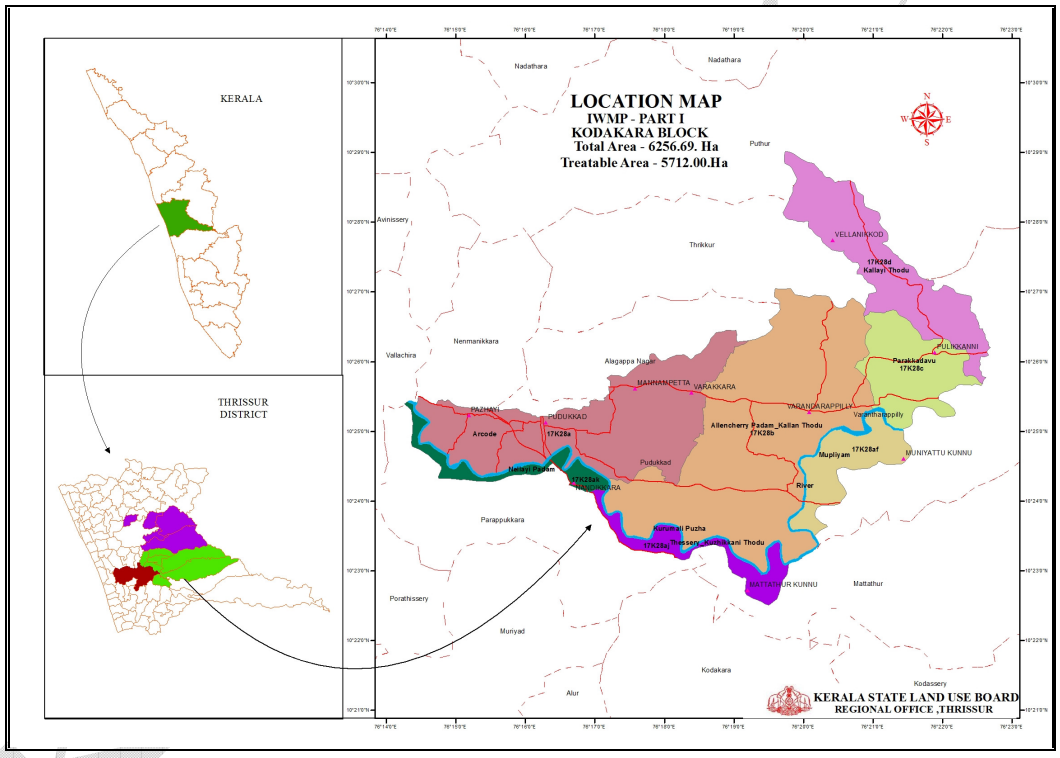
IWMP KODAKARA (IWMP - 1)

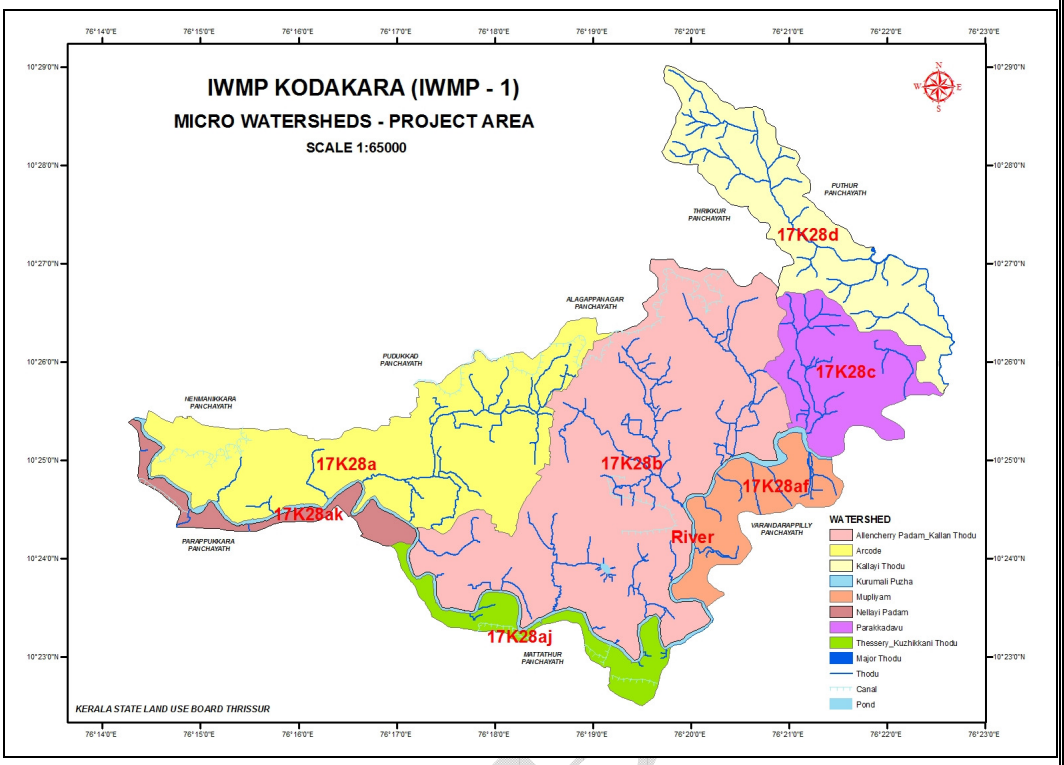
Location of the Project

Kodakara (IWMP-1) project area is mainly located in Mukundhapuram Taluk of Thrissur district of Kerala State. A small portion of the project area is also located in the Thrissur Taluk. The project is a cluster of seven micro watersheds viz.17K28a (Arcode padam), 17K28b (Allcncherry padam – Kallan thodu), 17K28c (Parakkadavu), 17K28d (Kallayi thodu), 17K28af (Mupliyam), 17K28aj (Thessery – Kuzhikkani thodu) & 17K28ak (Nellayi padam). These watersheds are situated on either banks of Kurumali River from Parakkadavu, in Varandharapilly Panchayat, to Palakkadavu, in Parappukkara Panchayat. The total area of the project is 6256.69 ha, of which 5712 ha is proposed to be treated under Integrated Watershed Management Programme (IWMP).



Watersheds of Kodakara IWMP

No	Watershed code	Watershed name	Area in ha	%
1	17K28a	Arcode padam	1489.12	23.8
2	17K28b	Allcncherry padam – Kallan thodu	2483.11	39.69
3	17K28c	Parakkadavu	568.54	9.09
4	17K28d	Kallayi thodu	896.2	14.32
5	17K28af	Mupliyam	379.5	6.07
6	17K28aj	Thessery – Kuzhikkani thodu	253.92	4.06
7	17K28ak	Nellayi padam	186.3	2.98
Total			**6256.69**	**100**



Details of Watersheds, Panchayats and Area

Sl No	Watershed code	Name of Panchayat	Block Panchayat	Area (Ha)
1	17K28a	Alagappanagar	Kodakara	467.33
		Pudukkad	Kodakara	826.27
		Nenmanikkara	Kodakara	195.52
2	17K28b	Alagappanagar	Kodakara	371.07
		Pudukkad	Kodakara	558.26
		Varandharapilly	Kodakara	1490.1
		Thrikkoor	Kodakara	63.68
3	17K28c	Varandharapilly	Kodakara	568.54
4	17K28d	Puthoor	Ollukkara	340.19
		Varandharapilly	Kodakara	301.2
		Thrikkoor	Kodakara	254.81
5	17K28af	Varandharapilly	Kodakara	379.5
6	17K28aj	Parappukkara	Kodakara	114.26
		Mattathur	Kodakara	139.66
7	17K28ak	Parappukkara	Irinjalakuda	186.3
	Total Project Area			**6256.69**

Watershed information

Name of Project	Kodakara Watershed
Name of Programme	IWMP
Location	$10^0$23' to $10^0$29' North Latitudes and $76^0$14' to $76^0$23' East Longitudes
Block	Kodakara
District	Thrissur
Type of project	Midland
Total Villages	14
Total Gram Panchayat	8
No. of micro watersheds	7
Total Watershed Committees	8
Total Geographical Area	6256.69 Ha
Area available for treatment	6256.69. Ha
Sanctioned Area	5712.00 Ha
Total Sanctioned Cost	685.44 Lakhs
Proposed Budget on Works	514.08 Lakhs
Proposed budget on NRM	383.85 Lakhs
Proposed budget on Livelihood Enhancement	61.69 Lakhs
Proposed budget on Productivity Enhancement	68.54 Lakhs
Cost per Ha (IWMP project)	12000 per Ha
From Project Cost	383.85 Lakhs
From Convergence	80.99 Crores
Agro climate zone	Central midland laterite zone
Major crops	Coconut, Rubber, Banana, Nutmeg
Major slope range	50% with gentle slope and 50% with steep slope
Major streams	Kallayi thodu, Vallanjupadam thodu, Vadamthole – Thottumugham thodu, Palambra thodu, Kallupalam cana thodu, Uzinjalpadam thodu, Nandipulam thodu, Pathikkirichira thodu
River Basin	Karuvannur
Major soil series	Palappilly – Chelakkara association very deep with a solum thickness of more than 100 cm dark reddish brown, sandy clay loam to clay loam texture, strongly acidic
Rainfall	2780.5 mm

Per capita availability of land	0.29 Ha
Small and Marginal farmers	More than 99%
Major option of livelihoods	Agriculture, Animal husbandry, Wage employment
Source of drinking water	Open well, Bore well
Quality of drinking water	Good
Irrigation source	River, Ponds and Open wells
Cattle	Cow, Goat, Backyard poultry
Nearest town	Pudukkad
Name of PIA	Kodakara Block Panchayat
Coordinating Person from PIA	Secretary, Block Panchayat
Address	Kodakara Block Panchayat Office, Pudukkad, Thrissur(dist), pin: 680 301

Budget

The distribution of budget for Kodakara IWMP -1 for the various components as per IWMP guidelines is given below:

No.	Budget component	%	Amount in Rs.
1.	Administrative cost	10	68,54,400
2.	Monitoring	1	6,85,440
3.	Evaluation	1	6,85,440
Preparatory phase			
4.	Entry point activities	4	27,41,760
5.	Institution and capacity building	5	34,27,200
6.	Detailed Project Report	1	6,85,440
Watershed works phase			
7.	Watershed development works	56	3,83,84,640
8.	Livelihood activities for asset less	9	61,68,960
9.	Production system and micro enterprises	10	68,54,400
10.	Consolidation phase	3	20,56,320
	Total	100	**6,85,44,000**

Physiography

The elevation in the project area ranges up to 220 m above msl and the highest elevations are located in the Kallayi thodu watershed. The lowest elevations are <10m and 10-20 m which are mainly paddy fields. The area in general has a hilly topography and excessive relief features.

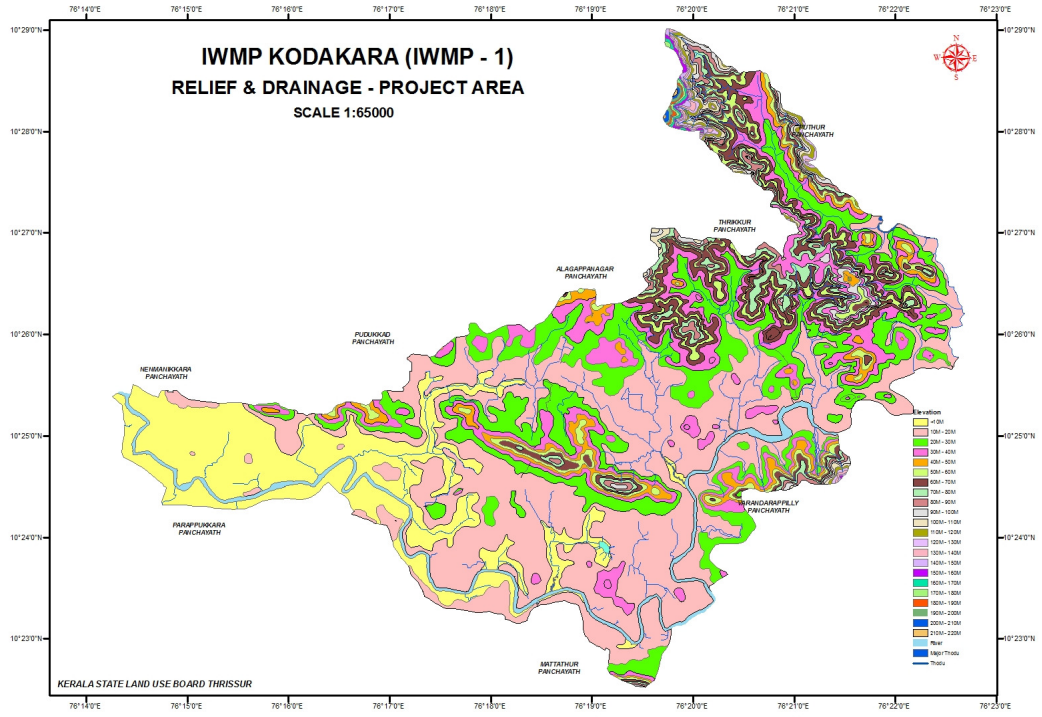
Climate

The project area has a tropical humid climate with an oppressive hot season lasting from January to May followed by plentiful monsoon season starting from June to September. October to December forms the retreating monsoon season

As per the rainfall data from Kerala Agricultural University, Vellanikkara ,Thrissur, the annual rainfall received for the year 2011 was 3465 mm. The district received 2536.8 mm of rainfall during the south west monsoon, and 435.7 mm of rainfall during north east monsoon period.

Relief

The relief of the project area ranges up to 220m above msl. Majority of the project area lies between 10m to 20m above msl. Structural hills and denudation hills with elevations 100 m above from msl are also situated in the project area.



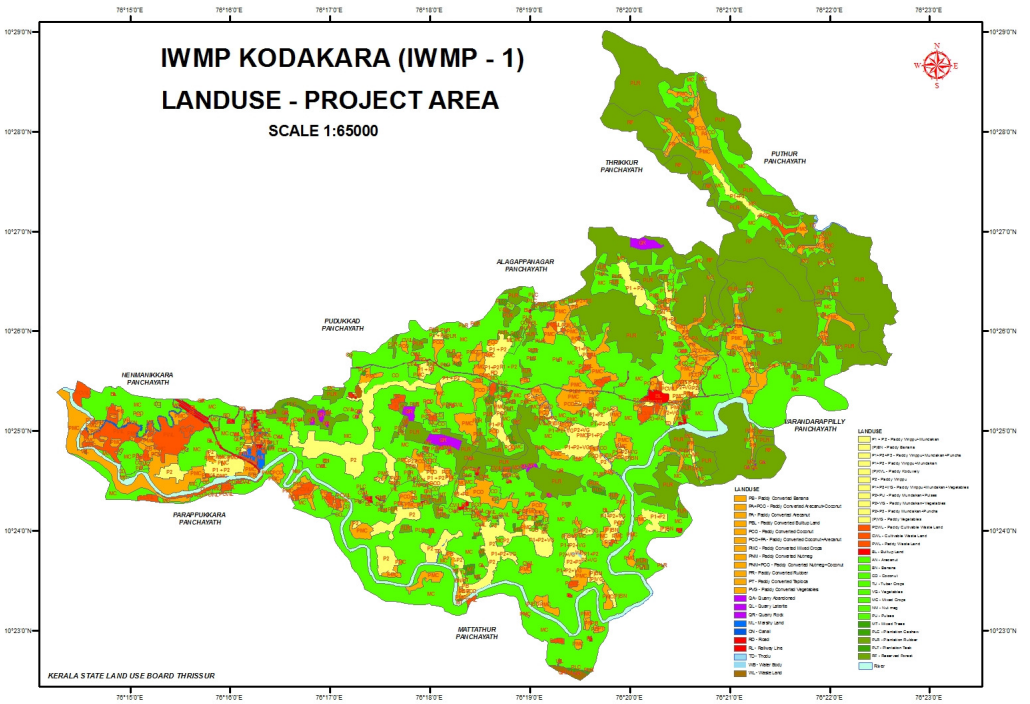
Slope

The project area is divided into six categories of slope. Very gentle slope (0-3% slope) extends to 1645.81 ha, gentle slope (3-5% slope) extends to 1296.62 ha, moderate slope (5-10% slope) extends to 1085.39 ha, strongly sloping slope (10-15% slope) extends to 474.87 ha, steep slope (15-35% slope) extends to 1452.36 ha and

very steep slope (>35% slope) extends to 301.64 ha . Majority of project area comes under very gentle slope.

Landuse

The major land use category mapped in the project area is mixed crops (2815.48 Ha). Mixed crops are the typical homestead cultivation of Kerala wherein the different crop species are grown together that cannot be spatially mapped separately. The second major land use category is rubber plantation (1275.57 Ha). Rice is being cultivated in the valley portions in an area of 554.59 ha during different seasons. 657.56 ha paddy fields are converted to garden land for cultivating other horticulture crops. 52.09 ha paddy fields and 32.43 ha garden lands suitable for cultivation is left uncultivated. Arecanut, coconut, nutmeg and banana are cultivated nominally as monocrops in this watershed.



Geology

The major geological formation of the project area is Archean formation. This comprises of charnockite group of rocks (5666.78 ha), basic rocks (966.29 ha) and migmatite complex (523.61 ha). Majority of the project area falls under charnockite group of rocks. Basic rocks are igneous rocks that are seen as intrusives

Geomorphology

There are nine geomorphologic units in the project area. They are valley fill (937.40 ha), structural hills (86.77 ha), residual mounts (139.72 ha), piedmont zone (2242.97 ha), mud flats (0.09 ha), lower plateau (2358.26 ha), linear ridges (80.71 ha), residual mounts (139.72 ha), denudational and structural hills (59.70 ha)

Soils

The major up land soil association is Palappilly Chelakkara which is distributed in an area of 2663.65 ha followed by Karimkulam Varandharapilly soil association. Palapilly soils are very deep, medium textured, well drained, dark reddish brown loamy soil, developed from gneissic parent materisl. The surface texture ranges from sandy clay loam to clay loam followed by clay loam to clay subsurface horizons. This soil is well drained with moderate slow permeability. This soil is intensively cultivated to rubber, coconut and vegetables. Forest plantation is also present.

