the tank can be lined using 200 GSM UV resistant polythene film, commonly known as Silpaulin. Nylon materials can also be used for the same purpose. For this the sheet is made into the shape of the pond, by the process of thermal welding. After the thermal welding process the plastic sheet is inserted into the pond, and the sides are buried into the soil for making it stable. The pond can be further stabilized with rubble pitching and vegetative fencing.

Check Dams

“Check-dams” are small barriers built across the direction of water flow on shallow rivers and streams, for the purpose of water harvesting. The small dams retain excess water flow during monsoon in a small catchment area behind the structure. Pressure created in the catchment area helps force the impounded water into the ground. The major environmental benefit is the replenishment of nearby groundwater reserves and wells. The water entrapped by the dam, surface and subsurface, is primarily intended for domestic needs, livestock and irrigation.

Rain water harvesting structure

The principle behind the rain water harvesting, is the collection and usage of precipitation from a catchment surface. An old technology is gaining popularity in a new way. Artificial recharge to ground water is a process, by which the ground water reservoir is augmented at a rate, exceeding that obtaining under natural conditions or replenishment.

Rain water harvesting is essential because

- Surface water is inadequate to meet our demand and we have to depend on ground water.
- Due to rapid urbanization, infiltration of rain water into the subsoil has decreased drastically, and recharging of ground water has diminished.

One of the primary requirements of a water harvesting system is that of containers to store the water in a hygienic condition. This need is more pronounced in high rainfall areas where it is more feasible to store water in containers for direct use, rather than for recharging the groundwater.

Ferro cement tank

Ferro cement tank is the proposed work under the watershed area, for rain water harvesting under the IWMP project. Ferro cement consists of cement mortar which is reinforced with a cage made of wire mesh and steel bars.

Percolation pits

Percolation pit is also a method for harvesting rain water. The pits of appropriate size collect water, and allow the rain water to percolate into the soil. The outcome of this activity is the increased ground water table level.

Terracing

A terrace is a piece of sloped plane, that has been cut into a series of successively receding flat surfaces or platforms, which resemble steps, for the purposes of more effective farming. This type of landscaping, therefore, is called terracing. Graduated terrace steps are commonly used on hilly or mountainous terrain. Terraced fields decrease erosion and surface runoff and are effective for growing crops that require a lot of water.

a) Agronomic measures

Centripetal terracing for Coconut and Arecanut

Proper Soil and moisture conservation measures are vital for better performance of coconut and arecanut palms, especially in steep and undulating terrains. Centripetal terracing around coconut and arecanut palms will contribute to good soil moisture conservation, and it is best to be done before the onset of monsoon. It is low cost process and needs reduced labour requirement. Soil porosity and aeration are vastly improved through this.

Coconut and Arecanut mulching

Mulching is an important technique for moisture conservation. The basins of arecanuts and coconut trees are mulched with coir pith, coconut husks, green leaves, dried leaves and organic wastes. The mulching is best done by the end of the monsoon and before the topsoil gets dried up.

Nursery

A nursery is a place where plants are propagated or grown to usable size. These include retail nurseries which sell to general public. Nurseries are proposed in the area under the IWMP project, SHGs will be selected to involve in this activity in each watershed areas.

Vegetable cultivation

The State has been depending on its neighboring states to meet the increasing need for vegetable. The vegetable cultivation is a proposed activity in the project area, that will help to make the people self sufficient. The land type and climate here are also favorable for vegetable cultivation.

Compost Pits

Compost pits are small pits dug out on open space. They are used for dumping the organic waste. We can put food scraps, leaves and dead flowers from the garden. When the compost pit is full we have to cover it. A few months later the compost can be used as organic manure.

XIV. PRODUCTION SYSTEM and MICRO ENTERPRISES

Animal Husbandry

Animal husbandry has been an integral part of agriculture because of its interdependence for food on crops, animal production and manures. So the cow rearing is proposed in the watershed area to improve the quantity of animals.

Cow rearing

Cattle rearing involve the breeding and general care of dairy cattle. The cow rearing is proposed in the areas as a production system, because the rural poor can raise the standard of living through the rearing of good breed of cattle. Dairy development of the area is another output of cow rearing practice in the area.

Vermi Compost

Vermi compost is the product or process of composting, using various species of earth worms to create mixture of decomposing vegetable or food waste, bedding material and vermin cast. Vermi castings contain reduced levels of contaminants and a higher saturation of nutrients. Vermi compost is an excellent, nutrient rich organic fertilizer and soil conditioner.

Biogas Plant

Biogas typically refers to a gas, produced by break down of organic matter in the absence of oxygen. Organic waste such as dead plant and animal material, animal feces and kitchen waste can be converted into gaseous fuel called bio gas. Biogas originates from biogenic material and is a type of bio fuel.

Paulin House

In India traditional farming is prevalent, but now new farming technology like paulin house farming provides better income in a short period of time with less labour. Paulin house farming is an alternative new technique in agriculture, gaining foot hold in rural India. It reduces dependency in rain fall, and makes the optimum use of land and water resources. Paulin house farming can help the farmer to generate income around the year by growing multiple crops like vegetables and flowering plants suited to the paulin house condition. It is now an established fact, that paulin house intervention is capable of enhancing production and productivity of horticultural crops. There is a tremendous scope of adoption of paulin house technology in the region. The harvested rain water can be used to irrigate winter season vegetables, through micro irrigation system to enhance productivity

and profitability. More intensive efforts in the form of demonstration and sensitization are needed to popularize these technologies. Owing to the poor economic condition of the farmers of the region, more assistance and low cost technologies may find favourable.