Capacity Building

A series of trainings, awareness programmes, user group discussions and brain storming sessions were organized at different levels in all Panchayats and Block level in the project area.

District level Awareness Seminar

District Level awareness seminar on IWMP Programme for watershed based local planning; a one day seminar was organized.

Block level Awareness Seminar

To create awareness on IWMP programme for local planning, a one day seminar on at Kodakara Block Panchayat Hall

Panchayat level Awareness Seminar

Panchayat level awareness seminars were conducted in all the Panchayats included in the IWMP Project

Trainers Training at PIA Level for NHG Formation

One day trainers' training for the formation of NHGs was conducted by TSO at its headquarters (KeralaState Land Use Board office, Thrissur).

Trainers Training at Panchayat Level for NHG Formation

One day training for formation of NHGs within the project area was organized in the Grama Panchayats by TSO for the ward members, selected facilitators and few farmers' representatives

Trainers Training for PRA Survey

One day training was conducted for the facilitators, selected from the Project area, to collect the baseline information with the active involvement of the beneficiaries .The following information was collected through PRA at neighbourhood level of a village

1. Bio physical aspects such as soil type, erodability, incidence of drought, flood etc... Incidence of attack of wild animals, vegetation status with reference to fuel wood, green leaf manure etc.
2. Common property & assets, land use, cultivable fallow, its location, area, use etc.
3. Major crops and cropping systems
4. Major livelihood, livelihood of women, SC

5. Irrigation Facilities
6. Marketing Facilities
7. Micro enterprises, Value addition
8. Existing SHGs, User Groups and their activities
9. Availability of skilled labour and machineries for crop husbandry.

Trainers Training for Net Plan Preparation

One day training was conducted for facilitators and master trainers to collect the detailed information required from individual beneficiaries with the help of Net Plan forms.

1. The existing numbers of horticultural crop & plants and their numbers that can be increased
2. Agro forestry (trees/plants of minor fruits, medicinal, tuber, fodder, green manure, timber value)
3. Fodder (for increasing vegetative cover)
4. Crop demonstration (possible crops and crop management aspects)
5. Soil and water conservation measures (engineering measures)
6. Irrigation source, surface & ground water sources and water conservation structures, methods of improving efficiency of irrigation.
7. Allied activities such as compost, biogas, azolla etc.
8. Rain water harvesting measures
9. Possible livelihood activities, micro enterprises & production system.
10. Animal husbandry present status & expansion possible
11. Paddy (Khariff, Rabi & Zaid crop) existing & possible area of expansion.

Training on Drainage line survey

One day training was organized at Panchayats level to discuss the various interventions to be undertaken on the drainage line and surface water sources. The participants of the training were people's representatives, facilitators of Neighbourhood Groups, master trainers, representatives of user groups such as Padasekhara Samithies, Lift Irrigation etc. coming under the IWMP Project area.

Entry point Activities

A Group Discussion was conducted with watershed Development Committee regarding the EPA. It was conveyed to the neighbourhood level and panchayat level committee that a particular amount was allotted for EPA for each of their villages, which was 4 per cent of total allocated budget

Details of Entry Point Activities are shown in table below.

Details of Entry Point Activities suggested

No.	Name of watershed	Name of Panchayat	Entry Point Activities suggested		IWMP	Convergence	Total
1	17K28a (Arcode Padam)	Nenmanikkara	1. Crop demonstration Vegetable garden in school premises		15000	1500 (BC)	16500
			2. Crop demonstration Cultivation of mali variety of chilli as intercrop in Banana plantation. Tray method of raising seedling of chilli mali variety		41800	4180 (BC)	45980
			3.Repair of foot valve of Lift irrigation scheme		61000	6100 (BC)	67100
			4.Crop demonstration Dry land agriculture paddy		15000	1500 (BC)	16500
			5. Embankment protection of river using bamboo, reed etc.		50000	-	50000
		Pudukkad	1. Planting trees in common properties		4500	-	4500
			2. Embankment protection of river using bamboo, reed etc.		159000	-	159000
		Alagappanagar	1.Brushwood bunding and desiltation of Valanjupadam thodu	Brush Wood Bunding Desiltation	32164 177876	23729 (MNREGS)	357429
				Earthen Bund	123660		
				Total	333700		
			2.Rain water harvesting tank in school		35000	7000 (BC)	42000
			Grand Total		**715000**	**44009**	**759009**
2	17K28b (Allencherry padam_Kallan thodu)	Pudukkad	1. Planting trees in common properties		4500	-	4500
			2. Embankment protection of river using bamboo, reed etc.		135000	-	135000
		Varandharapilly	1.Desiltation of thodu	1. Vadamthol Thotu mukham thodu	538120	-	676504

				2. Kuriyaddi thodu	104904		
				3. Nurukullam thodu	33480		
				Total	676504		
			2.Gully plugging in first order streams		18996	-	18996
			3. Decentralised nursery for Forest species, medicinal plants and bamboo at Centre for National Programme on Conservation of Medicinal Plants and tracing knowledge for enhancing health and livelihood.		100000	-	100000
		Alagappanagar	1.Recharging wells using water diverted from roof top		240000	26664 (BC)	266664
		Grand Total			**1175000**	**26664**	**1201664**
3	17K28c (Parakkadavu)	Varandharapilly	1. Gully plugging of first order streams draining into Pathikiri Chira and repair of sluice for preventing leakage	Sluice Shutter - 1 Repair	68614.32	-	168000
				Sluice Shutter - 2 Repair	57178.5		
				Gully Plugging Type 1	15829.75		
				Gully Plugging Type 2	26377.43		
				Total	168000		
		Grand Total			***168000***	**-**	***168000***
4	17K28d (Kallayi thodu)	Puthur	1.Retaining wall repairing of Anganvadi building		50818	5081.8 (BC)	55899.8
			2.Gully plugging of first order streams (two numbers)		56986.6	-	56986.6
			3.Retaining wall repair as land development work in ST colony		50000	5000 (BC)	55000
			4.Rainwater harvesting tank to ST colony members		105000	10500 (BC)	115500
		Thrikkur	1.Gully plugging(repair) in the first order and second order stream and stabilization using		25829.75	-	25829.75

			bamboo			
			2.Deepening of Kallayi thodu	58365.65	28203.9 (MNREGS)	86569.55
			Grand Total	***347000***	***48785.7***	***395785.7***
5	17K28af (Mupliyam)	Varandharapilly	1. Embankment protection of river using bamboo, reed etc.	12600	-	12600
			2.Well Recharge (22 NOs)	112400	11240 (BC)	123640
			Grand Total	***125000***	***11240***	***136240***
6	17K28aj (Thessery_ Kuzhikkani thodu)	Mattathur	1.Rain water harvesting tank in school	35000	7000 (BC)	42000
			2.Bio gas plant in school 3 m^3	59100	5910 (BC)	65010
			3.Tree planting along the boundary of School ground	900	1600 (MNREGS)	2500
			4. Planting Medicinal plants and trees in Canal Purampoku.	27000	48000 (MNREGS)	75000
			Grand Total	***122000***	***62510***	***184510***
7	17K28ak (Nellayi padam)	Parappukkara	1. Strengthening of irrigation bund by the river side earthen bund and stabilising the same using grass.	89000	1322154.05 (MNREGS)	1411154.05
			Grand Total	***89000***	***1322154.05***	***1411154.05***
Grand Total				**2741000**	**1515362.75**	**4256362.75**

Watershed Development Works

Natural Resource Management (NRM)

Watershed development deals with treatment to the area for soil and moisture conservation and water storage with an objective of sustainable use of natural resources.

Soil and Water Conservation Works

Mainly the watershed development works are divided into two area treatment (including the ridge area) and drainage line treatment. The following treatment measures were planned for different micro watershed suited to slope, soil topography, vegetation and socio economic condition of the locality.

A. Ridge Area Treatment Plans:

The following Mechanical (Engineering) measures were planned as part of area treatment.

1. Strip terraces (platform terraces)
2. *Stone pitched bunds (kayyala)*
3. *Contour earthen bunds*
4. *Field bunding*
5. *Staggered trenches*
6. *Moisture collection pits*
7. Agronomic and biological measures
    - *a. Centripetal terracing and mulching*
    - *b. Tillage*
    - *c. Cover cropping*
    - *d. Horticulture*
    - *e. Agroforestry*
    - *f. Agrostological measure*
    - *g. Biofencing (live hedge)*
8. *Crop Demonstration*

- *Intensification of cropping systems*: area expansion of plantain, vegetables, rehabilitation of pepper, insitu budding in nutmeg.
- *Improving productivity, production and income from cropping systems*: INM of coconut, arecanut, nendran banana, IPM of nutmeg, vegetables, paddy, and crop rotation in paddy fields.

B. Drainage line treatment plans

1. *Water conservation structures in streams*
    a. Gully plugging (loose boulders)
    b. Gabion structure
    c. Brush Wood Check dam
    d. Vented Cross Bars New
    e. Vented Cross Bars Repair
    f. Temporary Check Dam Using Sand Bag

2. *Stream Management Activities*
    a. Geotextiles
    b. Embankment Protection
    c. Side varambu Eartherning
    d. Side wall Protection (DR) New
    e. Side wall Protection (DR) Repair
    f. Widening of Thodu
    g. Deepening of Thodu
    h. Chal Restoration
    i. Brushwood Bunding

2. Water Conveyance Structures in Farm Irrigation
    a. Culvert
    b. Culvert Repair
    c. Inverted siphon (found in irrigation canal)
    d. Drop Structures
    e. Underground Pipe Line Water Distribution System
    f. Canal Desiltation
    g. Canal outlet (Spout) Repair
    h. Sluice New
    i. Sluice Repair
    j. CADA Canals Repair
    k. Under Tunnel Desiltation

3. Other farm structures
    a. Tractor passage (Concrete slab)

C Increasing the storage capacity of surface and subsurface water resources

a. Desiltation of streams, ponds and Public wells.
b. Construction of wells.
c. Recharge of wells.
d. Side wall Protection of Ponds (New)
e. Side wall Protection of Ponds (Repair)
f. Biofencing around Pond

D. Water Harvesting Methods

a. Mini Drinking Water Supply Schemes
b. Rainwater harvesting from rooftop catchments
c. Silpaulin Tank

E. Promotion and propagation of non-conventional energy saving devices

a. Solar LED Street Lighting
b. Solar water heater (SWH) or solar hot water (SHW)

F. Allied Activities

a. Biogas 2 m3
b. Biogas 1 m3 (Portable)

c. *Biogas 1 m3 (Fixed Dome)*
d. *Community Biogas*
e. *Ordinary Compost*
f. *Aerobic Compost*
g. *Vermi Compost*
h. *Pipe Compost*
i. *Azola*

Budget for NRM

The distribution of budget under the natural resources management activities for different micro watersheds as per IWMP guidelines is given below:

No.	Name of micro watershed	Amount in Lakhs
1	Arcode Padam (17K28a)	100.07
2	Allenchery Padam – Kallan thodu (17K28b)	164.55
3	Parakadavu (17K28c)	23.54
4	Kallayi thodu (17K28d)	48.57
5	Mupliyam (17K28af)	17.53
6	Thessery – Kuzhikkani thodu (17K28aj)	17.06
7	Nellayi padam (17K28ak)	12.52
	Total	**383.85**

Livelihood Activities for the Landless / Assetless Households

One of the key features of the watershed development includes focused priority on livelihood activities for landless / assetless persons. This component aims to maximize the utilization of potential generated by watershed activities and creation of sustainable livelihoods and enhanced incomes for households within the watershed area

Mode of Operation

i. The livelihood action plan will be implemented through Self Help Groups and / or their federation.
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.

Funding pattern

The funding pattern adopted is as follows;

1	Grand in aid (Composite loan clubbing grand in aid and bank loan) to	Maximum of 30% of the total fund limited to 50% of the

	enterprising SHGs to upscale/diversify their activities	cost of activity or Rs. 2 lakh whichever is less.
2	Seed money/ revolving fund to existing SHGs and newly formed SHGs for continuing/ undertaking their major livelihood activities.	Initial amount upto a maximum Rs. 25000/-

Capacity Building for Beneficiaries

The capacity building needs of the marginalized communities, including SC/ST, landless / assetless people, women, is also be included in the livelihood action plan prepared after the livelihood analysis.

Major interventions suggested

The activities identified can thus be broadly classed in to the following;

A. Skilled and unskilled labour groups
B. Nurseries
C. Activities that promotes and encourages the major livelihood of the landless, women and SC community of the region.
D. Assistance to labour banks/ agencies that enjoys an undisputable position as the major livelihood donor within the region.

List of activities include

A	1	Plant protection skilled labour groups
	2	Skilled labour group for coconut climbing
	3	Skilled labour group for Mechanised farming
	4	Skilled labour group for Nutmeg insitu budding
	5	Skilled labour Tapping Bund construction
	6	Unskilled labour group
B	1	Nursery (Nutmeg)
	2	Nursery (Tray method vegetable seedling)
	3	Nursery (Fruit Plants)
	4	Nursery (Medicinal Plants)
	5	Nursery (Bamboo)
	6	Nursery (Forest)
C	1	Lease land Paddy farming
	2	Banana (N) cultivation by lease farmers
	3	Vegetable lease cultivation
	4	Mushroom cultivation
	5	Goat rearing
	6	Cattle rearing
	7	Processing Unit
	8	Paddy Farming (Dryland)
	9	Floriculture Marrygold
	10	Floriculture Bush jasmine
	11	Floriculture Anthurium
	12	Bamboo Basket making

	13	Kadalivazha Lease farming
	14	Ginger Turmeric farming
	15	Compost Production
	16	Fodder cultivation
	17	Bee keepnig
	18	Aqua Culture
	19	Arecanut leaf Plate making
	20	Medicinal plant cultivation
	21	Paddy Processing Unit
D	1	Labour Bank of Panchayath – Equipments (Haritha Sena)
	2	Agro Service Centre
	3	Vegetable Market

Budget for LAP

The distribution of budget under the livelihood activities for the landless/asset less households for different micro watersheds as per IWMP guidelines is given below:

No.	Name of micro watershed	Amount in Lakhs
1	Arcode Padam (17K28a)	16.08
2	Allenchery Padam – Kallan thodu (17K28b)	26.44
3	Parakadavu (17K28c)	3.78
4	Kallayi thodu (17K28d)	7.81
5	Mupliyam (17K28af)	2.82
6	Thessery – Kuzhikkani thodu (17K28aj)	2.74
7	Nellayi padam (17K28ak)	2.01
	Total	61.69

Production System and Microenterprices based Livelihood Activities

The main activities falling within the productive sector of this region is broadly classified under four categories;

a) Activities that come under the umbrella of agriculture and horticulture.
b) Activities that come under the perview of animal husbandary
c) Microenterprises based upon the products of the above two categories
d) Activities that promote the sale of products from category A

Major interventions suggested

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

A	1	Paddy Farming IPM + INM
	2	Vegetable Farming (Non pandal)
	3	Vegetable Farming (pandal)
	4	Compost Production

	5	Nursery (Banana)
	6	Mushroom Cultivation
	7	Floriculture Anthurium
	8	Fodder nursery
	1	Backyard Poultry
	2	Cattle rearing (Animals alone)
	3	Goat Rearing
	4	Aqua Culture Tank
B	5	Rennovation of cattle Shed (construction of pucca floor, urine tank & fodder trough for cattle)
	6	Calf Rearing
	7	Rabbit Rearing
	8	Aqua Culture paddy field
C	1	Marketing Centre

Budget for MEP

The distribution of budget under the livelihood activities for the landless/asset less households for different micro watersheds as per IWMP guidelines is given below:

No.	Name of micro watershed	Amount in Lakhs
1	Arcode Padam (17K28a)	17.87
2	Allenchery Padam – Kallan thodu (17K28b)	29.38
3	Parakadavu (17K28c)	4.20
4	Kallayi thodu (17K28d)	8.67
5	Mupliyam (17K28af)	3.13
6	Thessery – Kuzhikkani thodu (17K28aj)	3.05
7	Nellayi padam (17K28ak)	2.24
	Total	**68.54**

PART II

MICRO WATERSHED BASED ACTION PLAN

Methodology

In line with the guidelines of IWMP, as suggested by Government of India, the following methodologies were carried out.

1. Collected and Digitized the Cadastral and Land use maps of the project area.
2. Overlaid the micro watershed boundaries over cadastral maps and resource maps to identify the distribution of micro watersheds on each panchayat
3. Induction training was given for the project staff on Resource Mapping, Concept of maps, Watersheds, and PRA techniques.
4. Conducted transect walk with ward representatives, ADS/CDS members and finalized micro watershed boundaries.
5. Printed hand books providing vital and concise informations regarding the IWMP programme, different stages, and guidelines to be adopted on different steps.
6. District level orientations were conducted for People's representatives of District/Block Panchayats, line departments and other functionaries.
7. This was followed by orientation seminars at block level for People's representatives of Block/Grama Panchayats, line departments, Kudumbasree, and other functionaries of Grama Panchayats.
8. Panchayat Level Watershed Committees were constituted at Grama Panchayats for finalizing the modalities of work.
9. Training for base line survey was conducted for CDS/ADS members from each ward at panchayat level.
10. NHGs were designed at grass root level comprising of 40 to 50 neighboring households and delineated the boundaries through transect.
11. Trainer's training for the formulation of NHGs and to conduct PRA.
12. Predefined questionnaire was prepared for data collection through PRA.
13. Training at Panchayat level for the formulation of NHGs and to conduct PRA for CDS/ADS members from each ward
14. Formulated NHGs at grass root level comprising of 40 to 50 neighboring households, elected NHG committee and conducted PRA.
15. Panchayat Level Watershed Committees were convened at Grama Panchayats and the list of entry point activities suggested were discussed and finalized.
16. Interaction and field visit along with ward members, implementing officers, CDS/ADS, and members of CBOs for identification of Entry point activities.
17. Detailed questionnaire for net plan was prepared for data collection from each household and individual holdings of NHGs

18. Training to facilitators at panchayat level for detailed household survey including baseline informations and possible intervention for watershed development covering 11 teams.
19. Detailed household survey for DPR preparation. The information gathered includes soil and water conservation activities to be taken up through MGNREGS and other schemes and list of agricultural/horticultural/veterinary/fisheries activities to be taken up in each house holding. The list of drains/ponds/wells to be rejuvenated /renovated and the details of production system activities/livelihood activities to be taken up in each NHG were also collected.
20. Panchayat level interactions were organized on drainage line and common property treatment. Various resources like different water bodies, wells and farm ponds, major drains and drainage lines were identified and marked in the cadastral map with the help of the facilitators.
21. Interventions for drainage line treatment and common property treatment were identified and plotted on cadastral maps through transect and field survey.
22. Focus Group Discussions were organized at Panchayat level for ward members & ADS Chairpersons, Presidents& Secretaries of NHGs, Padashekhara Samithi, Kera Samithi, Kudumbasree, MGNREGS, Officials of Agriculture, and Veterinary& Soil.
23. The information gathered on soil and water conservation activities to be taken up through MGNREGS and other schemes and list of agricultural/horticultural/veterinary/fisheries activates to be taken up were finalized. The list of drains/ponds/wells to be rejuvenated /renovated and the details of production system activities/livelihood activities to be taken up in each NHG were also finalized. The livelihood action plan and the activities under production system were also consolidated.
24. The land use maps already prepared were updated through field survey and the present land use map is prepared using different notions and symbols.
25. Trainer's training for project scientists regarding estimate preparation, consolidation of project proposal, and prioritization of proposal.
26. Trainer's training for taking people's estimates and consolidation of project proposals. This was organized at Grama Panchayat and NHG level. Elected representatives, ADS Chairpersons, Officer Bearers of NHGs, MGNREGS officials, etc. attended this training.
27. The suggestions were split for four years and four separate annual plans were also prepared.