Pisiculture

There is an increasing demand for fish and fish protein. Fish farming in controlled or under artificial conditions, has become the easier way of increasing the fish production. Farmers can easily take up fish culture in village ponds, tanks or any other water body and can improve their financial position substantially. Even seasonal ponds can also be utilized for fish farming of short durations. It also creates gainful employment for skilled and unskilled youths.

Apiculture

Honey bee farming is a great way to reduce unemployment in rural areas. This also increases the availability of pure and natural honey. Incorporating honey bee farming in current farming is always a sustainable method of farming. Honey bee farming in rubber plantations increases the income from rubber plantations by spending small amount of money and time. Rubber trees are great source of honey. Various Government agencies like Rubber Board, National Horticulture Board, NABARD, Khaddi Board etc give training and assistance to promote bee keeping.

Marketing society

It is proposed to constitute an agriculture and horticulture products collection centre, in order to enable a good marketing system in the watershed area. As the majority stakeholders are farmers, the benefits directly increase the income levels of all the households engaged in the agriculture.

XV. LIVELIHOOD ACTIVITIES

Studies on women's contribution to household income reveal that, women tend to contribute a higher proportion of their income for family sustenance, while men spend more for their personal comforts. Several programmes have been introduced by the central and state governments by recognizing that women empowerment, is the best strategy for poverty alleviation and for ensuring gender equality. To be empowered, it is imperative that women mobilize and organize themselves. When group of women do this process together, they reinforce each other, and the strength of the collectiveness has a great role to play. Through this they are able to identify their own problems and priorities.

Integrated Watershed Management Programme (IWMP) is also focused to deal with rural poverty. Developing Community Based Organizations (CBOs) will assist the rural poor not only soil and water conservation measures, but also to improve their livelihoods. Livelihood plans under IWMP in Cherpu Block Panchayath also aims to improve peoples participation and facilitation of better livelihood opportunities for the marginalized.

OBJECTIVES

- To improve the socio economic status of the people inhabited in the watershed areas.
- To create employment opportunities for the stakeholders, both men and women.
- To eliminate the migration of the inhabitants due to lack of employment opportunities.
- To empower women through generating income for their families and through offering a distinctive status for women either as entrepreneurs or as leaders.
- Goat Rearing, Horticulture (Kitchen Gardens), Nursery, Bee keeping, jack fruit drier, mushroom cultivation, are some of the proposed livelihood activities in the watershed areas under the IWMP project.

The proposed activities are given below:

Goat Rearing

Goat farming is an important component in dry land farming system. It is one of the techniques to improve the economy of rural farming community. Hybrid goat rearing has been found to be highly remunerative, compared to rearing other farm animals, and it is advocated as a better substitute of livelihood for the rural poor.

Piggery

Introduction of cross breed pigs to farmers is another recommendation. Pig farming will provide employment opportunities, to seasonally employed rural farmers and supplementary income to improve their living standards.

Ornamental Fish Farming

Ornamental fish sector shows 15 % growth every year. The main attraction of this sector is the existence of huge domestic market. The growing interest in aquarium fishes has resulted in steady increase in aquarium fish trade, globally. Many people are earning decent money, through ornamental fish farming. Many of the ornamental fishes are easy to breed. Some of these are rare, difficult to breed and expensive. Most of the exotic species can be bred and reared easily, since the technology is simple and well developed. At present the market is mainly domestic and the demand is increasing steadily. The export market for indigenously bred exotic species is also fast growing and encouraging.

Majority of the production goes to domestic market and to some extent, for exporting. Knowledge about the different aspects of this industry can help the farmer to reduce risk factors. Experience is the key factor for the success in this industry. Careful selection of the breeds, maintenance of water, disease treatments etc play major roles.

Jackfruit Drier

Food drying is one of the oldest methods of preserving food for later use. The jack fruits can be cleaned, dried, graded and packed at the village level and fetch better price in the market during off season. Equipments like jackfruit drier will be provided after training.

Nursery

A nursery is a place where plants are propagated or grown to usable size. Nurseries are proposed in the area under the IWMP project, SHGs will select to involve in this activity in each watershed area.

Mushroom Cultivation

Mushroom has a good overseas market, in which the present contribution of India is negligible. In the domestic market the availability of mushroom is limited to cities and big towns only. Mushrooms can be marketed either fresh or after dehydration. There is huge international demand for dried mushroom. Mushroom has good nutritional potential and has wider acceptance in markets.

Umbrella Unit

Umbrella unit is very apt livelihood activity in the watershed areas. It doesn't need high infrastructure facilities, much raw materials and initial investments. Umbrella unit involves small budget and can run by small group of people and the demand of umbrellas are constant in every seasons. So the people engaged in umbrella units can raise their income level.

Rubber Band Production Unit

Rubber band manufacturing unit is another productive livelihood activity in the watershed area as the raw material ie, 'rubber' is cheaply available, and it does not need much infrastructure facilities. A small group of people can easily maintain the unit and make profit easily.

Poultry Farm

Poultry farming is the raising of domesticated chickens, for the purpose of meat or eggs for food. The manure from poultry can be used to manure crops. Poultry rearing does not require much infrastructure facilities.

Emu farm

Emu farming is also proposed in the project area to meet the demand of meat, since it is much cheaper than other sources of meat.