Arcode Padam Micro watershed (17K28a)

General Description

Arcode Padam Micro watershed is the second largest watershed in the IWMP cluster of Kodakara PIA with an area of 1489.12 Ha (23.80% of total geographical area). This micro watershed is located mainly in Pudukkad Gramapanchayat (56%), 31% in Alagappanagar Gramapanchayat and the remaining 13% is Nenmanikkara Gramapanchayat. The Kurumali River flows through the south western and southern boundary of the watershed.

Name of micro watershed	Arcode Padam
Micro watershed code	17K28a
River basin	Karuvannur
District	Thrissur
Block Panchayat	Kodakara
Gramapanchayat	Pudukkad, Alagappanagar, Nenmanikkara
Villages	Thoravu, Amballur and Nenmanikkara
Latitude	10° 23' 30''to 10° 26' 30'' North
Longitude	76° 14' 30'' to 76° 19' East
Wards	Pudukkad - 4, 5, 12, 13, 14, 15 (Full), and 2, 3, 6 7, 11 (Part) Alagappanagar - 14, 15 (Full), and 4, 5, 9, 10, 11, 12, 13, 16 (Part) Nenmanikkara - 7 (Full), and 6, 8, 9 (Part)
Total Area	1489.12 Ha
% area in the IWMP cluster	23.80%

Socio economic profile

The general socio-economic situation of the micro watershed is average. As per the informations from baseline survey conducted, the socio economic status ofArcode padam Micro watershed is as follows.

Socio Economic Status : Arcodepadam watershed

Total number of Households		6889
Total Population		26375
Adults	Male	9599
	Female	10188
	Total	19787
Children	Boys	3430
	Girls	3158
	Total	6588
Number of Woman Headed Families		1268
Number of BPL Families		1864
Number of persons enrolled under MGNREGS		1419
Households	Scheduled Caste	777

	Scheduled Tribe	38
	General	6064
Land holdings	Landless	82
	Marginal (<5 cent) Very small (6-50cent)	1479 4413
	Small (51-250 cent)	857
	Medium (251-500 cent)	49
	Large (>500 cent)	9

Biophysical Resources

Relief

The relief of the watershed ranges up to 80 m above msl. Majority of the area falls in the relief category of 0-10m above msl, which covers an area of 624.14 Ha .6.90 Ha areas are located above 60m from msl.

Slope

The watershed area is dived in to six categories of slope classes. The majority of area is under the category of very gentle slope having 0-3 % slope. This category of slope spreads over 494.17 Ha. 421.59 Ha area lies under gentle slope category (3-5 %) and 231.02 Ha under moderate slope (5-10 %).

Drains

The Kurumali River is the major drain of this watershed. Valanjuppadam thodu and Uzhinjalpadam thodu are other significant drains. A number of drains, originating from the different parts of this watershed, drains to Valanjupadam thodu and Uzinjalpadam thodu, and finally into the Kurumali River. The watershed has 16 numbers of public ponds

Land use

The major land use of this watershed is mixed crops (786.30 Ha). The second major landuse is paddy (168.96 Ha) which is along the valley portions of the watershed. An area of 152.06 ha paddy land is converted to garden land to cultivable other horticulture crops.

Geology

The major geological unit in the watershed is Charnockite group of rocks (1176.30 Ha).The remaining area comprises of Migmatite complex which extends along the ridge in the Northern part of Watershed.

Geomorphology

The geomorphic unit Lower plateau (laterite) extends for an area of 1076.88 Ha and Valley fills cover 345.19 Ha.

Soils

The major soil associations existing in this watershed are Palappilly/ Chelakkara (565.83 ha), Vadakanchery / Chithilapally (386.62 ha), Koratty (359.12 ha), Kodakara (65.52 ha), Anallur (87.81ha) and Manalur/Ayyanthole/Konchira series (24.21ha).

	SWOT Analysis 17K 28a				
Sl No	**Area**	**Strength**	**Weakness**	**Opportunities**	**Threat**
1	Agriculture	168 hectare under paddy cultivation raising two crops. Eight padasekhera samithis functioning inside the watershed	152 hectare of paddy land converted for banana and other mixed crops. Lack of skilled labour for transplanting, harvesting paddy.	19 hectare cultivable fallow paddy land and lease farmers. One skilled labour group for mechanized farming.	79 hectare remains as uncultivable submerged fallow after clay mining.
2	Horticulture	50% of the total area of watershed under coconut based farming system with intercrops such as arecanut plantain, nutmeg tuber crops ginger turmeric and pepper. VFPCK MARKET functioning in the watershed	Lack of skilled labour for plant protection, harvesting coconut, arecanut, staking nendran banana, insitu budding of nutmeg, tapping of rubber	Scope for intercropping nendran banana with mali variety of chilli, area expansion for plantain varieties, rejuvenation of pepper. Skilled labour group for insitu budding nutmeg, plant protection, tapping, coconut climbing, totray method of raising vegetable seedling.	
3	Animal Husbandry	Cattle rearing as major lively hood by many small and marginal farmers. Backyard poultry taken up as subsistent farming by majority of inhabitants. Accessibility to milk collection centres	Lack of availability of fodder. Lack of sufficient infrastructure for rearing cattle in a scientific manner	Cattle rearing major lively hood by many women. Scope for increasing backyard poultry as part of production system. Scope for cultivation of fodder as intercrop in coconut garden and common lands.	Cattle rearing cannot be taken up as group enterprise due to lack of sufficient space for construction of the shed.
4	Natural Resources	70% of area of watershed lie below 20m MS Land belongs to the category of geomorphology lower plateau where the slope is gentle and	30% of area of watershed, the topography is undulating and slope moderate. Subject to	Area treatment with suitable soil and water conservation measures such as contour bunding and terracing in medium slopes, mulching, cover	Sand mining from river adversely affecting the water table and water quality. Clay mining

		soil is deep and texture is clayey.	erosion hazards. In the valley portion, breach of bunds, flooding	cropping, water harvesting measures such as staggered trenches and pits. Embankment protection of river by vegetative measures. As part of drainage line treatment, strengthening of field bunds (VARAMBU) Stream bank protection of thodu, desiltation and restoration of field channels.	from fertile paddy field has left 79 ha of paddy field as uncultivable waste land impairing the natural drainage and increasing the chance of flooding.

PROBLEM TOPOLOGY 17K 28a				
No	**Problem Area**	**Constraints**	**Solutions**	**Project Support**
1	Soil	Soil in gently sloping concave narrow valley portion belongs to the land capability classification IV w where the soil is highly clayey & imperfectly drained.	Soil & Water Conservation in the midland region giving thrust for drainage in the lowland region.	Construction of field bunds, strengthening of field bunds, centripetal terracing, coconut, arecanut, nutmeg mulching, cover cropping restoration or renovation of drainage channels etc in the lower region.
		In the midland belongs to land capability classification III es where the gravelliness and erodability act as limitations	Soil & Water Conservation	Terracing bunding & construction of staggered trenches, pits etc along with agroforestry using tree species in the midland region
2	Vegetation	Availability of green leaf manure, fodder, poles or standards for staking banana and growing pepper poor	Promoting agroforestry as part of area treatment	As part of Natural Resource Management, promoting bio fencing, Agrostological Measures, Agroforestry and Fodder Cultivation

3	**Water Resource**			
	Surface Water			
	River	River affected by bank erosion	Embankment protection using bamboo, reed	As part of drainage line treatment, stream bank & river bank protection by brush wood bunding.
	Ponds	Ponds silted & infested by aquatic weeds	Desiltation of ponds & removal of aquatic weeds	Desiltation of all ponds with priority of valley head ponds.
	Thodu	Silted up, network or connectivity lost.	Desiltation, restoration deepening & widening of thodu. Construction of check dam, repair of existing VCBs	Desiltation, restoration deepening & widening of thodu. Construction of check dam, repair of existing VCBs
	Ground Water			
	Wells	Side collapsing of earth from bottom portion of well. Dry up from January onwards	Construction of ring as side protection of wells Recharging wells	Recharging wells
	Lift irrigation			
	field channel	Distribution system earthen & hence much water lost by leakage	Laying of Pipes	Laying of Pipes 6" (main chal)
	Drinking Water			
	Wells	Wells in upper reaches Dry up in January	Recharging wells Deepening of wells	Recharging wells Deepening of wells
			Minidrinking water scheme	Minidrinking water scheme

4	**Common Property**			
	River	Bank erosion, sand mining	Embankment protection	As part of drainage line treatment, embankment protection of river using bamboo, reed
	Canal Purampoku	Encroachment, grazing	Fodder cultivation in canal purampoku	Fodder cultivation in canal purampoku
	ICDP Centre	Waste management	Composting	Compost Unit
	VHSC	Waste management	Composting	Compost Unit

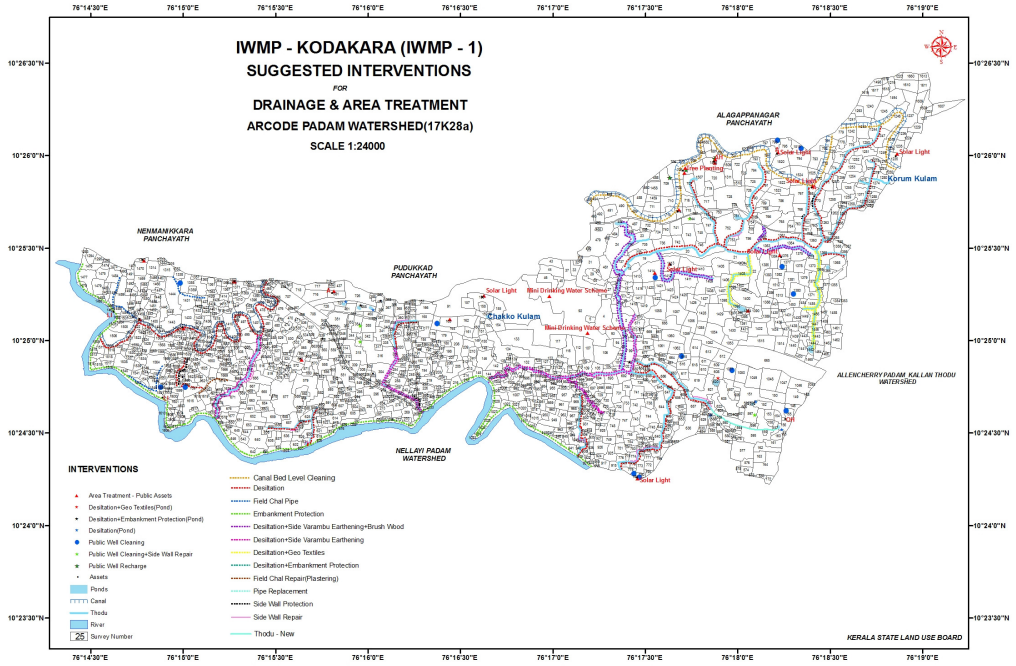
Neighbourhood Groups

131 Neighbourhood Groups, spreading over 3 panchayaths, are constituted in the watershed area combining 40 to 50 adjacent households.

NHGs of 17K28a Micro watershed		
Panchayath	**No of NHG**	**Total**
Alagappanagar	42	**131**
Pudukkad	73	
Nenmanikkara	16	

Budget for 17K28a watershed.

Budget component	%	Amount
Administrative cost	10	17,86,944.00
Monitoring	1	1,78,694.40
Evaluation	1	1,78,694.40
Entry point	4	7,14,777.60
Institution & Capacity building	5	8,93,472.00
DPR	1	1,78,694.40
Watershed development works	56	1,00,06,886.40
Livelihood activities for asset less	9	16,08,249.60
Production system and micro enterprises	10	17,86,944.00
Consolidation phase	3	5,36,083.20
Total	**100**	**1,78,69,440.00**



ALLANCHERI PADAM – KALLAN THODU (17K28b)

General Description

Allancheri Padam - Kallan thodu micro watershed is the largest micro watershed in the IWMP cluster of Kodakara PIA with an area of 2483.11 Ha.This micro watershed is located mainly in Varandharapilly Grama Panchayat (60%). 22% of micro watershed area is located in Pudukkad gramapanchayat, 15% in Alagappanagar and a very small portion in Thrikkur gramapanchayat. The Kurumali River flows through the south eastern and southern boundary of the watershed.

Name of micro watershed	:	Allancheri padam - Kallan Thodu
Micro watershed code	:	17K28b
River basin	:	Karuvannur
District	:	Thrissur
Block Panchayat	:	Kodakara
Gramapanchayats	:	Varandharapilly, Pudukkad, Alagappanagar and Thrikkur
Villages	:	Varandharapilly, Nandipulam, Chengallur, Amballur and Kallur
Latitude	:	$10^0$22' to $10^0$27'30" North
Longitude	:	$76^0$17'to $76^0$21' East
Wards	:	Varandharapilly Panchayat - 1, 2, 3, 17, 18, 19, 20, 21, 22 (full) and 4, 5, 12, 13, 16 (part) Pudukkad Panchayat - 8, 9, 10 (full) and 6, 7, 11 (part) Alagappanagar Panchayat - 10, 11 (part) Thrikkur Panchayat -10, 11 (part)
Total Area	:	2483.11 ha
% area in the IWMP cluster	:	39.69 %

Socio economic profile

The general socio economic situation of the micro watershed is average. As per the informations from baseline survey conducted, the socio economic status of this watershed is as follows.

Total number of Households		8955
Total Population		34754
Adults	Male	12884
	Female	13263
	Total	26147
Children	Boys	4493
	Girls	4114
	Total	8607
Number of Woman Headed Families		1842
Number of BPL Families		2223

Number of persons enrolled under MGNREGS		1349
Households	Scheduled Caste	644
	Scheduled Tribe	106
	General	8205
Land holdings	Landless	50
	Marginal (<5 cent)	1370
	Very small (6-50cent)	5906
	Small (51-250 cent)	1480
	Medium (251-500 cent)	121
	Large (>500 cent)	28

Biophysical Resources

Relief

The relief of the watershed ranges up to 110m above msl. Majority of the land falls in the relief category of 10–20m above msl which covers an area of 1205.36 ha. An area of 7.19 ha is located above 100m from msl.

Slope

The watershed area is divided into five categories of slope classes. The majority of area (637 ha) is under gentle slope, having 3-5% slope and 504.30 ha area have steep slope (15 35%).

Drains

The Kurumali River is the major drain of this watershed. Palambra thodu ,Kuttadan kaichal, Mattummachira ,Vadanhtole thottumugham chal, Kallupalam kanathodu, Nandipulam chal , Kuriyadi thodu etc are the other prominent drains of this watershed.The watershed has 25 number of public ponds distributed throughout the area.

Land use

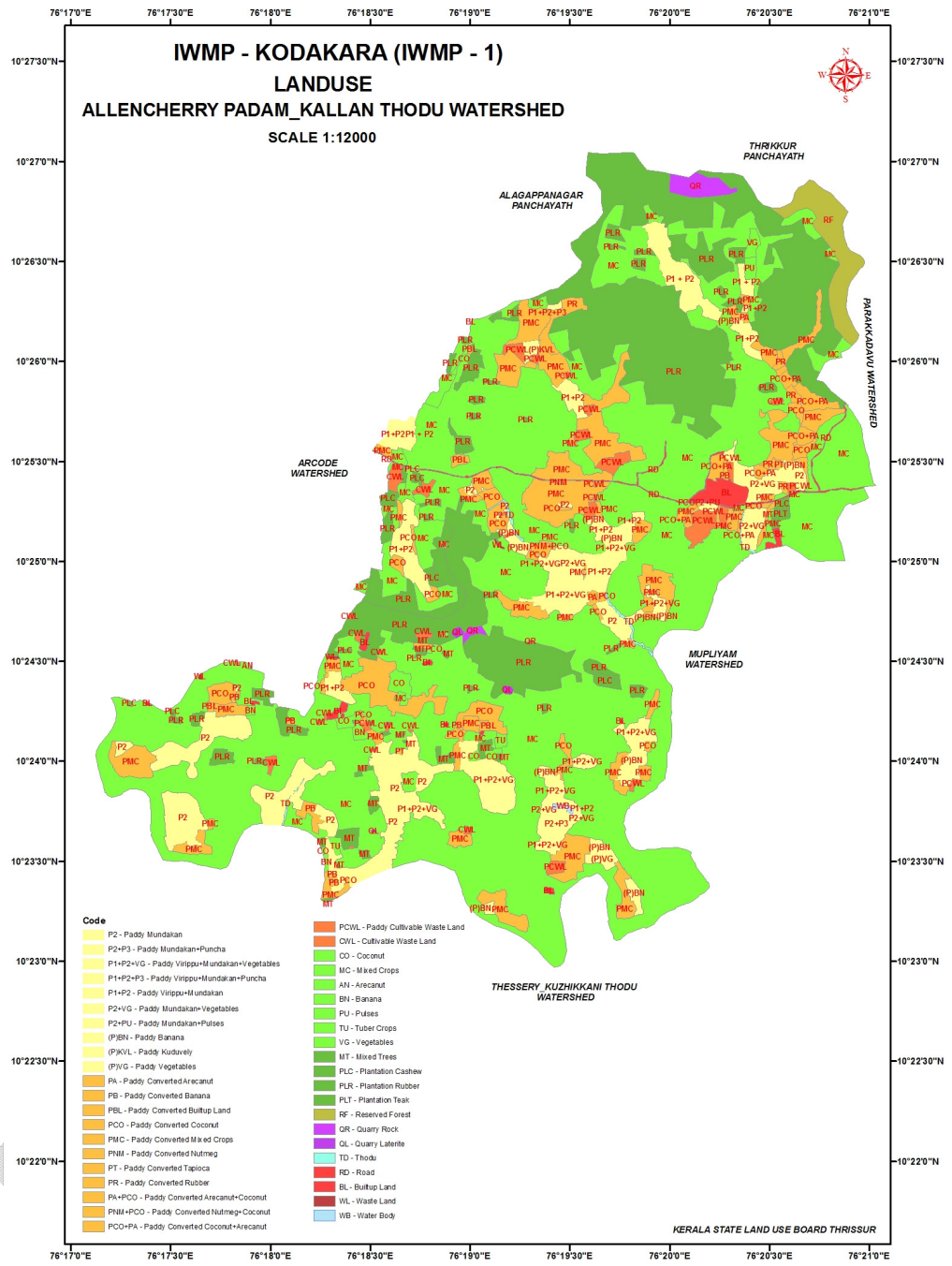
The major landuse of this watershed is mixed crops (786.30 ha) followed by rice cultivation (168.96 Ha), which is along the valley portions. 152.06 ha paddy land has converted to garden land to cultivable other horticulture crops.

Geology

The major geological units in the watershed are Charnockite group of (2442.25 ha). Migmatite complex (19.95 ha) and basic rocks (20.91 ha) also exist in this watershed.

Geomorphology

There are five geomorphological units in the watershed. 1143.18 ha area falls under the category of lower plateau (lateritic) ,792.63 ha area under Piedmont zone and 438.42 ha under valley fill.



Soils

Wadakkanchery chittillapilly soil series (558.68 ha) and Palapilly Chelakkara association (1809.96 ha) are the major soil associations situated in this watershed

	SWOT Analysis 17K 28b				
Sl. No	**Area of Intervention**	**Strength**	**Weakness**	**Opportunities**	**Threat**
1	Agriculture	284 hectare under paddy cultivation raising two crops. Ten padasekhera samithis functioning	78 hectare of paddy land converted into mixed crops coconut, arecanut, nutmeg & rubber adversely affect the wetland ecosystem suitable for paddy cultivation	Scope for increasing area under paddy one crop, pulses in rice fallow 23 ha paddy cultivable waste land	Conversion of wetland ecosystem in to crops rubber impaired the natural drainage, resulting in flodding & crop loss. Crop damage due to attack by wild animals such as pig, peacock
2	Horticulture	51% of area of total watershed under horticultural crops such as coconut, arecanut, banana, plantain, nutmeg, pepper, tubercrops and vegetables in mixed cropping system. KHDP MARKET, (nandipulam) VFPCK MARKET (Pudukkad) functioning inside the watershed. Processing Unit for Value addition of coconut, (virgin coconut oil) arecanut (plate making) functioning in the watershed	Area under pepper declining due to quick wilt. Area under tuber crops declining due to attack by wild animals. Lack of availability of skilled labour for harvesting coconut & arecanut, plant protection insitu budding in nutmeg & tapping in rubber	Scope for banana nursery for producing quality suckers of different plantain varieties such as Kadali. Scope for lease farming of vegetable and banana, scope for promoting skilled labour group, insitu budding of nutmeg, coconut climbing. Scope for processing unit, cultivation of medicinal plants, bee keeping in rubber plantations. Scope for compost production using pseudo stem of banana. Scope for nursery of fruit plants, pepper & nutmeg. Scope for mushroom cultivation, betel vine cultivation, floriculture especially marigold	Trend in conversion of coconut based farming system into monocrop of rubber. Lack of irrigation facility.

3	Animal Husbandry	Goat rearing as major lively hood by many small and marginal farmers. Cattle rearing as major livelihood for many women. Backyard poultry taken up as subsistent farming by majority of inhabitants. Accessibility to milk collection centres, co-operatives.	Lack of availability of fodder. Lack of sufficient infrastructure for rearing cattle in a scientific manner	Cattle rearing taken as major lively hood by many women. Scope for increasing backyard poultry as an additional source of income. Scope for cultivation of fodder as intercrop in coconut garden & and common lands such as thodu, canal puramboku.	
4	Natural Resources	Kurumali river flows through southern boundary of the micro watershed.	31% watershed area under piedmont zone with moderate slopes subject to erosion hazards.	Area treatment with suitable soil conservation measures such as terracing, contour bunding, agrostological measure, cover cropping, mulching, agroforestry etc in medium slope areas.	Conversion of wetland ecosystem suitable for paddy into rubber impairing natural drainage & adversely affecting water table.
		In the narrow valley and lower reaches of the microwatershed. 22 % of soil comes under vadakkanchery/chittilappilly series under land capability II w	72% of watershed area under land capability IIIes with erodability and gravelliness as sub limitations. Denuded forest land. 26% total area of the micro watershed converted into horticulture crops like coconut, nutmeg, banana, tapioca, arecanut etc	4% paddy land under cultivable waste land which can be utilized for the cultivation of paddy two crops (virippu & mundakan) and pulses etc	
		Valley head and "Themali" ponds (sunken ponds for	Most of the ponds are silted and there by decrease the	Desiltation and embankment stabilization measures can be	Most of the " Themali" ponds are eliminated

		irrigation purpose) are situated in the micro watershed area.	water holding capacity. It adversely affects the paddy cultivation of the micro watershed.	done for the protection of ponds

Sl. No	PROBLEM TOPOLOGY 17K 28b			
	Problem Area Land	**Constraints**	**Solutions**	**Project Support**
1	Topography Undulating topography	Presence of boulders, rock exposure	Planting deep rooted trees	Afforestation, Agroforestry
	Geomorphology	31% area of watershed belongs to piedmont zone (geomorphology).	Area treatment with soil and water conservation measures such as staggered trenching, contour bunds, terracing construction of trenches, pits, agrostological measures, cover cropping, mulching in medium to steep slope. In very steep slope agroforestry with suitable species.	Staggered trenching , contour bunds, terracing construction of trenches, pits, agrostological measures, cover cropping, mulching, agroforestry
	Land Capability	70% of area belongs to land capability classification IIIe where erodability is the limiting factor		
	Slope	24% area of watershed the slope is medium (5-15%). In 20% area of watershed the slope is steep (15-35%) This area is subject to erosion hazards		
	Soil	In medium to steep slope areas the soil is medium textured developed from greisic parent material In the very steep slope areas (more than 35% slope) the soil is gravelly clay with very poor irrigability	Mulching, cover cropping and green manuring	Mulching, cover cropping and green manuring
2	Vegetation	In majority of the area, the	Promoting agroforestry,	As part of Natural Resource

		availability of green leaf manure & fodder is poor.	biofencing, agrostological measures	Management, promoting growing of fodder trees, live standards for pepper, biofencing using species for green leaf manure etc agrostologial measures using grass on trenches, bunds etc promoting fodder cultivation, fodder nursery as part of production system
3	**Water Resource**			
	Surface			
	River	Sand mining, flooding during monsoon, embankment erosion	Embankment stabilization	As part of drainage line treatment, stream bank & river bank protection by brush wood bunding, planting bamboo ,reed etc
	Ponds	Silted up, infested by weeds	Desiltation of ponds & removal of weeds with priority for valley head ponds	Desiltation of ponds & removal of weeds with priority for valley head ponds
	Thodu	Silted up, reduced in width, depth, flooded during monsoon embankment erosion. Network or connectivity lost. Encroachment of thodu purampoku	Desiltation of thodu, deepening of thodu, widening of thodu. Stream bank protection using coir geotextiles. Restoration of thodu	Desiltation of thodu, deepening of thodu, widening of thodu. Stream bank protection using coir geotextiles. Restoration of thodu
	Well	Wells in upper reaches dry up in January	Recharging wells	Well recharge in upper reaches
	Lift irrigation			
	field channel	Distribution system has not reached certain areas	Field channel extension	Field channel extension (earthen)

	Drinking Water			
	Wells	Wells in upper reaches dry up in January	Recharging wells	
		In some neighbourhood area, failed wells due to presence of hard rock in the substratum	In such areas water harvesting structures or mini drinking water scheme by lifting from nearby sources	Assistance for water harvesting structure, well recharge Silpolin tank Mini drinking water scheme
4	**Common Property**			
	Forest	Denuded, wild animals cause damage in nearby fields	Afforestation wire net fencing	Afforestation wire net fencing
	Irrigation Canal	Poor maintenance of spouts	Repair of spouts	Repair of spouts
		Canal purampoku encroachment	Rehabilitation of encroaches, planting of trees, fodder etc in the canal purampoku	Planting of trees, fodder etc in the canal purampoku
	Asset			
	Ayurveda Hospital, Veterinary Hospital, Family welfare centre Complex Building	Availability of hot water	Installation of solar panel	

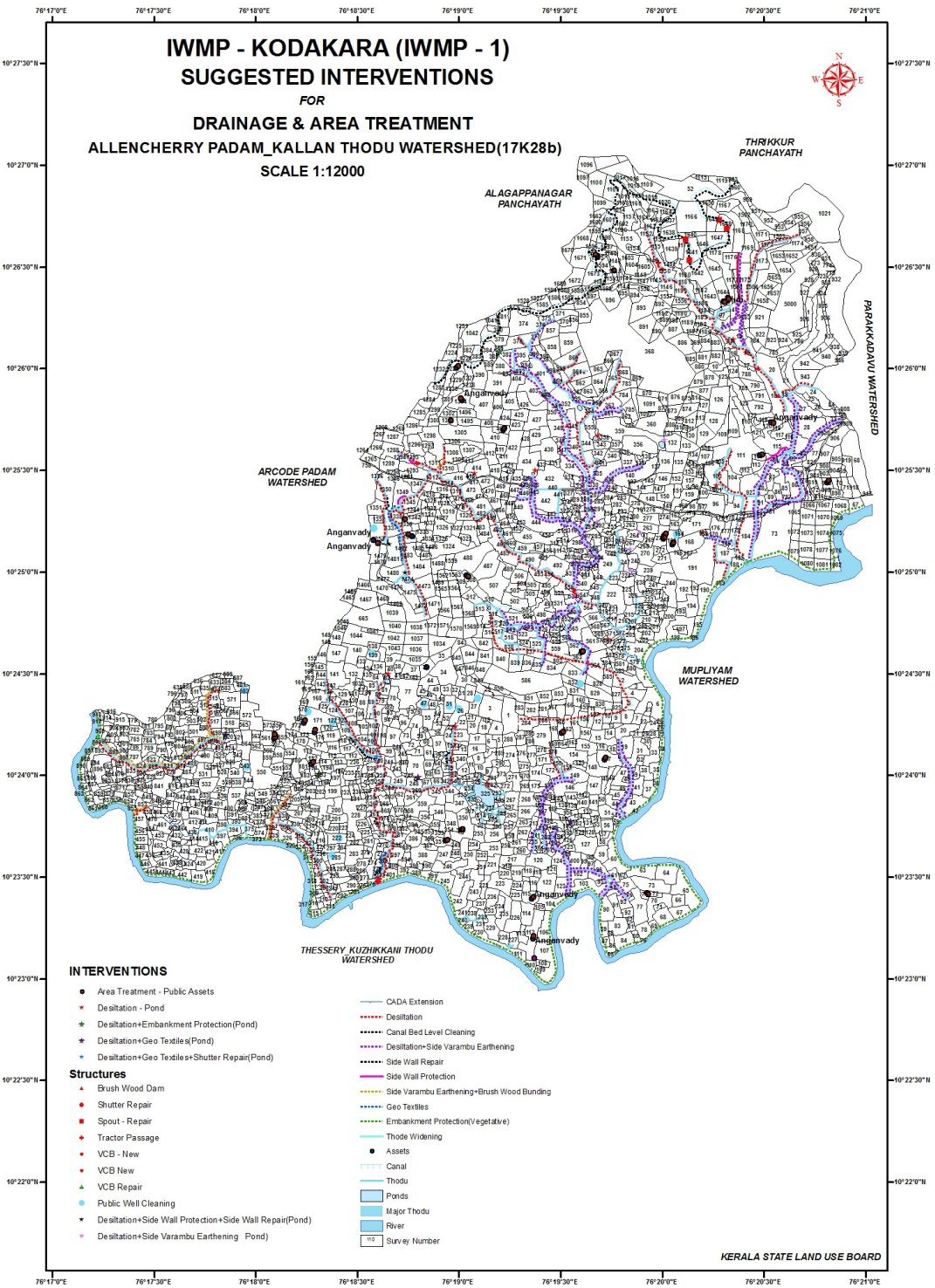
Neighbourhood Groups

166 Neighbourhood Groups, spreading over 4 panchayaths, are constituted in the watershed area combining 40 to 50 adjacent households.

NHGs of 17K28b Micro watershed		
Panchayath	**No of NHG**	**Total**
Varandharapilly	115	**166**
Alagappanagar	18	
Pudukkad	31	
Thrikkoor	2	

Budget for 17K28b watershed

Budget component	%	Amount
Administrative cost	10	2938332
Monitoring	1	293833.2
Evaluation	1	293833.2
Entry point	4	1175332.8
Institution & Capacity building	5	1469166
DPR	1	293833.2
Watershed development works	56	16454659.2
Livelihood activities for asset less	9	2644498.8
Production system and micro enterprises	10	2938332
Consolidation phase	3	881499.6
Total	**100**	**29383320**


IWMP - KODAKARA (IWMP - 1)
SUGGESTED INTERVENTIONS
FOR
DRAINAGE & AREA TREATMENT
ALLENCHERRY PADAM_KALLAN THODU WATERSHED(17K28b)
SCALE 1:12000
THRIKKUR PANCHAYATH
ALAGAPPANAGAR PANCHAYATH
PARAKKADAVU WATERSHED
ARCODE PADAM WATERSHED
MUPLIYAM WATERSHED
THESSERY_KUZHIKKANI THODU WATERSHED
Anganvady
INTERVENTIONS
Area Treatment - Public Assets
Desiltation - Pond
Desiltation+Embankment Protection(Pond)
Desiltation+Geo Textiles(Pond)
Desiltation+Geo Textiles+Shutter Repair(Pond)
Structures
Brush Wood Dam
Shutter Repair
Spout - Repair
Tractor Passage
VCB - New
VCB New
VCB Repair
Public Well Cleaning
Desiltation+Side Wall Protection+Side Wall Repair(Pond)
Desiltation+Side Varambu Earthening (Pond)
CADA Extension
Desiltation
Canal Bed Level Cleaning
Desiltation+Side Varambu Earthening
Side Wall Repair
Side Wall Protection
Side Varambu Earthening+Brush Wood Bunding
Geo Textiles
Embankment Protection(Vegetative)
Thode Widening
Assets
Canal
Thodu
Ponds
Major Thodu
River
Survey Number
KERALA STATE LAND USE BOARD

Parakkadavu Micro watershed (17K28c)

General Description

Parakkadavu Micro watershed is the fourth largest micro watershed in the IWMP cluster of Kodakara PIA with an area of 568.53 Ha (9.09 % of total geographical area). This micro watershed is located in Varandharapilly Gramapanchayat. The Kurumali River flows through the southern boundary of the watershed. Veluppadam, Parakkadavu, Pathazhapara are the important places coming under this micro watershed.

Name of micro watershed	:	Parakkadavu
Micro watershed code	:	17K28c
River basin	:	Karuvannur
District	:	Thrissur
Block Panchayat	:	Kodakara
Gramapanchayat	:	Varandharapilly
Villages	:	Varandharapilly
Latitude	:	$10^0$25' to $10^0$26'30'' North
Longitude	:	$76^0$20'30'' to $26^0$23' East
Wards	:	Varandharapilly- 4, 5, 12, 13 (Part)
Total Area	:	568.53 Ha
% area in the IWMP cluster	:	9.09 %

Socio economic profile

The general socio economic situation of the micro watershed is average. As per the informations from baseline survey conducted, the socio economic status of this watershed is as follows.

Socio-Economic details – Parakkadavu Watershed

Total number of Households		1153
Total Population		6206
Adults	Male	2556
	Female	2354
	Total	4910
Children	Male	694
	Female	602
	Total	1296
Number of Woman Headed Families		258
Number of BPL Families		236
Number of persons enrolled under MGNREGS		204
Households	Scheduled Caste	136
	Scheduled Tribe	3
	General	1014
Land holdings	Landless	20

	Marginal (<5 cent)	197
	Very small (6-50cent)	767
	Small (51-250 cent)	148
	Medium(251-500 cent)	19
	Large (>500 cent)	2

Biophysical Resources

Relief

The relief of the watershed ranges from 10m to 90 m above msl. An area of 163.93 Ha lies between 10-20m above msl. Majority of the area (173.89 ha) falls in the category of 20-30m above msl.

Slope

The majority of area (258.49 ha) is under steep slope (15-35% slope) category. The moderately sloping category (5–10%) spreads over an area of 92.69 Ha . The watershed area has very steeply sloping lands (23.23 ha) which required urgent soil and water conservation measures.

Drains

The Kurumali River is the major drain of this watershed. There are 10 minor drains and 4 public ponds situated in this watershed.

Land use

The major land use category mapped in the watershed area is reserved forest (216.81 Ha). The second major category is mixed crops (198.45 Ha) followed by rubber plantation (98.76 Ha). 36.32 Ha paddy land is converted to mixed crops.

Geology

The major geological unit in the watershed is Charnockite group of rocks (557.63 Ha) followed by Basic rocks (11.26 Ha).

Geomorphology

Piedmount zone (483.13 Ha), Valley fill (76.51 Ha) and Residual Mounts (8.90 Ha) are the three geomorphological units situated in this watershed.