XVI.SCOPE FOR CONVERGENCE

Convergence with various programmes and Line Departments

Horticultural Department

The project activities of Integrated Watershed Programme Management Project in Cherpu are also converged with activities of various departments and other schemes in the areas. The watershed development activities can be classified into Natural Resource Management, Livelihood enhancement activities and Production system and Microenterprises. All these activities are converged with other ongoing schemes in the Block Panchayath like MNREGA and other line departments. The convergences with other schemes will help to reach the project activities to maximum stakeholders.

The main objectives and reasons for seeking convergence are:

- Avoid duplication of efforts and redundant actions.
- Enable sharing of resources for common objectives.
- Enhance effectiveness of programme delivery.
- Improve quality of service provided.
- Develop effective linkage with various development initiatives.
- Help to identify new opportunities and options.
- Ensure transparency and accountability in governance.
- Result in the effective monitoring of outcomes

Merits of Convergence

Increase in Social Capital: Collective planning and implementation among different stakeholders will enhance social capital. This will also improve management and work output.

Increase in Physical Capital: The process will aid in creating durable assets and will also improve land productivity.

Facilitation of Ecological Synergies: Regeneration of natural resource base through different activities such as, afforestation, drought proofing, flood proofing etc will lead to the effective use of resources.

Enhance economic opportunities: Income opportunities, savings and investments may be generated through activities.

Strengthen Democratic Processes: Convergence awareness and planning at the grass root level will lead to greater ownership of projects.

Facilitate Sustainable Development: Convergence efforts through creation of durable assets, rural connectivity, productivity enhancement and capacity development lead to sustainable development.

Convergence Agencies

The list of Convergence Agencies is given below:

Gramapanchyat
Forest Department
Animal Husbandry Department
Horticulture Department
Agriculture Department
Khadhi and village industries
Fisheries
Small scale industries
Sujitwa Mission

Table 24 Estimate of NRM activities with convergence

Integrated Watershed Management Programme										
Cherpu Block Panchayath										
Total NRM activities consolidation with convergence (2014-2017)										
IWMP					Convergence					
Sr No	Activites	Rate	Unit	Total Nos	IWMP Fund (in lakhs)	Rate	Total units	Unit	Convergence Fund (in lakhs)	Convergence Agency
Natural Resource Management (NRM)										
1	Ramp construction		Nos	3	1.495					
2	Pond side protection		M	297.5	15.405		191	M	51.63	MGNREGS
3	Stream side protection		M	300	12.505		3770	M	178.76	MGNREGS
4	Pond desilting		M	225.5	8.66		92	M	10.16	MGNREGS
5	Stream desilting		M	4875	27.855		1950	M	7.09	MGNREGS
6	Well renovation		Nos	28	10.45		28	Nos	15	MGNREGS
7	Sluice construction		Nos	4	10.07		2	Nos	8.48	MGNREGS
8	Stream construction		M	280	10.4					
9	Shutter construction		Nos	3	1.57		1	Nos	0.425	MGNREGS
10	Paddy field weed removal		M	250	5.845					MGNREGS
11	Pond renovation		Nos	14	22.1					
12	Rain shelter		Sq.ft	400	4.2					MGNREGS
13	Vegetable seedlings				1.8					Horticulture mission
14	Horticulture (25 cents below)	1060	Nos	5231	55.4483	1060	22500	Nos	238.5	Horticulture mission
15	Horticulture (25 cents above)	2250	Nos	405	9.1125	2250	5871	Nos	132.09	Horticulture mission
16	Horticulture (25-50 cents)	2250	Nos	1240	27.9	2250	6875	Nos	154.6875	Horticulture mission
17	Horticulture (50 cents above)	3050	Nos	176	5.368	3050	12000	Nos	366	Horticulture mission

18	Well recharging		Nos		10000	197	Nos	19.7	MGNREGS
19	Coconut trenching		Nos		62	5000	Nos	31	MGNREGS
20	Coconut multching		Nos		28	50000	Nos	14	MGNREGS
21	Compost pit		Nos		230	6268	Nos	14.4164	MGNREGS
22	Tree planting		m2		5	4193	Nos	0.20965	MGNREGS
23	Rainwater harvesting tank		Nos		50000	34	Nos	17	MGNREGS
24	Fodder grass		Nos		22.6	7527	M2	1.70069	MGNREGS
25	Bio fencing		M2		16.4	7675	M2	1.258	MGNREGS
26	Bunds along paddy fields		M		21	6900	M	1.44876	MGNREGS
27	Percolation pit		Nos		377	5036	Nos	18.985	MGNREGS
	Balance				0.1103				
Total NRM					230.29			1279.834	

Table 25 Estimate of PSM Activities with convergence

Production System and Microenterprises (PSM) 2014-2017											
		PSM Action Plan 2014-17									
		Total area : Ha		3427		Total IWMP fund : lakhs		41124000			
		Treatable Area : Ha		3427		Total NRM fund : Lakhs		4112400			
		IWMP					Convergence				
Sr No	Particulars	Nos	Unit	Rate/Unit	IWMP Fund	WDF (20%)	Nos	Unit	Rate	Fund from other agencies	Agency
1	Bio-gas plant @15000/1m3	81	Nos	15000	1215000	243000	200	Nos	15000	1275000	Sujitwa mission
2	Coconut Dwarf Chavakkad	4532	Nos	75	339900	67980	9606	Nos	75	337500	Krishi bhavan
3	Cow Rearing (2 cow per house hold)[1 group]	50	House hold(4 groupx5pax=20 pax)(one cow each)	24000	1200000	240000	60	House hold	40000	1120000	Animal Husbandry
4	Shelter (Renovation)				0	0	60	Household	10000	200000	MNREGS
5	Vegetable cultivation (25 grow bag)	2716	Nos	500	1358000	271600	9325	Nos	500	1750000	Krishi bhavan
6	Bee -Keeping				0	0	165	Nos	7000	1155000	Rubber Board
7	Nutmeg						1900	Nos	450	855000	SHM
8	Ginger						1800	cent	50	90000	SHM
9	Turmeric						1800	cent	50	90000	SHM
10	Poly House						9	NO	10000	90000	SHM
Total					4112900	822580				6962500	

Table 26 Estimate of LH Activities with convergence

LH Activities Action Plan 2014-17													
Total area : Ha		3427		Total IWMP fund : lakhs		41124000							
Treatable Area : Ha		3427		Total NRM fund : Lakhs		3701160							
Consolidation of Livelihood Activities with Convergence													
Arattupuzha watershed													
Seed Money= 1375000									Convergence				
SI no	Activity	No of Beneficiaries	Unit	Rate/ group	Total	Funds from IWMP	Bank Loan	Total	Volume	Rate	Fund from other Agencies	Convergence Agency Name	Total Cost
1	Malabari Goat (10 no/ group)(1group =5 pax) ((one year old+avg 20 Kg)	118	Group	80000	9440000	2950000	6490000	9440000	120	80000	9600000	Animal Husbandry	3520000
2	Shelter(3 feet from ground: 4x10ft)					0	0	0	170	6000	1020000	MNREGS	1020000
	unforseen Amount							0					
	Total					2950000		9440000					
IWMP Fund = 751160													
SI no	Activity	No of Beneficiaries	Unit	Rate	total	Funds from IWMP	Bank Loan	Total	Volume	Rate	Fund from other Agencies	Convergence Agency Name	Total Cost

3	Backyard Poultry Rearing(10 hen@90 Rs)(1.1/2 months old)	391	Household	900	351900	175950	175950	351900	430	900	387000	Animal Husbandry	738900
4	Backyard Poultry Rearing Cage((3 feet from ground 1.1/2sq ft)	374	Household	3000	1122000	561000	561000	1122000	560	2000	1120000	MNREGS	2242000
5	Rabbit Farming(4 rabbit each with 6 monthold 3 female+1male)(@500 each)								100	2000	200000	Animal Husbandry	200000
6	Cage of Bamboo for 4 No(@4000 Rs)								100	4000	400000	Animal Husbandry	400000
7	Fish Farming								20000	5	100000	Animal Husbandry	100000
8	Heifer								50	10000	500000	Fisheries	500000
	unforeseen amount					14210		3050				Animal Husbandry	3050
Total					1473900	751160	736950	1476950			2707000		4183950

XVII.MICRO WATERSHEDS

Arattupuzha Watershed

Table 27 Location and Extend of Arattupuzha Watershed

1	Name of the Block	Cherpu Block Panchayat
2	Name of the District	Thrissur
3	Name of Panchayat	Cherpu :9,10,11,12,13,14,15,16,17 Vallachira: 5,6,7,8,9,10,11(P) Chazoor : 9(P)
4	Block	Cherpu ,Anthikad Block
5	Geographical Location	
	Longitudes	10°26'44.083"N 10°24'8.175"N 76°11'0.654"E 76°14'27.781"E
	Latitudes	10°28'48.233"N 10°25'46.53"N 76°13'1.388"E 76°16'13.698"E
6	Geographical Area of the Watershed	1475 Ha
7	Watershed and Watershed codes	Arattupuzha [17k8a]
8	Major Water Source	Chapakayal Thodu
9	River flowing nearby the watershed area	Manali,Karavannur
10	Livelihood Options	Agriculture, Animal Husbandry, Business, Wages, Govt. Job

Watershed Character- Arattupuzha Watershed

Relief	Normal to Subnormal
Drainage	Well Drained
Average Slope	Nearly level to steep