Soils

Vadakkanchery Palappilly association (73.03 ha), Palappilly Chelakkara association (376.15 ha) and Karinkulam Varandharapilly series 119.36 ha) are the major soils situated in this watershed.

SWOT Analysis

Sl. No	Area of Intervention	Strength	Weakness	opportunities	Threat
1	Agriculture		99% of paddy land converted in to rubber, tapioca and vegetable	1.2 ha of cultivable fallow land	Conversion of wetland ecosystem into crops such as rubber adversely affect the water table, natural drainage & food security
2	Horticulture	34% area under mixed crops, coconut based farming system with nutmeg, arecanut, plantain, ginger, turmeric, tuber crops & pepper as intercrops. Coconut cluster functioning inside the watershed. Bamboo nursery & varietal collection in the sub centre of Kerala Forest Research institute located inside the watershed	70% of area under monocrops of rubber. 80% of the area of the watershed is rainfed	Scope for promoting banana and vegetable is paddy converted land. Scope for bee keeping in rubber plantation, nursery of medicinal plants, forest nursery. Centre for National Programme Conservation of Medicinal Plants & tracing knowledge for enhancing health & livelihood is located inside the watershed with all facility for raising nursery	Attack of wild animals coming from forest such as pig, monkey, deer etc coming from forest damaging crops
3	Animal Husbandry	Goat rearing as major livelihood. Cattle rearing taken up by many women. Backyard poultry at	Lack of availability of fodder. Lack of knowledge base regarding scientific management of cattle	Goat rearing & cattle rearing taken up as major livelihood by many women. Scope for fodder cultivation in revenue purampoku & as	

		subsistent level by many households. ICDP centre functioning inside the watershed	rearing & goat rearing. Lack of infrastructure facility for scientific cattle shed	inter crop in coconut garden & on terraces.	
4	Natural Resources	Kurumali river flowing along the southern boundary of watershed. Upper reaches 38% of total area covered by reserve forest (216.81 ha). In the narrow concave valley portion the soil series is Vadakkanchery Chittilappilly association with land capability IIw. In the upper reaches two large reservoirs locally named as "Chira"(average size of 0.5 ha) draining 6-7 first order streams from forest located.	45% of total area of the micro watershed is with steep slope subject to erosion hazards. Major soil in this area belongs to land capability classification IIIe (Palappilly Chelakkara soil association) with erodability as the major limitation. 83% of area of watershed belongs to geomorphological classification piedmont zone	Area treatment with suitable soil conservation measures such as terracing in medium slopy areas cover cropping in rubber, Afforestation in steep slopes, water harvesting measures such as staggered trenches, pits in medium slope areas. Embankment protection of river & thodu using vegetative measures in low land areas.	Denuded forest land in critical catchment of large reservoir namely "Chira" (Pathikirichira) increase the chance of siltation of chira decreasing its water holding capacity

Sl. No	PROBLEM TOPOLOGY 17K 28c			
	Problem Area	**Constraints**	**Solutions**	**Project Support**
1	**Water Resource Surface**			
	First order streams	Gully formation	Gully plugging, area treatment with suitable water & soil conservation measures	Gully plugging as part of drainage line treatment. Area treatment with suitable conservation measures such as terracing, trenching & cover crop
	Chiras Ponds	Reduced in water holding & capacity due to siltation from upstream catchment poor maintenance of sluices resulting is leakage & water loss Valley head ponds silted up. Sunken pond embankment subject to bank erosion	Desiltaion of chira repair of sluice Embankment protection of pond	Desiltaion of chira repair of sluice Embankment protection of pond
	Thodu	Encroachment of thodu, thodu reduced in width thereby decreasing the water holding capacity	Desiltation, widening of thodu, embankment protection of thodu using earth silt & strengthening by agrostologial measures using cement concrete in specific areas. Repair of existing VCB's	Widening of thodu, desiltation of thodu, sidevarambu, earthening, embankment protection (vegetative) side wall protection. VCB repair, construction of brushwood check dam
	Ground Water			

	Wells	Presence of plutonic rock in the north western area of watershed reduces the yield of wells in that area & wells dry up in January.	Water harvesting structures, silpolin tank	Water harvesting structures, silpolin tank
		In majority of the area of watershed wells dry up in march	Well recharge	Recharge of well from rooftop diverting rain water.
	Drinking Water			
	Drinking water Scheme	Well start drying up in March	Desiltation of public well Recharge wells as part of area treatment	Desiltation of public well & protection with net
		One drinking water scheme (swajaldhara). Lifting water from Velupadam. Water holding capacity of the source impaired by conversion to wetland ecosystem into crops such as rubber	Consensus & legal actions for preventing conversion of wet land ecosystem in to rubber	
2	**Common Property**			
	Forest	35% of total area of watershed is under reserve forest but more than 10% of reserve forest has been encroached converted into rubber plantations. Denudation also prevails in certain pockets which act as critical catchment of reservoirs (chira).	Afforestation, agro forestry	Afforestation, agroforestry in critical catchment
		Incidence of wild animals destroy crops		
	Revenue Purampoku	Lack of soil & water conservation measures, subject to erosion hazards	Afforestation, terracing, agrostological measures using suitable variety of fodder grass (stylosanthus)	Terracing & agrostological measure using fodder

	River Anganwadi	Bank erosion, sand mining Electricity not available.	Embankment stabilization Solar light	Embankment stabilization using bamboo, reed Solar light installation in Anganwadi

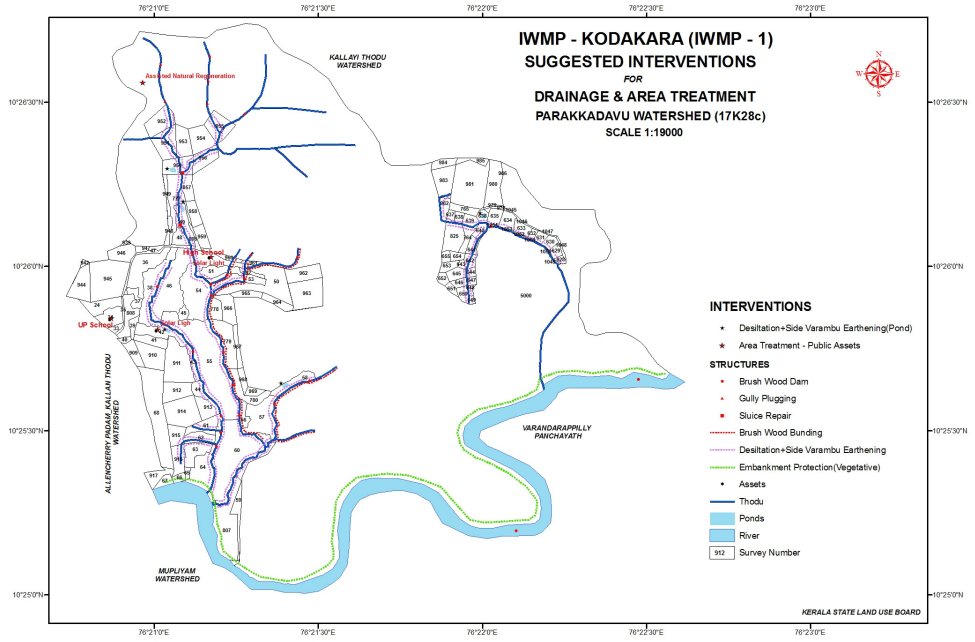
Neighbourhood Groups

19 Neighbourhood Groups are constituted in the watershed area combining 40 to 50 adjacent households.

NHGs of 17K28c Micro watershed		
Panchayath	**No of NHG**	**Total**
Varandharapilly	19	**19**

Budget for 17K28c watershed

Budget component	%	17K28c
Administrative cost	10	4,20,408.00
Monitoring	1	42,040.80
Evaluation	1	42,040.80
Entry point	4	1,68,163.20
Institution & Capacity building	5	2,10,204.00
DPR	1	42,040.80
Watershed development works	56	23,54,284.80
Livelihood activities for asset less	9	3,78,367.20
Production system and micro enterprises	10	4,20,408.00
Consolidation phase	3	1,26,122.40
Total	**100**	**42,04,080.00**



KALLAYI THODU MICRO WATERSHED (17K28d)

General Description

Kallayi thodu micro watershed is the third largest micro watershed in the IWMP cluster of Kodakara PIA with an area of 896.22ha (14.32%of total project area). This micro watershed is located in Varandharapilly, Puthur and Thrikkur gramapanchayats. Kurumali River flows through southern boundary of the micro watershed. Kallayi thodu, the main thodu, flows through eastern boundary of the micro watershed and drains in to Kurumali River.

Name of micro watershed	:	Kallayi Thodu
Micro watershed code	:	17K28d
River basin	:	Karuvannur
District	:	Thrissur
Block Panchayats	:	Kodakara, Ollukkara
Gramapanchayats	:	Varandharapilly, Puthur and Thrikkur
Villages	:	Varandharapilly, Mannamangalam and Kallur
Latitude	:	$10^0$25'30'' to $10^0$29'30'' North
Longitude	:	$76^0$20' to $76^0$22'30'' East
Wards	:	Varandharapilly -5(part) Thrikkur - 11(part) Puthur – 8, 9, 10(part)
Total Area	:	896.22ha
% area in the IWMP cluster	:	14.32 %

Socio economic profile

The general socio economic situation of the micro watershed is average. As per the informations from baseline survey conducted, the socio economic status of this watershed is as follows.

Socio Economic Status : Kallayi thodu watershed

Total number of Households		1352
Total Population		4708
Adults	Male	1739
	Female	1777
	Total	3516
Children	Male	562
	Female	630
	Total	1192
Number of Woman Headed Families		275
Number of BPL Families		375
Number of persons enrolled under MGNREGS		55
Households	Scheduled Caste Scheduled Tribe	72 33
	General	1247
Land holdings	Landless	38

	Marginal (<5 cent)	95
	Very small (6-50cent)	648
	Small (51-250 cent)	507
	Medium (251-500 cent)	54
	Large (>500 cent)	10

Biophysical Resources

Relief

The relief of the watershed ranges from 20m to 220m above msl. The majority of area (153.16 ha) comes under the relief category of 20 - 30m above msl followed by 30 – 40m category (126.75 ha).

Slope

Majority area (447.89 ha) of this watershed is under steep slope (15-35%) category followed by very steep slope (>35%). An area of 205.93 ha is mapped under this category. More than 40% of area of this watershed requires urgent soil and water conservation.

Drains

The Kurumali River is flowing through the southern boundary of this watershed. Kallayi thodu is the major thodu flowing through this micro watershed. Besides this there are 15 numbers of minor thodes and 4 numbers of ponds situated in this watershed.

Land use

The major land use category is Rubber plantation (513.37 ha) followed by mixed crops (122.55 ha). 49.93 ha paddy fields are reclaimed to garden lands.

Geology

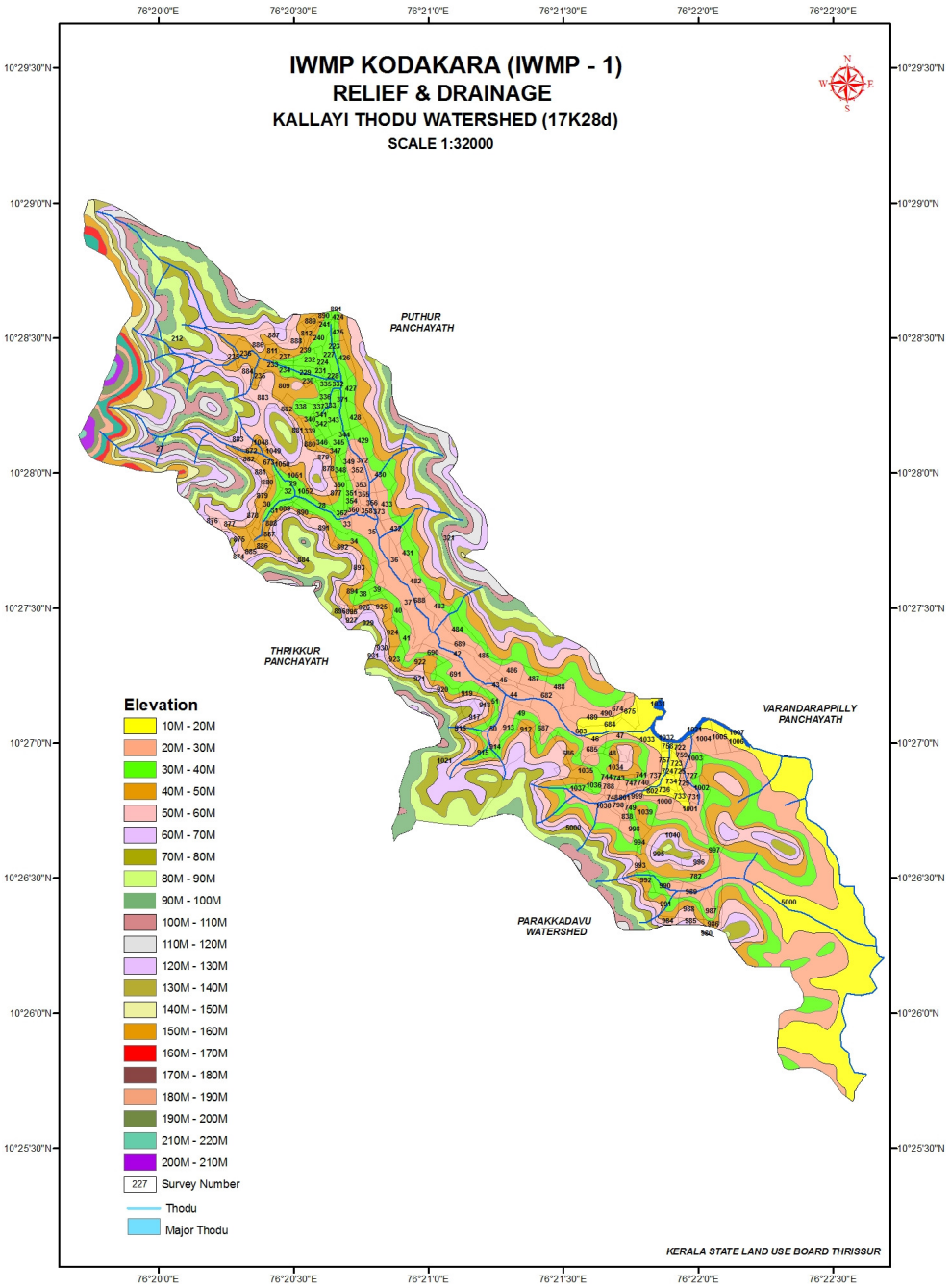
The major geological units in the watershed are Charnokitic group of rocks (709.83ha), followed by migmatite group of rocks (163.17ha)

Geomorphology

The denudation hills (191.13 ha), pediment zone (572.14 ha), residual mount (40.72 ha) and structural hills (92.20 ha) are the major geomorphological units seen in this watershed.

Soils

The major soils of this watershed are Palappilly – Chelakkara association (459.93 ha), followed by Karumkulam Varandharapilly association (389.89 ha).


IWMP KODAKARA (IWMP - 1)
RELIEF & DRAINAGE
KALLAYI THODU WATERSHED (17K28d)
SCALE 1:32000
76°20'0"E
76°20'30"E
76°21'0"E
76°21'30"E
76°22'0"E
76°22'30"E
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
10°26'0"N
10°25'30"N
PUTHUR PANCHAYATH
THRIKKUR PANCHAYATH
VARANDARAPPILLY PANCHAYATH
PARAKKADAVU WATERSHED
Elevation
10M - 20M
20M - 30M
30M - 40M
40M - 50M
50M - 60M
60M - 70M
70M - 80M
80M - 90M
90M - 100M
100M - 110M
110M - 120M
120M - 130M
130M - 140M
140M - 150M
150M - 160M
160M - 170M
170M - 180M
180M - 190M
190M - 200M
210M - 220M
200M - 210M
227 Survey Number
Thodu
Major Thodu
KERALA STATE LAND USE BOARD THRISSUR

SWOT Analysis 17K 28 d

Sl. No	Area of Intervention	Strength	Weakness	Opportunities	Threat
1	Agriculture	32% of wetland of the watershed lying in the valley portion under two crops of paddy	67% of wetland of the watershed converted into crops such as coconut, vegetable, arecanut, banana etc	Raising of third crop (pulses & vegetables) in 24 ha. Raising of paddy in 1st season in 1 ha which is remaining as cultivable fallow at present	Conversion of wetland ecosystem which is suitable for raising paddy into rubber adversely affects the natural drainage and water table.
2	Horticulture	15% of total area of watershed under coconut based farming system with intercrops such as plantains, arecanut, nutmeg tuber crops ginger turmeric and pepper. VFPCK & KHDP MARKETs functioning inside the watershed. VSS functioning inside the watershed (raising nursery, honey processing) Rubber procurement centre under RPS functioning inside the watershed. Vegetable cultivation taken up as major livelihood by many self help groups especially women(Puthur panchayat)	57% of garden land suitable for raising mixed crop converted into monocrop of rubber & rubber based farming system.	Raising of intercrops of banana & pineapple in rubber based farming system (new plantations). Increase in area under banana & vegetable, pineapple, pepper, in coconut/ rubber based farming system, bee keeping in rubber plantation. Value addition of jack, mango, turmeric & pepper RPS as cooperative of rubber growers functioning inside the watershed for taking up skilled labour group for tapping, plant protection etc	Attack of horticulture crops especially banana & tuber crops by wild animals from forest.

3	Animal Husbandry	Cattle rearing as major livelihood by many households. Goat rearing taken up as livelihood especially women. Backyard poultry at subsistent level by many households. Milk collection centres & cooperatives functioning inside the watershed.		Increase in area under fodder as intercrop in coconut garden, scope for increasing cattle rearing, goat rearing as major livelihood for women	
4	Natural Resources	In the 5% area of the watershed lying in the valley portion the land capability is IIw suitable for growing paddy. Incidence of perennial valley head ponds high in Thrikkur Panchayat. Rubber procurement centre under RPS functioning inside the watershed. Vegetable	50% of the total area of watershed under medium slope belonging to geomorphological classified pediment zone. 43% of the total area of watershed belongs to the land capability classification VI e subject to severe erosion hazards. Rubber, a shallow rooted crop in the main crop in this area increases the hazard of erosion.	Afforestation in very steep slopes. Soil & water conservation measures such as contour bunding, repair of old bunds, terracing in rubber, cover cropping in rubber, agrostological measures on bunds with soil bunding crops such as pineapple/fodder, staggered trenching. RPS as cooperative of rubber functioning inside the watershed for taking up	Land use change from natural reserve forest into rubber plantations (50% of total area of watershed) has adversely affected the perenniality of streams and water table. Quarrying of critical catchment adversely affect the water table.

		cultivation taken up as major livelihood by many self help groups especially women (Puthur panchayat)		skilled labour group for tapping, plant protection measures etc	

PROBLEM TOPOLOGY 17K 28d

Sl. No	Problem Area	Constraints	Solutions	Project Support
1	**Water Resource**			
	Surface			
	First order streams	Gully formation	gully plugging, area treatment with suitable water & soil conservation measures	Gully plugging, area treatment with suitable water & soil conservation measures
	Ponds	Encroachment of valley head ponds(public) silting up of valley head ponds (private)	Desiltation	Desiltation of ponds (private)
	Thodu	Siltation, encroachment, bank erosion, poor maintenance of existing VCBs & check dams	Desiltation, deepening of thodu, embankment protection of thodu using earth silt & strengthening by agrostologial measures using cement concrete in specific areas. Repair of existing VCB's	Deepening of thodu, desiltation of thodu, sidevarambu, earthening, embankment stabilization (vegetative) side wall protection. VCB repair, construction of brushwood check dam
	Ground Water			
	Wells	wells start drying up from December, January-February presence of plutonic rock in the northern region of the	Recharging wells Roof Water harvesting Silpolin tank	Recharging wells Roof Water harvesting Silpolin tank

		watershed decrease the yield of wells in that area		
	Drinking Water			
	Drinking water Scheme	Silting up of water source of the scheme (public well panchayat)	Desiltation of public well	Desiltation of public well & protection with net
2	**Common Property**			
	Forest	Gully formation in forest chal. Encroachment of forest area. 50% of total area of watershed originally under resource forest but 90% of the original forest have been converted into plantation rubber	Gully plugging, Afforestation	Gully plugging in forest chal Afforestation with the participation of VSS Nursery of forest species as livelihood support of women SHG's
		Cattle grazing	Social fencing	Promoting fodder bank & stall feeding
	Irrigation Purampoku	Steep slope, denuded	land development work	Terracing & agrostological measure using fodder
		Electricity not available.	Solar light & fan	Solar light & fan
	Anganwadi	Located in steep slope,premises not protected	Retaining wall	As part of entry point activity land development work in Anganwadi
	PHC	Waste management	Composting	Composting

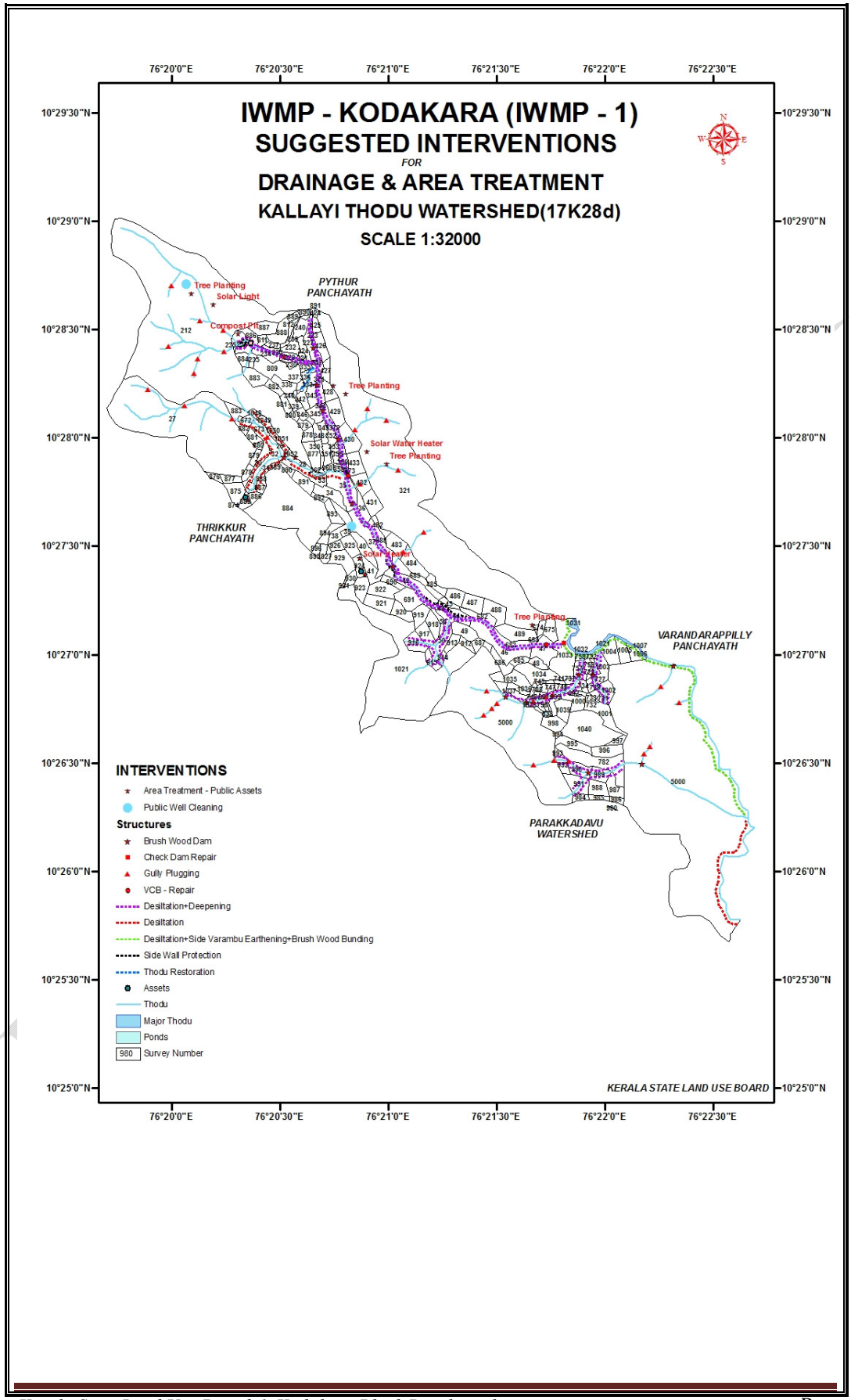
Neighbourhood Groups

18 Neighbourhood Groups, spreading over 3 panchayaths, are constituted in the watershed area combining 40 to 50 adjacent households.

NHGs of 17K28d Micro watershed		
Panchayath	**No of NHG**	**Total**
Puthoor	11	**18**
Thrikkoor	5	
Varandharapilly	2	

Budget for 17K28d watershed

Budget component	%	17K28d
Administrative cost	10	867372
Monitoring	1	86737.2
Evaluation	1	86737.2
Entry point	4	346948.8
Institution & Capacity building	5	433686
DPR	1	86737.2
Watershed development works	56	4857283.2
Livelihood activities for asset less	9	780634.8
Production system and micro enterprises	10	867372
Consolidation phase	3	260211.6
Total	**100**	**8673720**


IWMP - KODAKARA (IWMP - 1)
SUGGESTED INTERVENTIONS
FOR
DRAINAGE & AREA TREATMENT
KALLAYI THODU WATERSHED(17K28d)
SCALE 1:32000
76°20'0"E
76°20'30"E
76°21'0"E
76°21'30"E
76°22'0"E
76°22'30"E
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
10°26'0"N
10°25'30"N
10°25'0"N
PYTHUR PANCHAYATH
THRIKKUR PANCHAYATH
VARANDARAPPILLY PANCHAYATH
PARAKKADAVU WATERSHED
Tree Planting
Solar Light
Compost Pit
Solar Water Heater
Solar Fence
INTERVENTIONS
Area Treatment - Public Assets
Public Well Cleaning
Structures
Brush Wood Dam
Check Dam Repair
Gully Plugging
VCB - Repair
Desiltation+Deepening
Desiltation
Desiltation+Side Varambu Earthening+Brush Wood Bunding
Side Wall Protection
Thodu Restoration
Assets
Thodu
Major Thodu
Ponds
980 Survey Number
KERALA STATE LAND USE BOARD

MUPLIYAM WATERSHED (17K28af)

General Description

Mupliyam micro watershed is the fifth largest micro watershed in the IWMP cluster of Kodakara PIA with an area of 379.50 ha (6.07% of total geographical area). This micro watershed is located at Varandharapilly Gramapanchayat. Kurumali River flows through the north western boundary of this micro watershed. Vellarampadam, Mupliyam, Muplikunnu, Anthiyampadam are the major places of interest.

Name of micro watershed	:	Mupliyam
Micro watershed code	:	17K28af
River basin	:	Karuvannur
District	:	Thrissur
Block Panchayat	:	Kodakara
Gramapanchayat	:	Varandharapilly
Village	:	Mupliyam
Latitude	:	$10^0$23 to $10^0$25'30" North
Longitude	:	$76^0$20' to $76^0$21'30 East
Wards	:	Varandharapilly Panchayat -14,15,16 (part)
Total Area	:	379.50
% area in the IWMP cluster	:	6.07%

Socio economic profile

The general socio economic situation of the micro watershed is average. As per the informations from baseline survey conducted, the socio economic status of this watershed is as follows.

Socio economic status - Mupliyam watershed

Total number of Households		1319
Total Population		4304
Adults	Male	1607
	Female	1696
	Total	3303
Children	Male	529
	Female	472
	Total	1001
Number of Woman Headed Families		229
Number of BPL Families		367
Number of persons enrolled under MGNREGS		303
Households	Scheduled Caste	45
	Scheduled Tribe	2
	General	1272
Land holdings	Landless	3
	Marginal (<5 cent)	106
	Very small (6-50cent)	849

	Small (51-250 cent)	320
	Medium (251-500 cent)	41
	Large (>500 cent)	0

Biophysical Resources

Relief

The relief of the watershed ranges from to 160m above msl. Majority of the area (154.34 ha) falls in the relief category of 10m to 20m above msl and 86.37 ha is situated in the relief range of 20m to 30m.

Slope

Majority area (126.54 ha) of this watershed is moderately sloping (5-10%) followed by moderately steep slopes (121.86 ha) with 15 – 35% slope.

Drains

The Kurumali is the major river flowing through the watershed boundary. Nochi thodu, Pottanpadam thodu, Pidikka thodu, Pulikka thodu, Anthiyampadam thodu, Kopli thodu are minor drains. There are 7 number of public ponds situated in this watershed

Land use

The major land of the watershed area is mixed crops (132.55 ha) followed by Rubber plantation (90.57 ha).

Geology

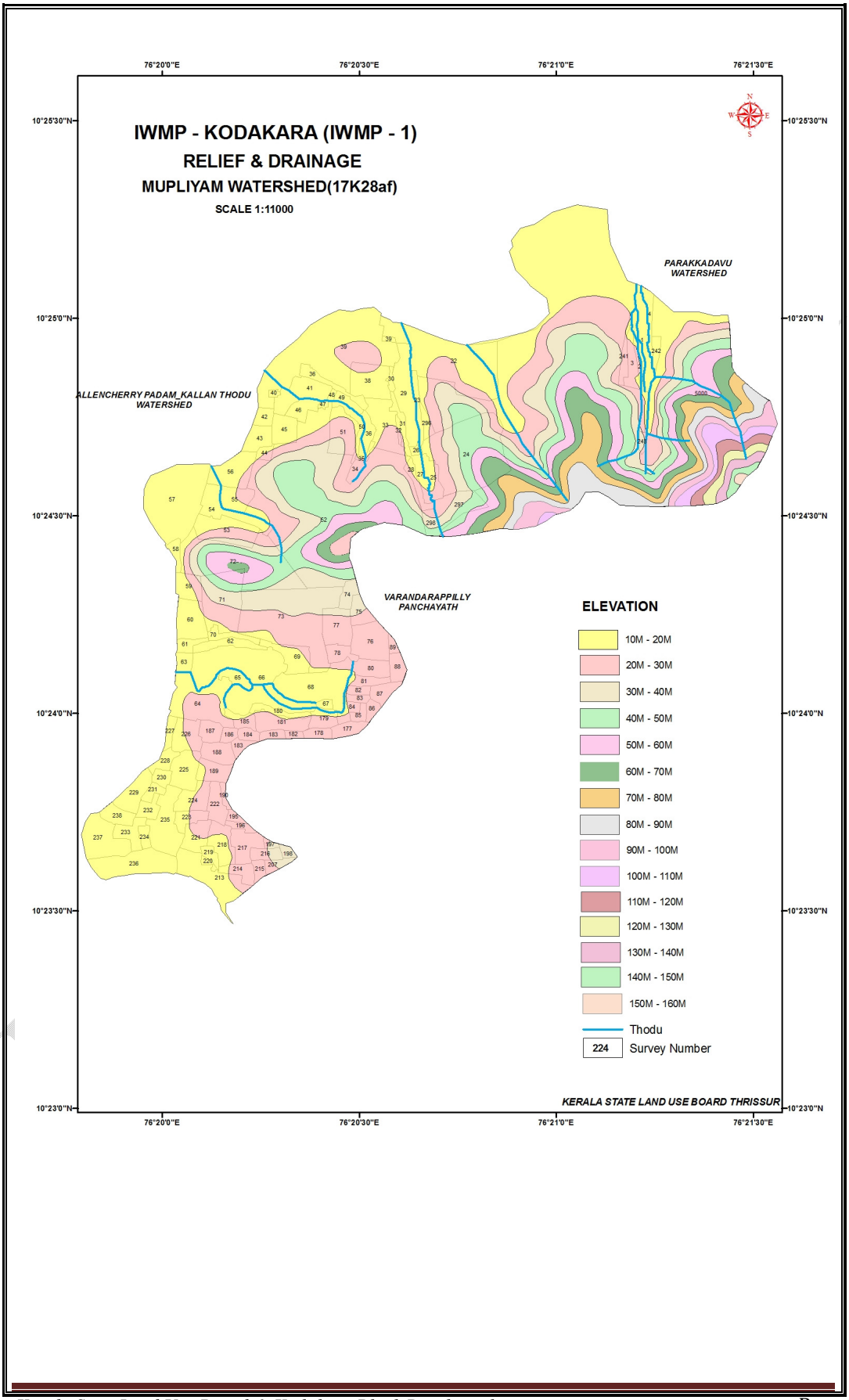
The geological units of this watershed are charnockite group of rocks (368.23 ha) and basic rocks (11.27 Ha).

Geomorphology

The three geomorphologic of this watershed are Piedmont zone (289.17 ha), Denudational Structural Hills (62.78 Ha) and Valley fills (27.56 ha).

Soils

The major soil series of this watershed are Koratty (231.94 ha), Palappilly – Chelakkara (65.52 ha) followed by Anallur (49.07 ha).


IWMP - KODAKARA (IWMP - 1)
RELIEF & DRAINAGE
MUPLIYAM WATERSHED(17K28af)
SCALE 1:11000
PARAKKADAVU WATERSHED
ALLENCHERRY PADAM_KALLAN THODU WATERSHED
VARANDARAPPILLY PANCHAYATH
ELEVATION
10M - 20M
20M - 30M
30M - 40M
40M - 50M
50M - 60M
60M - 70M
70M - 80M
80M - 90M
90M - 100M
100M - 110M
110M - 120M
120M - 130M
130M - 140M
140M - 150M
150M - 160M
Thodu
224 Survey Number
KERALA STATE LAND USE BOARD THRISSUR
76°20'0"E
76°20'30"E
76°21'0"E
76°21'30"E
10°25'30"N
10°25'0"N
10°24'30"N
10°24'0"N
10°23'30"N
10°23'0"N

SWOT Analysis 17K 28 af

Sl. No	Area of Intervention	Strength	Weakness	opportunities	Threat
1	Agriculture	31% of watershed area under paddy cultivation raising two crops. One padasekharasamithi functioning inside the watershed	60% of wetland ecosystem suitable for paddy cultivation converted into mixed crops and rubber	0.5 Ha cultivable fallow land where two crops can be raised. Raising of pulse & vegetable as third crop in 10 ha.	
2	Horticulture	35% of area of watershed under coconut based farming system with intercrops such as nutmeg, plantain, pepper, ginger, turmeric, tuber crops. Access to KHDP market functioning nearby watershed.	23% of area of watershed under monocrop of rubber.	Incrent with suitable soil and water conservation measures such as stone pitched contour bunding and terracing in medium slopes, mulching, cover cropping, water harvesting such as staggered trenches and pits.	A number of abandoned quarries situated in the micro watershed. Unscientific quarrying leads to depletion of water table

Sl. No	PROBLEM TOPOLOGY 17K 28 af			
	Problem Area	**Constraints**	**Solutions**	**Project Support**
1	**Water Resource**			
	Surface			
	First order streams	Gully formation	gully plugging, area treatment with suitable water & soil conservation measures	Gully plugging, area treatment with suitable water & soil conservation measures

	Thodu	Siltation, encroachment, bank erosion, poor maintenance of VCB	Desiltation, embankment protection of thodu using earth silt and using cement concrete in specific areas. Repair of existing VCB's	Deepening of thodu, desiltation of thodu, sidevarambu earthening, and embankment stabilization side wall protection. VCB repair
	Lift irrigation	Silting up of irrigation channel. Leakage of water through side wall of distributary channel	Desiltation of irrigation channel Repair of side wall of field channel	Desiltation of irrigation channel Repair of side wall of field channel
	Ponds	Silting up of valley head ponds	Desiltation of ponds Side wall stabilization earthen	Desiltation Side wall stabilization earthen
	Ground Water			
	Wells	wells dry up in December onwards in the upper reaches of the micro watershed		Recharging wells
		Presence of plutonic rock in hill crust decrease the yield of well	Rain water harvesting	Rain water harvesting tank Silpolin tank
5	**Common Property**			
	Forest	35% of total area of watershed under reserve forest but more than 10% of reserve forest have been encroached and converted into Teak plantations. Denudation also prevail in certain pockets	Afforestation, agroforestry	Afforestation, agroforestry in critical catchment
		Cattle grazing	Social fencing	Promoting fodder bank & stall feeding
	Anganwadi	Electricity not available.	Solar light & fan	Solar light & fan
	School	Electricity not available.	Solar light & fan	Solar light & fan