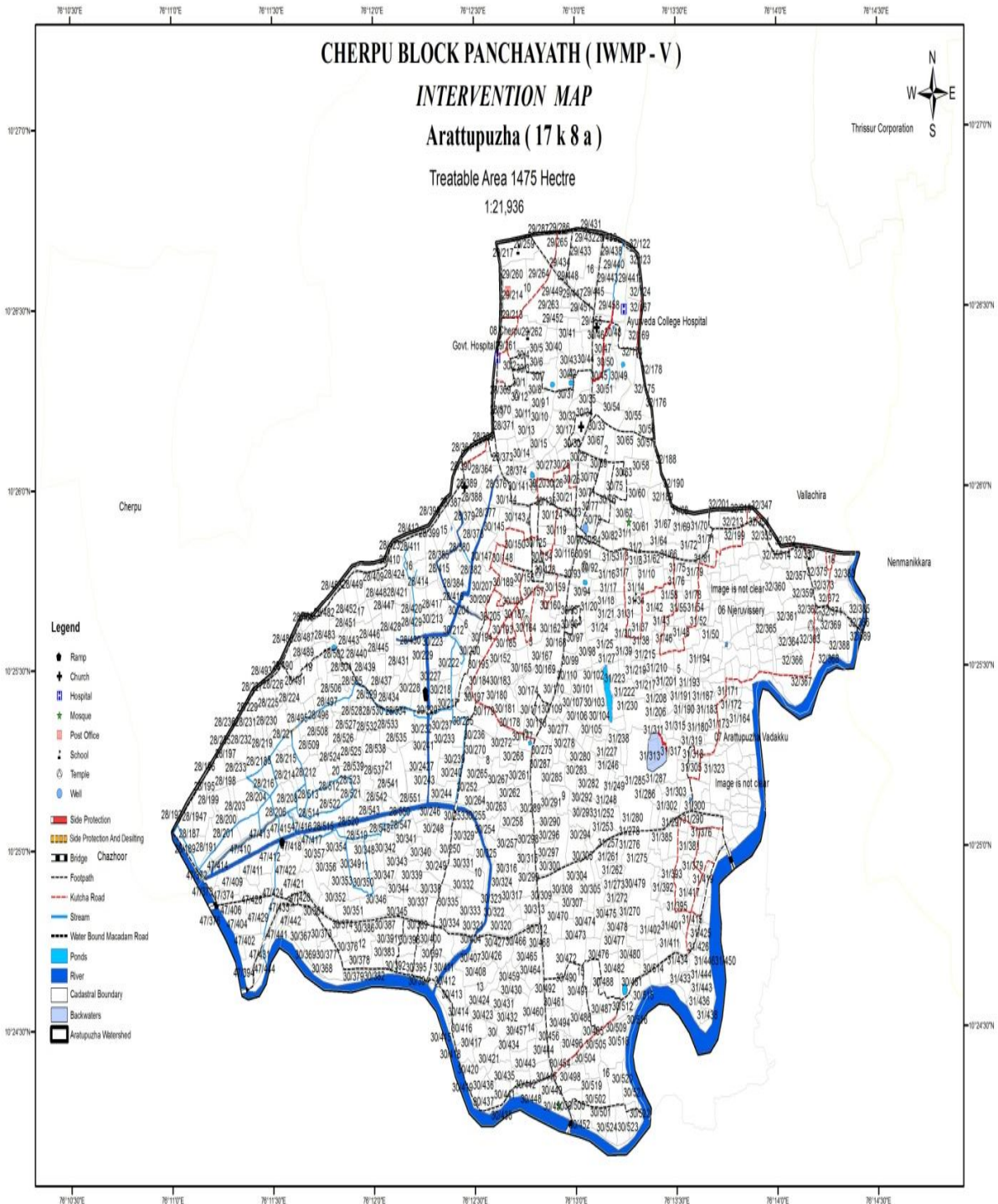
CHERPU BLOCK PANCHAYATH (IWMP - V)

INTERVENTION MAP

Arattupuzha (17 k 8 a)

Treatable Area 1475 Hectre

1:21,936



Legend

- Ramp
- ✙ Church
- 🏥 Hospital
- 🕌 Mosque
- 📮 Post Office
- 🎓 School
- 🏛️ Temple
- 🕒 Well
- 🛡️ Side Protection
- 🛡️ Side Protection And Desilting
- 🌉 Bridge Chazhoor
- 👣 Footpath
- 🛤️ Kutcha Road
- 🌊 Stream
- 🛣️ Water Board Macadam Road
- 🟦 Ponds
- 🌊 River
- 📏 Cadastral Boundary
- 🟩 Backwaters
- 🟩 Arattupuzha Watershed

Pulakkattukara Watershed

Table 28 Location and Extend of Pulakkattukara Watershed

1	Name of the Block	Cherpu Block Panchayat
2	Name of the District	Thrissur
3	Name of Panchayat	Nenmanikkara : 1,2,10,11,12,13,14,15 Vallachira: 1,2,3,4,11(P),12,13,14 Avinisseri:6,7,8 Cherpu:7(P) Puthur: 19(P)
4	Block	Ollukkara Block
5	Geographical Location	
	Longitudes	10°28'48.233"N 10°25'46.53"N
	Latitudes	76°13'1.388"E 76°16'13.698"E
6	Geographical Area of the Watershed	1421 Ha
7	Watershed and Watershed codes	Pulakattukara Water Shed [17k9a]
8	Major Water Source	Thalore Kayal Thodu
9	River flowing nearby the watershed area	Manali, Karavannur
10	Livelihood Options	Agriculture, Animal Husbandry, Business, Wages, Govt. Job