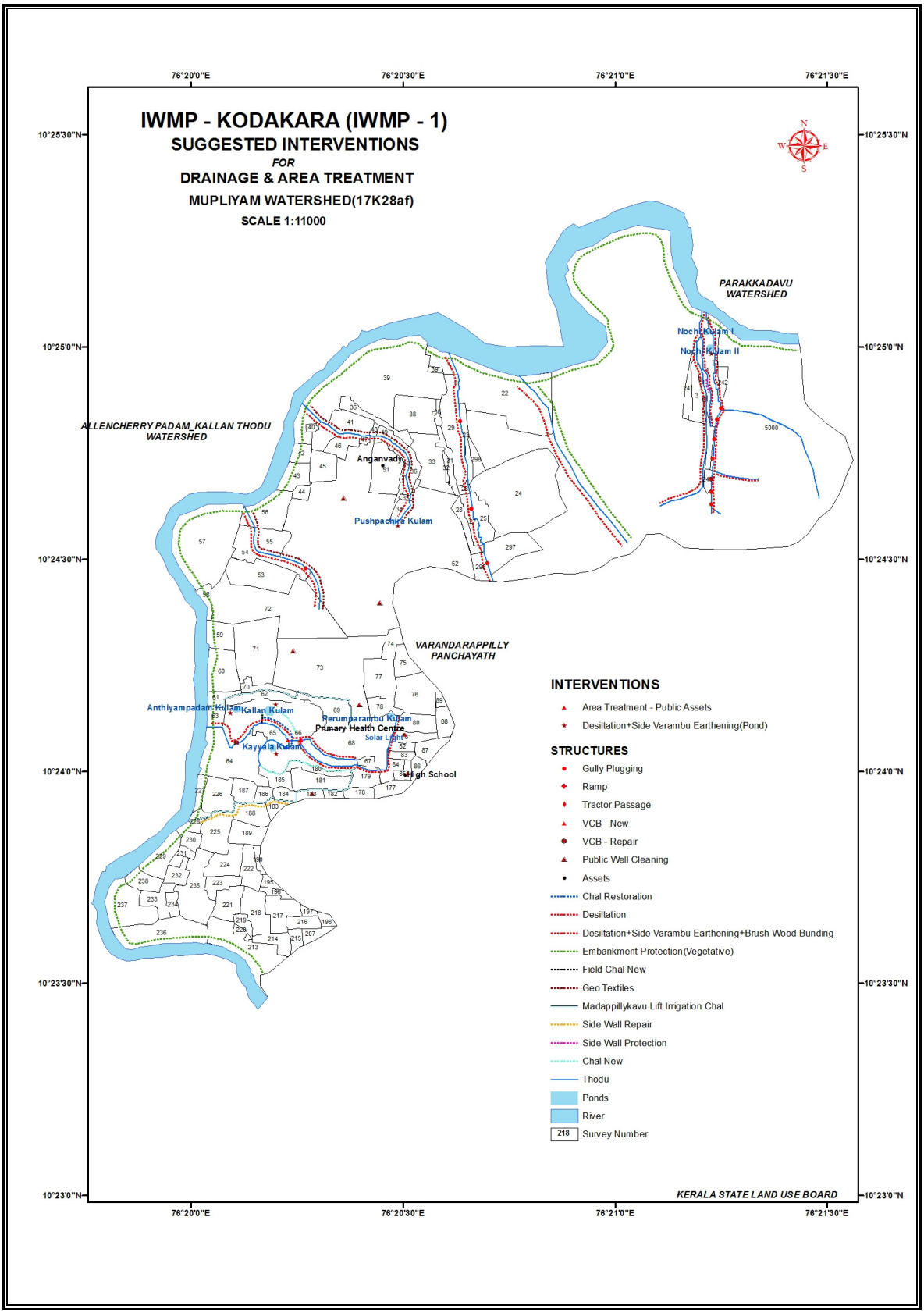
Neighbourhood Groups

19 Neighbourhood Groups are constituted in the watershed area combining 40 to 50 adjacent households.

NHGs of 17K28af Micro watershed		
Panchayath	**No of NHG**	**Total**
Varandharapilly	19	**19**

Budget for 17K28af watershed

Budget component	%	Amount
Administrative cost	10	313080
Monitoring	1	31308
Evaluation	1	31308
Entry point	4	125232
Institution & Capacity building	5	156540
DPR	1	31308
Watershed development works	56	1753248
Livelihood activities for asset less	9	281772
Production system and micro enterprises	10	313080
Consolidation phase	3	93924
Total	**100**	**3130800**


IWMP - KODAKARA (IWMP - 1)
SUGGESTED INTERVENTIONS
FOR
DRAINAGE & AREA TREATMENT
MUPLIYAM WATERSHED(17K28af)
SCALE 1:11000
76°20'0"E
76°20'30"E
76°21'0"E
76°21'30"E
10°25'30"N
10°25'0"N
10°24'30"N
10°24'0"N
10°23'30"N
10°23'0"N
PARAKKADAVU WATERSHED
ALLENCHERRY PADAM_KALLAN THODU WATERSHED
VARANDARAPPILLY PANCHAYATH
Noch Kulam I
Noch Kulam II
Anganvady
Pushpachira Kulam
Anthiyampadam Kulam
Kallan Kulam
Perumparambu Kulam
Primary Health Centre
Solar Light
Kayyala Kulam
High School
INTERVENTIONS
Area Treatment - Public Assets
Desiltation+Side Varambu Earthening(Pond)
STRUCTURES
Gully Plugging
Ramp
Tractor Passage
VCB - New
VCB - Repair
Public Well Cleaning
Assets
Chal Restoration
Desiltation
Desiltation+Side Varambu Earthening+Brush Wood Bunding
Embankment Protection(Vegetative)
Field Chal New
Geo Textiles
Madappillykavu Lift Irrigation Chal
Side Wall Repair
Side Wall Protection
Chal New
Thodu
Ponds
River
218 Survey Number
KERALA STATE LAND USE BOARD

THESSERY - KUZHIKKANNI THODU MICRO WATERSHED (17K28aj)

General Description

Thessery- Kuzhikkanni Thodu micro watershed is the second smallest micro watershed in the IWMP cluster of Kodakara PIA with an area of 253.92ha (4.06% of total project area). This micro watershed is located in Mattathur and Parappukkara Gramapanchayat 55% of total micro watershed area. The remaining 45% of total micro watershed area is located in Parappukkara Gramapanchayat. The Kurumali River flows through the Northwest and Northern boundary of the watershed.

Name of micro watershed	:	Thessery – Kuzhikkanni Thodu
Micro watershed code	:	17K28aj
River basin	:	Karuvannur
District	:	Thrissur
Block Panchayat	:	Kodakara, Irinjalakuda
Gramapanchayat	:	Mattathur, Parappukkara
Villages	:	Mattathur, Nellayi, Parappukkara.
Latitude	:	$10^0$22'30'' to $10^0$24' North
Longitude	:	$76^0$17' to $76^0$19'30'' North
Wards	:	Mattathur – 18, 19, 20 (part) Parappukkara – 5, 6 (part)
Total Area	:	253.92 ha
% area in the IWMP cluster	:	4.06 %

Socio economic profile

The general socio economic situation of the micro watershed is average. As per the informations from baseline survey conducted As per the information provided in the baseline survey, the socio economic status of this watershed is as follows.

Socio Economic Status: Thessery - Kuzhikkani thodu watershed		
Total number of Households		1097
Total population		4387
Adults	Male	1649
	Female	1753
	Total	3402
Children	Male	540
	Female	445
	Total	985
Number of Woman Headed Families		257
Number of BPL Families		291
Number of persons enrolled under MGNREGS		137
Households	Scheduled Caste	74
	Scheduled Tribe	4
	General	1019

Land holdings	Landless	11
	Marginal (<5 cent)	189
	Very small (6-50cent)	717
	Small (51-250 cent)	175
	Medium (251-500 cent)	4
	Large (>500 cent)	1

Biophysical Resources

Relief

The relief of the watershed ranges upto140m above msl. The majority of the area (152.46ha) falls in the category of 10-20m above msl, An area of 61.91ha falls in the category of 0 – 10m and 26.70 ha falls in the range 20 – 30m above msl.

Drains

The Kurumali River is flowing through the north and north-west boundary of this watershed. 5 minor streams and one public pond are situated in the watershed.

Landuse

The major land use of this watershed is mixed crops (220.99 ha).17.23 ha paddy fields are converted to garden land.

Geology

The geological unit of the entire watershed is charnockite groups of rocks

Geomorphology

The geomorphological units of this watershed are Pediment zone (213.85 Ha), Valley fill (18.48 Ha) Lower plateau (lateritic) (18.40 Ha) and Structural hills (3.18 Ha).

Slope

195.93 ha area of this watershed is very gently sloping (0 -3 %), 39.02 ha area is moderately sloping (5 – 10%) and 10.41 ha area is very steeply sloping (> 35%).

Soils

The major soil series of this watershed are Kodakara (130.38 ha), Puzhakkal (40.55 ha), Karinkulam (51.13 ha), Koratty (28.92 ha), and Vadakanchery/Chithilappilly (2.95 ha).

SWOT Analysis 17K 28aj					
Sl. No	**Area of Intervention**	**Strength**	**Weakness**	**opportunities**	**Threat**
1	Agriculture	Riverine ecosystem	Poor maintenance of irrigation canal system, paddy land converted for banana cultivation, rubber plantation, reclaimed paddy land for bricklins flooded & remain as wasteland	Cultivable fallow land & lease farmers	Conversion of wetland ecosystem into garden land, pose severe threat to availability of drinking water & natural drainage. Flooding during rainy seasons
2	Horticulture	Coconut based farming system intercropped with arecanut, nutmeg, banana, Plantain varieties, ginger, pepper, turmeric & fruit plants	Coconut affected by root wilt disease. Lack of availability of skilled labour for insitu budding of nutmeg, harvesting of coconut, arecanut, staking of banana	Scope for increasing cropping intensity of plantain varieties, vegetables, tuber crops, ginger, turmeric, pepper. Skilled labour group for nutmeg insitu budding coconut climbing etc	Poor management of coconut, decline in area, productivity. Absentee farming lack of main stay in farming
	Horticulture		Accessibility to market of perishable crops such as banana and vegetable is less	Women SHG's & lease farmer's cultivation banana nendran as livelihood good yield, assured market for nutmeg scope for starting collection centre for banana & vegetable in Mattathur Panchayat. Coconut cluster as an organised group of farmers functioning in all	In the neighbourhood group which is lying in close proximity to forest, (ward XVIII- NHG-1 Mattathur Panchayat) due to lack of wild animals from forest, cultivation of tuber crops, banana & vegetable not possible

				wards in the watershed area	
3	Animal Husbandry	Backyard poultry taken up at subsistent level by majority of households. Assured milk collection centres or diary cooperatives for cattle rearing.	Lack of availability of fodder. Lack of knowledge base regarding scientific management cattle rearing. High investment for modern dairy farm.	Cattle rearing taken as major livelihood by many women, marginal farmers. Scope for increasing backyard poultry as additional source of income. Scope for increasing cultivation of fodder in common properties such as canal Purampoku & as intercrop in coconut garden.	Cattle rearing cannot be taken up as group enterprise due to lack of sufficient space for construction of the shed.
4	Natural Resources	Kurumali River flowing along boundary of watershed. In upper reaches there is forest. Majority of the watershed area, the landform is gentle slope or valley.	The major soil (60%) of this watershed belongs to the land capability classification IIIes where erodability and gravelliness are the limitations. Around 20% of area of this watershed in upper reaches, the slope is very steep and vegetation is poor. (Land capability classification VI e) Bank erosion of river due to flooding	Area treatment with suitable soil and water conservation measures such as Afforestation in very steep sloppy areas mulching, cover cropping, water harvesting measures such as staggered trenches agrostological measures. Embankment protection of rivers using vegetative measures.	Quarrying of critical catchment of the watershed with very steep slope, sand mining from river etc adversely affecting the water table.

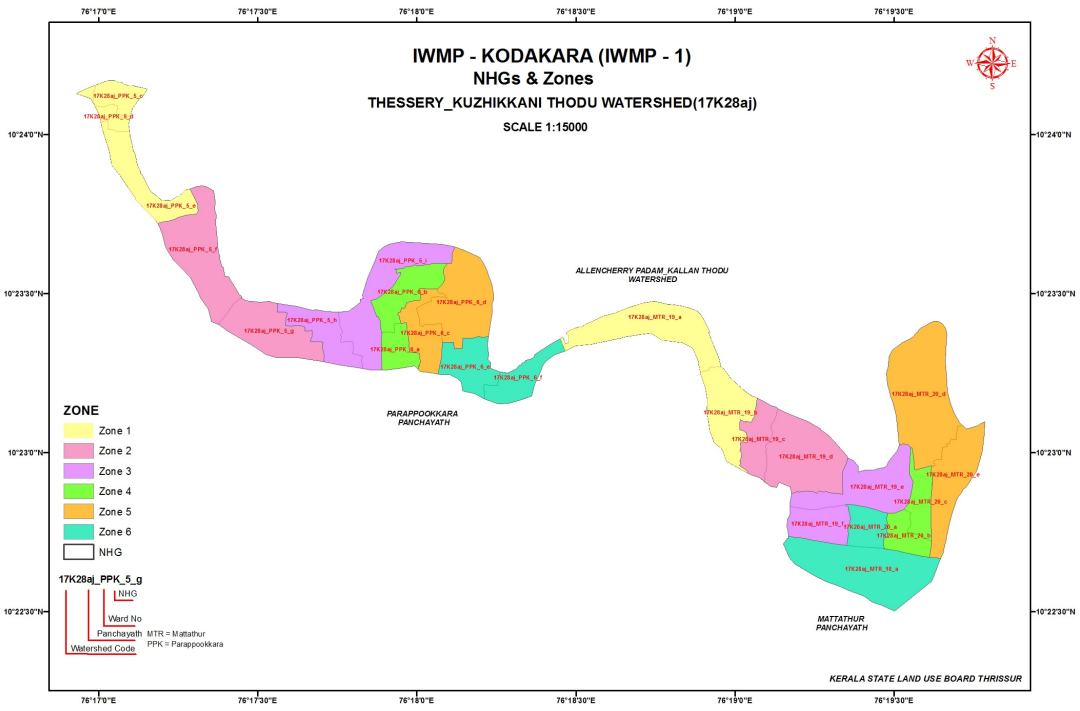
	PROBLEM TOPOLOGY 17K 28aj			
Sl. No	**Problem Area**	**Constraints**	**Solutions**	**Project Support**
1	Soil	60% of the area lateritic soil texture - gravelliness Soil erosion - erodability medium 20% of area (upper reaches) land is very steep and require minimum tillage. In this area erosion hazard is high	Soil & water conservation measures with a ridge to valley approach. Agroforestry using deep rooted tree species of medicinal and timber value. Cover cropping, mulching construction of contour bunds & staggered trenches & pits. Agrostological measures	Renovation of old stone pitched contour bunds Construction of new stone pitched contour bunds Construction of staggered trenches pits Centripetal terracing for coconut, nutmeg. Cover cropping for rubber plantation & coconut basins Mulching basins of coconut, arecanut, nutmeg Field bund construction of agrostological measures Agroforestry using tree species of timber, medicinal and fodder value Live fencing using species of medicinal and green leaf manure value
2	Vegetation	Availability of green leaf manure, fodder, poles or standards for staking banana poor	Promoting agroforestry as part of area treatment	As part of Natural Resource Management promoting Live fencing, Agrostological Measures, Agroforestry and Fodder Cultivation
4	Water Resource			
	Ÿ Surface	River affected by bank erosion	Embankment protection using bamboo, reed	As part of drainage line treatment, embankment protection of river using bamboo, reed
				Raising nursery of bamboo , reed
	Ponds	Ponds silted & infested by aquatic weeds	Desiltation of ponds & removal of aquatic weeds	As part of renovation surface water sources, desiltation & repair of valley head ponds
	Ÿ Ground Water	Wells silted up	Desiltation of well	Desiltation of private & public well

	Ÿ Drinking Water	Wells in upper reaches with low water table hard rock in the substratum, dry up in March	Recharging Wells Desiltation of wells	In those areas of watershed facing acute water shortage recharging wells, diverting rain water harvested from roof top into pits filled with sand, gravel and coal
5	**Common Property**			
	Forest	denuded, steep slope	Afforestation with deep rooted species	Afforestation convergence with NREG's
	River	Bank erosion, sand mining from river	Embankment protection	River embankment protection with bamboo, reed
	Irrigation Bund	Breach of bund due to flooding from river	Strengthening of bund	Construction of earthen bund strengthened by agrostological measures
	Irrigation Canal Purampoku	Encroachment, grazing	Planting of medicinal plants, fodder etc	Afforestation in canal Purampoku with provision for tree guard for live fence & potted irrigation

Neighbourhood Groups

25 Neighbourhood Groups, spreading over 2 panchayaths, are constituted in the watershed area combining 40 to 50 adjacent households.

NHGs of 17K28aj Micro watershed		
Panchayath	**No of NHG**	**Total**
Mattathur	12	**25**
Parappookkara	13	



Budget for 17K28aj watershed

Budget component	%	17K28aj
Administrative cost	10	304704
Monitoring	1	30470.4
Evaluation	1	30470.4
Entry point	4	121881.6
Institution & Capacity building	5	152352
DPR	1	30470.4
Watershed development works	56	1706342.4
Livelihood activities for asset less	9	274233.6
Production system and micro enterprises	10	304704
Consolidation phase	3	91411.2
Total	**100**	**3047040**

NELLAYIPADAM MICRO WATERSHED (17K28ak)

General Description

Nellayipadam micro watershed is the smallest micro watershed in the IWMP cluster of Kodakara PIA with an area of 186.30ha (2.98%of total project area). This micro watershed is located only in Parappukkara Gramapanchayat. The Kurumali River flows through the North and Northwestern boundary of the watershed.