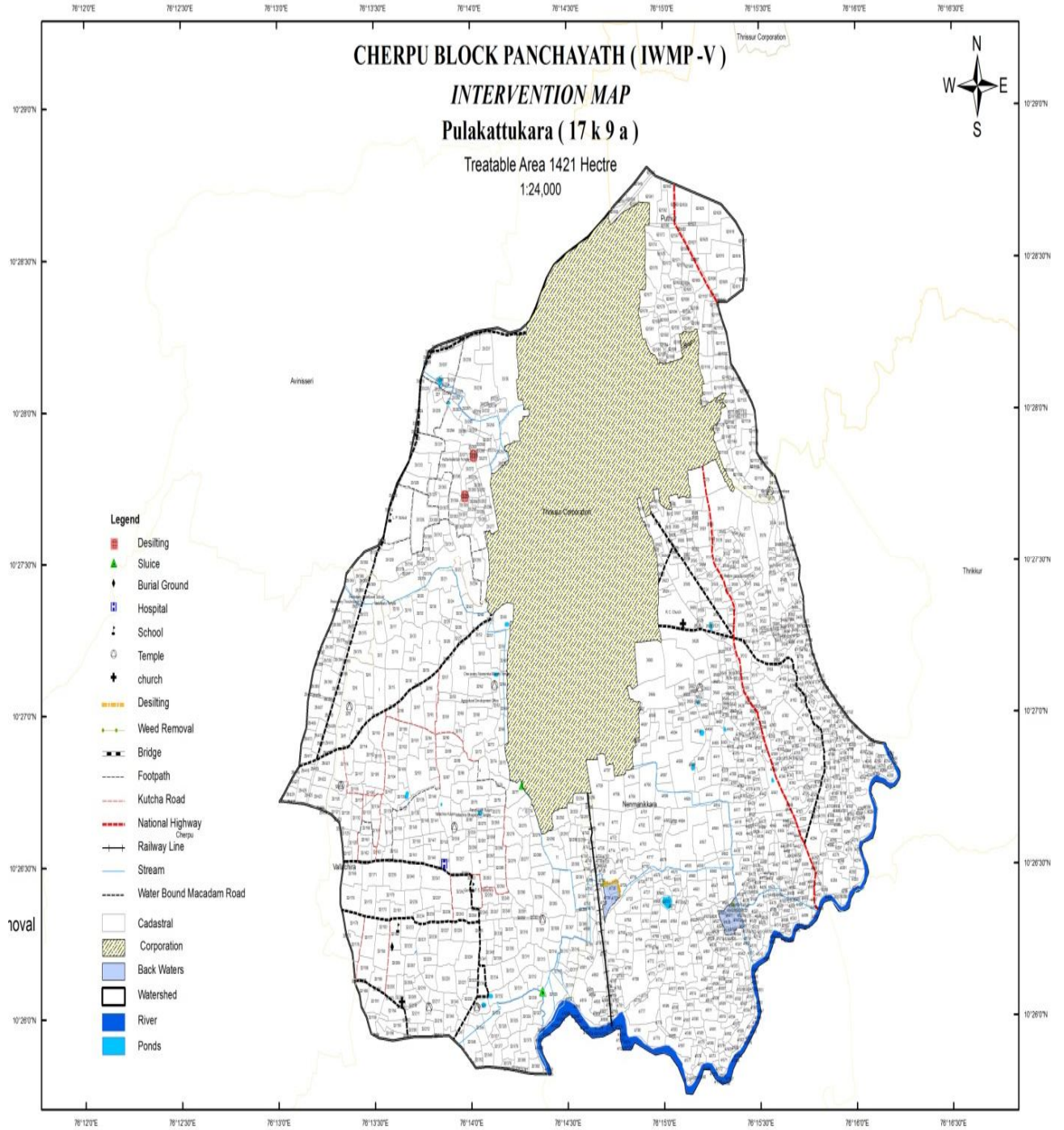
Watershed Character - Pulakattukara Watershed

Relief	Normal
Drainage	Well Drained
Average Slope	Nearly level to Moderately steep to steep

CHERPU BLOCK PANCHAYATH (IWMP-V)

INTERVENTION MAP
Pulakattukara (17 k 9 a)

Treatable Area 1421 Hectre
1:24,000



Legend

- Desilting
- Sluice
- Burial Ground
- Hospital
- School
- Temple
- church
- Desilting
- Weed Removal
- Bridge
- Footpath
- Kutcha Road
- National Highway
- Railway Line
- Stream
- Water Bound Macadam Road
- Cadastral
- Corporation
- Back Waters
- Watershed
- River
- Ponds

Madavakkara Watershed

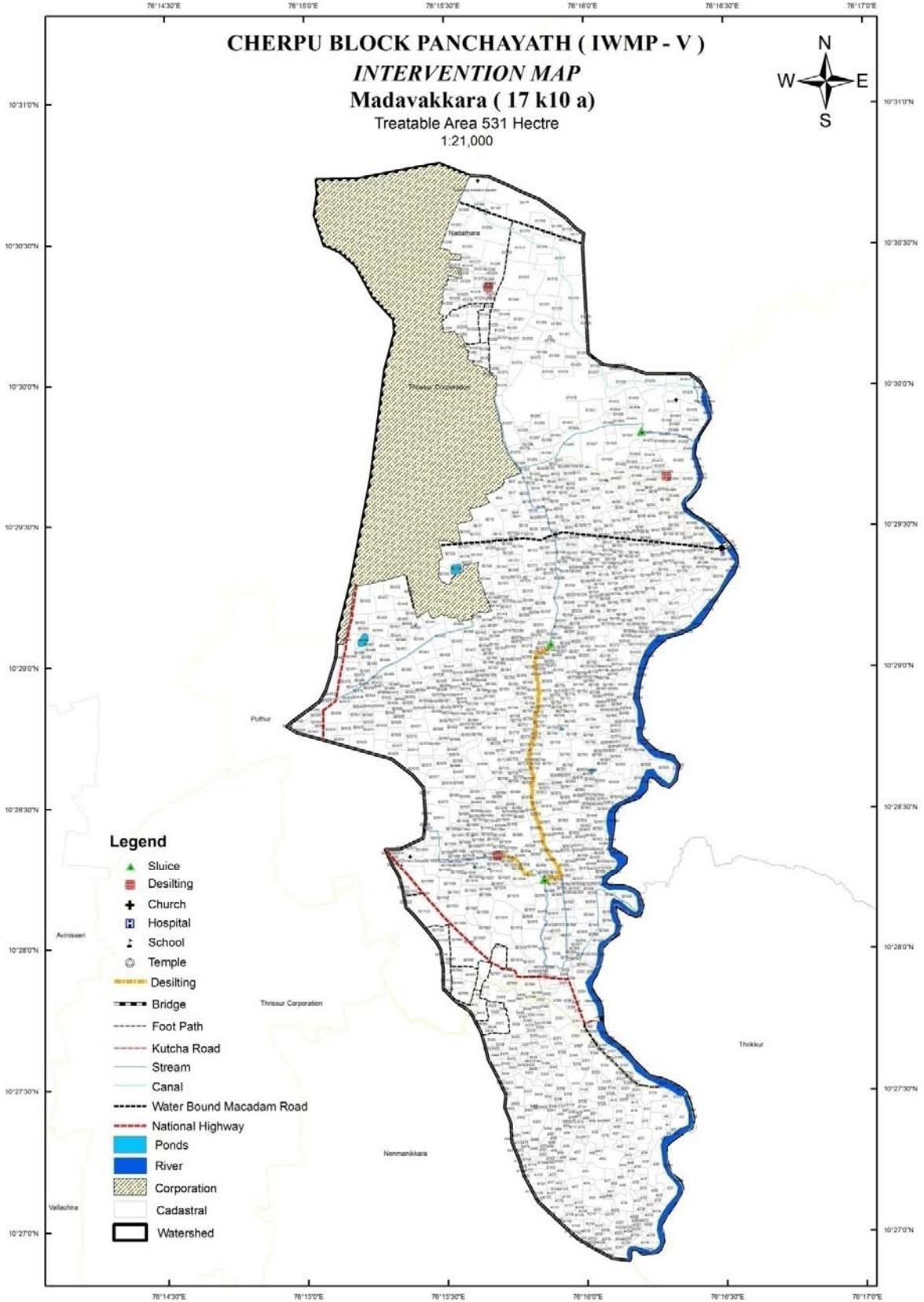
Table 29 Location and Extend of Madavakkara Watershed

1	Name of the Block	Cherpu Block Panchayat
2	Name of the District	Thrissur
3	Name of Grama Panchayat	Nenmanikkara: 3,4 Puthur: 17,18,19(P),20,21,22(P),23 Nadathara :14(P),15,16,17(P) Thrikkur: 1,2(P)
4	Block	Kodakkara ,Anthikad Block
5	Geographical Location	
	Longitudes	10°30'50.725"N 10°26'54.715"N
	Latitudes	76°14'55.194"E 76°16'34.345"E
6	Geographical Area of the Watershed	531 Ha
7	Watershed and Watershed codes	Madavakara [17k10a]
8	Major Water Source	Kalapada Thodu
9	River flowing nearby the watershed area	Manali,Karavannur
10	Livelihood Options	Agriculture, Animal Husbandry, Business, Wages, Govt. Job

Watershed Character - Madavakkara Watershed

Relief	Subnormal
Drainage	Well Drained
Average Slope	Very gently slopping to Moderately slopping

CHERPU BLOCK PANCHAYATH (IWMP - V)
INTERVENTION MAP
Madavakkara (17 k10 a)
 Treatable Area 531 Hectre
 1:21,000



XVIII.WATERSHED DEVELOPMENT FUND

One of the mandatory conditions for selection of villages in Watershed Development Programmes is people's contribution towards Watershed Development Fund (WDF). The contributions to WDF shall be a minimum 10% of the cost of works executed on individual lands. However, in case of SC/ST and persons identified below the poverty line, the minimum contribution shall be 5% of the cost of works executed on their lands. Contribution to the Fund in respect of community property may come from all the beneficiaries, which shall be a minimum of 5% of the development cost incurred.

It should be ensured that the contribution comes from the beneficiary farmers and is not deducted from the wages paid to the labourers who are engaged to treat the private lands. These contributions would be acceptable either in cash/ voluntary labour or material. A sum equivalent to the monetary value of the voluntary labour and materials would be taken from the watershed project account and deposited in this Fund. The Gram Panchayat shall maintain the Watershed Development Fund separately. The Chairman and Secretary, Gram Panchayat will operate the WDF account jointly. Individuals as well as community organizations should be encouraged to contribute generously to this Fund. The proceeds of this Fund shall be utilized in maintenance of assets created on community land or for common use after completion of project period. Works taken up for individual benefit shall not be eligible for repair/maintenance out of this Fund.

XIX. EXPECTED OUTCOME FROM EACH INTERVENTION

Employment

Seasonal employment has always been a problem in the village. Most of the villagers are engaged in agriculture and allied activities. However, the availability of water is very low. Lack of fodder makes animal husbandry very difficult too. So animal husbandry does not keep them engaged full time. Thus the people mainly depend upon casual labour either in the village itself or outside it.

The project plans for creation of both wage employment and self employment opportunities. Wage employment would be created by engaging people in physical works. Self employment would be created by providing the people with cash support in the form of direct livelihood activities like agriculture, animal husbandry and enterprise development.

1) Employment

S I N O	Names of Watersh eds	Wage Employment										Self Employment				
		No of man days in '00s					No of beneficiaries					No of beneficiaries				
		SC	S T	Oth ers	Wo men	To tal	SC	S T	Oth ers	Wo men	To tal	SC	S T	Oth ers	Wo men	To tal
1	Arattupu zha	10 50	0	150 0	750	33 00	10 50	0	150 0	750	33 00	52 5	0	750	375	16 50
2	Pulakkatt ukara	60 6	1	120 0	550	23 57	60 6	1	120 0	550	23 57	30 3	1	600	275	11 78
3	Madavak kara	34 4	60 0	500	250	16 94	34 4	60 0	500	250	16 94	17 2	0	250	125	54 7
	Total	20 00	6 1	320 0	155 0	73 51	20 00	6 1	320 0	155 0	73 51	10 00	1 1	160 0	775	33 75

2) Seasonal Migration

SI No	Watershed	No:of persons migrating	No of days per year of migration	Major reasons for migrating	Expected reduction in no of persons migrating
1	Arattupuzha	370	300	Lack of job opportunities in the agriculture and allied sectors. Low productivity and poor income from land. Rural economic activities getting weakened. Weak infrastructure and support services for agriculture. Better livelihoods, changing life styles.	110
2	Pulakkattukara	510	300		110
3	Madavakkara	205	300		60
	Total	1085			280

Ground Water Table

Watershed areas get enough rainfall but demand for ground water has been increasing all the time because of the geographical specialties. Proper water harvesting structures and percolation tanks would go a long way in increasing water table depth.

3) Water related outcomes:

SI No	Watershed	Sources	Pre project level	Expected post project level
1	Arattupuzha	Open wells	6	5
		Others – Ponds	3	2
2	Pulakkattukara	Open wells	8	7
		Others – Ponds	4.5	5
3	Madavakkara	Open wells	7	5
		Others – Ponds	4	3

4) Drinking Water

Majority of the people in the watershed area suffer lack of drinking water especially in summer seasons. As a result of watershed development activities, it is expected that the quantity and quality of drinking water would improve.

SI No	Watershed	Availability of drinking water		Quality of drinking water		Comments
		(no. of months in a year)		Pre-project	Expected Post-project	
		Pre-project	Expected Post-project			
1	Arattupuzha	10	12	The chemical quality of groundwater is generally good in both phreatic as well as deeper fractured rock aquifers.	Expected Post-project	Artificial recharge schemes should be practiced in large scale along with rainwater harvesting.
2	Pulakkattukara	11	12			
3	Madavakkara	9	10			

5) Crops

Agriculture primarily depends upon water availability but this is what is lacking in Cherpu Block Panchayath. This problem can be changed with the land and water management interventions in the project area. The earthen bunds and rain water harvesting systems help to percolate water to underground and preserve moisture in the soil. This will help additional area coming under cultivation and increasing productivity too.

SI No	Name of the crop	Pre - Project Status		Expected Post - Project Status	
		Area (ha)	Productivity (ton)	Area (ha)	Productivity (ton)
1	Coconut	600	1400	800	1864
2	Paddy	360	1728	500	2456
3	Nutmeg	110	33	150	45
4	Banana	700	17505	800	19365
5	Tapioca	100	1426	120	1756
6	Vegetable	50	255	60	325
7	Tuber crop	25	246	35	326
8	Fruits	20	186	25	238
9	Arecanut	30	33	35	38.5
10	Pepper	25	9	35	12.6

6) Horticulture

Sl. No.	Names of Watershed	Name of Crop	Existing area under horticulture (ha)	Expected Achievement (ha)	
				Area under horticulture proposed to be covered through IWMP	Change in area under horticulture
1	Arattupuzha	Vegetables and Fruits	20 Ha	25 Ha	Produce Good Crops and increase productivity
2	Pulakattukara	Vegetables and Fruits	20Ha	25Ha	Produce Good Crops and increase productivity.
3	Madavakara	Vegetables and Fruits	10 Ha	10 Ha	Produce Good Crops and increase productivity.

7) Livestock

The watershed areas have poor livestock population. The interventions like provision of good quality cows and buffalos, the establishment of a fodder bank and other such related activities would spur up the dairy development in the villages. It is expected that the post project period would see a substantial increase in livestock population and yield from them.

No	Name of the Animal	Current Status (No)	Expected post project status (No)
1	Cow	3303	3403
2	Goat	2287	2400
3	Hen	36530	40000
4	Buffalo	453	460

XX. EXIT PROTOCOL

While preparing the detailed Action Plan/Treatment Plan, the Gram Sabha/Gram Panchayat, under the technical guidance of WDT, shall evolve proper Exit Protocol for the watershed development project. The Exit Protocol shall specify a mechanism for maintenance of assets created, augmentation including levy and collection of user charges, utilization of the Watershed Development Fund etc. Mechanism for equitable distribution and sustainability of benefits accrue under the watershed development project should also be clearly spelt out in the Exit Protocol. While approving the Action Plan for the watershed, the ZP/DRDA shall ensure that the detailed mechanism for such Exit Protocol forms part of the Action Plan/Treatment Plan.

The active intervention period of most of the projects is about five years after which the PIA is expected to withdraw and move to other watersheds/areas. Maintenance of the infrastructure was a serious handicap prior to the concept of people's participation. All contributions mentioned previously were kept in a separate account called the Watershed Development Fund (WDF) in the name of the watershed associations to be operated after the exit of the PIA. Wherever participants could be convinced about the philosophy of cost-sharing, overall contribution per watershed went beyond 5-10 per cent of the stipulation since it was meant for the welfare of the community and the maintenance of the infrastructure created under the watershed programme. Despite several guidelines, this aspect is not dealt with adequately till date. Hence, in most of our sample watersheds the WDF has not been utilized fully. Due to changes/replacement of political/elected representatives in the local bodies and lack of proper guidance to Watershed Committees this account remains unutilized with the PIA. So the following must be kept after withdrawal – 1. Must have an office in each watershed to continue the process. 2 All NRM activities in the concerned area to be followed on accord of WC. 3 A paid secretary to be maintained in each watershed.