Name of micro watershed	:	Nellayipadam
Micro watershed code	:	17K28ak
River basin	:	Karuvannur
District	:	Thrissur
Block Panchayat	:	Irinjalakuda
Gramapanchayat	:	Parappukkara
Villages	:	Parappukkara, Thottipal.
Latitude	:	$10^0$23'30'' to $10^0$25'30'' North
Longitude	:	$76^0$14'30'' to726^{0}17' East
Wards	:	1,2,3,4,5(part)
Total Area	:	186.30 ha
% area in the IWMP cluster	:	2.98 %

Socio economic profile

The general socio economic situation of the micro watershed is average. As per the informations from baseline survey conducted, the socio economic status of this watershed is as follows.

Total number of Households		1088
Total population		4515
Adults	Male	1699
	Female	1879
	Total	3577
Children	Male	526
	Female	413
	Total	939
Number of Woman Headed Families		193
Number of BPL Families		214
Number of persons enrolled under MGNREGS		143
Households	Scheduled Caste	76
	Scheduled Tribe	9
	General	1003
Land holdings	Landless	4
	Marginal (<5 cent)	159
	Very small (6-50cent)	784
	Small (51-250 cent)	133
	Medium (251-500 cent)	7
	Large (>500 cent)	1

Biophysical Resources

Relief

The relief of the watershed ranges up to 20m above msl. Majority of the area (174.74 ha) falls in the range of 0-10m above msl,

Drains

The Kurumali River is flowing through the north and northwestern boundary of the watershed is the major drain of this watershed.

Landuse

The major land use of this watershed is mixed crops (75.64 ha). 62.44 ha paddy fields are converted to garden land.

Geology

The geological units of this watershed are Charnokitic group of rocks (158.61 ha) and Migmatite complex (27.68 ha

Geomorphology

The geomorphological units of this watershed are Lower plateau (Lateritic) dissected (152.97 Ha), Valley fills (33.24 ha) and Mud flats (0.09 ha).

Slope

The entire area of this watershed falls in the category of very gentle slope (0-3%).

Soils

The major soil series of this watershed are Koratty (111.05 ha), Ikkaranad (48.56 ha), and Manalur/Ayyanthole/Konchira (26.69 ha).

SWOT Analysis 17K 28ak					
Sl. No	**Area of Intervention**	**Strength**	**Weakness**	**opportunities**	**Threat**
1	Agriculture	Riverine ecosystem	Wet land (covering 40% of total area)reclaimed extensively impairing natural drainage & resulting in flood		Conversion of wetland ecosystem into built up areas, and garden land pose severe threat to availability of drinking water & natural drainage. Flooding during rainy seasons
2	Horticulture	Coconut based farming system intercropped with arecanut, nutmeg, banana, Plantain ginger, pepper, turmeric & fruit plants	Coconut affected by root wilt disease. Lack of availability of skilled labour for insitu budding of nutmeg, harvesting of coconut, arecanut, staking of banana	Scope for increasing cropping intensity of plantain varieties, vegetables, tuber crops, ginger, turmeric, pepper. Skilled labour group for nutmeg insitu budding coconut climbing etc	Coconut in reclaimed paddy field affected by root wilt disease .Poor management of coconut, decline in area, productivity due to attack by red palm weevil & rhinoceros beetle
3	Animal Husbandry	Backyard poultry taken up at subsistent level by majority of households. Assured milk collection centres or diary cooperatives for cattle rearing.	Lack of availability of fodder. Lack of knowledge base regarding scientific management cattle rearing. High investment for modern dairy farm.	Cattle rearing taken as major livelihood by many women, marginal farmers. Scope for increasing backyard poultry as additional source of income. Scope for increasing cultivation of fodder	
				scope for aqua culture in ponds	

4	Natural Resources	Kurumali River flowing along boundary of the watershed. Majority of the watershed area, the landform is riverrine	14% of the watershed area belongs to the land capability classification IV w where the land is submerged & soil is acidic and can be brought under cultivation of paddy only through special method of cultivation	Fertile riverine aluvial soil well suited for Horticultural crops such as nutmeg, plantain vegetable, banana and tuber crops. Cultivable fallow available in the interspaces of coconut garden	Change in land use Reclaimation of paddy land (wet land ecosystem) into garden land has impaired natural drainage resulting in flodding. Unscientific laying out of irrigation bunds without considering the drainage, slope, soil

Sl. No	PROBLEM TOPOLOGY 17K 28ak			
	Problem Area	**Constraints**	**Solutions**	**Project Support**
1	Soil	40% of area of the watershed belongs to the land capability classification III w & IV w which is clayey, acidic suitable for paddy cultivation alone 60% of the watershed belongs to land capability classification III e where texture of the soil is gravelly	Area treatment giving thrust for drainage channels, construction of field bunds etc in lower reaches & soil management such as tillage cover cropping, mulching, centripetal terracing in upper reaches	As part of NRM, renovation desiltation of drainage channels, strengthening of filed bunds agrostological measures, cover cropping, mulching, centripetal terracing of coconut, arecanut & nutmeg
2	Productivity	Low in coconut (affected by root wilt disease) poor organic matter content in soil	INM	As crop demonstration promoting INM in coconut using Soil ameliorant (lime) & green manure/pulse seed
3	Vegetation	Lack of availability of green leaf manure, fodder, poles for banana	Promoting agroforestry as part of area treatment	As part of Natural Resource Management promoting Live fencing, Agrostological Measures and Fodder Cultivation

4	Water Resource			
	Surface	River affected by bank erosion	Embankment protection using bamboo, reed	As part of drainage line treatment, embankment protection of river using bamboo, reed
				Raising nursery of bamboo , reed
		Ponds silted &infested by aquatic weeds	Desiltation of ponds & removal of aquatic weeds	As part of renovation surface water sources, desiltation & repair of valley head ponds
	Ground Water	Wells silted	Desiltation of well	Desiltation of private & public well
	Drinking Water	Wells in close proximity to low land paddy fields quality affected (symptoms of high levels of sulphur & iron)	Recharging wells	recharging wells, diverting rain water harvested from roof top into pits filled with sand, gravel and coal
5	**Common Property**			
	River	Bank erosion, sand mining from river	Embankment protection	River embankment protection with bamboo, reed
	Irrigation Bund	Breach of bund due to flooding from river	Strengthening of bund	Construction of earthen bund strengthened by agrostological measures
	Irrigation Canal Purampoku	Encroachment, grazing	Planting of medicinal plants, fodder etc	Afforestation in canal Purampoku with provision for live fence & potted irrigation

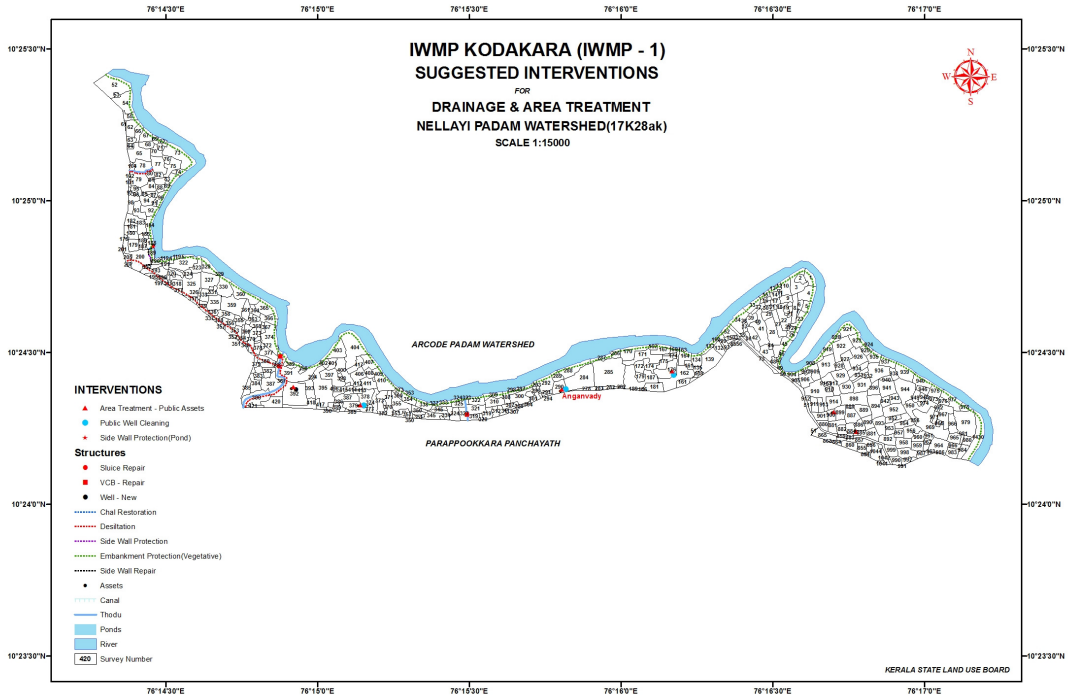
Neighbourhood Groups

20 Neighbourhood Groups are constituted in the watershed area combining 40 to 50 adjacent households.

NHGs of 17K28ak Micro watershed		
Panchayath	**No of NHGs**	**Total**
Parappookkara	20	**20**

Budget for 17K28ak watershed

Budget component	%	Amount
Administrative cost	10	223560
Monitoring	1	22356
Evaluation	1	22356
Entry point	4	89424
Institution & Capacity building	5	111780
DPR	1	22356
Watershed development works	56	1251936
Livelihood activities for asset less	9	201204
Production system and micro enterprises	10	223560
Consolidation phase	3	67068
Total	**100**	**2235600**



Activities proposed

Based on the series of discussions held with the different stakeholders the following activities are suggested.

Activities Proposed		
Natural Resource Management (NRM)	**Vegetative measures**	Bio Fencing (Live Hedge)
		Aforestation on Common Properties
		Tree Planting on Common Properties Agroforestry
		Agrostological Measures
		Centripetal terracing with husk trenching and mulching for Arecanut, Coconut, Nutmeg.
		Covering Crops Coconut, rubber
		Fodder
		Horticulture
		Intercultural Tillage
		Brush wood check dam (Streams) Brush wood bunding (Streams)
		Embankment Stabilization (River) (Vegetative)
		Embankment Stabilization (Thodu) (Vegetative)
		Geo Textiles (Streams)
		Geo Textiles (Ponds)
		Assisted Natural Regeneration (Forest)
		Biofencing (Ponds)
	Engineering measures	Stone Pitched Contour Bund New
		Stone Pitched Contour Bund Repair Earthen Bund New
		Earthen Bund Repair
		Field Bunding (Varambu - Paddy field)
		Base level Bunds
		Field Bunding (Etha Madal)
		Moisture collection pits
		Staggered Trench
		Strip terracing (Platform) Repair
		Strip terracing (Platform) New
		Embankment Stabilization (Varambu)
		Side Varambu Earthening
		Gully Plugging
	Allied activities	Aerobic Compost
		Azolla
		Biogas 1M3
		Biogas 2M3
		Compost (3.6 x 1.5 x 0.9 m)
		Crop Demonstration Rehabilitation Pepper

		Crop Demonstration Area Expansion Capsicum
		Crop Demonstration Area Expansion Plantain
		Crop Demonstration Area Expansion Cabbage/Cauliflower
		Crop Demonstration Budding Nutmeg
		Crop Demonstration Crop Rotation
		Crop Demonstration INM Arecanut
		Crop Demonstration INM Banana
		Crop Demonstration INM Coconut
		Crop Demonstration IPM Nutmeg
		Crop Demonstration IPM Paddy
		Crop Demonstration IPM Vegetable (Non Pandal)
		Crop Demonstration IPM Vegetable (Pandal)
		Pipe Compost
		Rain Water Harvesting tank
		Silpolin tank
		Soak pit Vermicompost (3.6 x 1 x0.75m)
		Tractor Passage (concrete slab)
		Ramp
		Motor (Mini Drinking Water for 25 houses)
		Pipe (Mini Drinking Water for 25 houses)
		Tank (Mini Drinking Water for 25 houses)
		Mini Drinking Water Scheme for ST Colony
		Community Biogas
		Rain water Harvesting
		Solar Heater
		Solar Light + Fan
		Solar Street Light
	Activities related to surface water resources	Desiltation (Canal)
		CADA Extension
		CADA Repair (concrete)
		Chaal Restoration (Earthen)
		Check dam shutter (iron)
		Check dam Repair
		Desiltation of Ponds Desiltation of Streams
		Drip Irrigation
		Drop pit Repair (Canal)
		Field Chal (pipe)
		Field Chal (pipe) (Canal)
		Field Chal Repair (Canal)

		Field Chal New (Earthen)
		Field Chal Repair (Earthen)
		Irrigation cum drainage channel (Aani chaal)
		Laying of Pipes for Irrigation
		Lift Irrigation Chal (Side wall)
		Lift Irrigation Chal (Side wall)
		New Channel (Thodu)
		Pond repair
		Rennovation of Edachaal
		Side wall enhancement (Ponds)
		Side Wall Protection (Ponds)
		Side Wall Repair (Ponds)
		Side Wall Repair (Streams)
		Sluice Repair (Ponds)
		Sluice Repair (Streams)
		Spout Repair (Canal)
		Inverted Siphon Desiltation (Canal)
		Canal bed level cleanlng
		Springler Irrigation
		Stream (Thodu) Deepening
		Stream (Thodu) Restoration
		Stream (Thodu) Widening
		VCB-New (Streams)
		VCB-Repair (Streams)
	Activities related to Ground water resources	Cleaning (desiltation) (Public well)
		New Public well
		Side Wall Protection (Public well)
		Well Net (Public well)
		Well Recharge (Wells)
		Well Side Wall Enhancement (Public well)
Production Plan		Aqua Culture (Paddy Field)
		Aqua Culture (Tank)
		Backyard Poultry
		Construction of Poultry shed
		Cattle rearing (Providing Animals)
		Renovation of cattle Shed (construction of pucca floor, urine tank & fodder trough for cattle)
		Floriculture Anthurium
		Fodder nursery
		Goat Rearing
		Construction of Goat shed
		Calf Rearing
		Construction of Calf shed

	Lift irrigation Samithies (Revolving fund to user groups)
	Marketing Centre
	Nursery Banana
	Paddy farming (IPM+INM)
	Rabbit Rearing
	Vegetable Farming (Non pandal)
	Vegetable Farming (pandal)
	Construction of Rabbit shed
Livelihood	Agro Service Centre Aqua Culture
	Areacanut leaf Plate making
	Bamboo Basket making
	Banana (N) lease farming
	Banana Lease Farming
	Bee Keeping
	Canteen
	Cattle Rearing
	Compost Production Emu Rearing
	Floriculture Anthurium
	Floriculture Bush jasmine
	Floriculture Marigold
	Fodder Cultivation
	Ginger Turmeric Farming
	Goat Rearing
	Kadalivazha Lease Farming
	Labour Bank of Panchayat - Equipments (Haritha Sena)
	Lease land Paddy Farming
	Medicinal plant Cultivation
	Mushroom Cultivation
	Nursery (Banana)
	Nursery (Bamboo)
	Nursery (Forest)
	Nursery (Medicinal Plant))
	Nursery (Nutmeg)
	Nursery (Tray method vegetable seedling)
	Nursery(Fruit Plants)
	Nursery(Medicinal Plants)
	Paddy Farming IPM + INM
	Paddy Lease Farming
	Paddy farming Dry land

	Paddy Processing Unit Plant protection skilled labour groups
	Processing Unit
	Rabbit Rearing (Individual)
	Skilled labour group for coconut climbing
	Skilled labour group for Mechanised Farming
	Skilled labour Group Nutmeg Insitu Budding
	Skilled labour Tapping Bund Construction
	Unskilled labour group
	Vana Samrakshana Samithi (Forest nursery, collection of forest produce and sale)
	Vegetable lease cultivation
	Vegetable lease Farming
	Vegetable Market

ESTIMATES FOR WATERSHED DEVELOPMENT WORK (NRM)

Watershed works is the important component of the Integrated Watershed Management Programme. 56 % of the total project cost is allocated for the execution of these works. This is the core component of the IWMP watershed project. Two types of soil and water conservation works are covered under this component. Based on the nature of activity it can be classified into

1. Vegetative and Agronomic measures
2. Physical measures(Mechanical or Structural or Engineering measures)
3. Allied activities such as energy conservation measures such as tapping solar energy, biogas, etc. and crop demonstration, crop management are also included in this component.

Based on the location of treatment; watershed development works can be classified in to Area treatment and Drainage line treatment.

A. Area treatment plans

Vegetative and Agronomic measures

Horticulture

The size of holdings vertically determines the type of horticultural plants and the numbers of these plants it can support.

Type A: - for holdings less than 25 cents

Sl. No.	PLANTING MATERIAL	QNTY	RATE	AMOUNT
1	Amorphophallus	3 Pits	800g tuber per pit @ Rs.20/kg	48
2	Colocasia	3 Pits	250g tuber per pit @ Rs.30/kg	23
3	Plantain	2 Nos	Sucker @ Rs.10	20
4	Vegetables in bags	10Nos	@Rs.20/bag for potting mix and seedlings, cement bags	200
			Total cost	**291**
			IWMP assistance	**250**
			Beneficiary contribution	**41**

All planting is to be converged using MNREGS labour.

Type B: - Holdings between 25 and 50 cents

Sl. No.	PLANTING MATERIAL	QNTY	RATE	AMOUNT
1	Horticulture crops (Mango, Nutmeg.etc.),except rubber	3 - 12 Nos	Price range from Rs: 10/- to 40/-	120
2	Minor fruit trees	4 - 8 Nos	Price range from	80

	(guva, champa)		Rs: 10/- to 20/-	
3	Plantain/Nendran banana	6 - 9 Nos	Price range from Rs: 10/- to 15/-	90
			Total cost	**290**
			IWMP assistance	**250**
			Beneficiary contribution	**40**

Type C: - For holdings above 50 cents

Sl. No.	PLANTING MATERIAL	QNTY	RATE	AMOUNT
1	Horticulture crops (Mango, Nutmeg.etc.),except rubber	6 - 20 Nos	Price range from Rs: 10/- to 40/-	120
2	Minor fruit trees (guva, champa)	5 - 10 Nos	Price range from Rs: 10/- to 20/-	80
3	Plantain/Nendran banana	6 – 9 Nos	Price range from Rs: 10/- to 15/-	90
			Total cost	**450**
			IWMP assistance	**350**
			Beneficiary contribution	**100**

Agroforestry

The size of holdings vertically determines the type of Agroforestry components and the numbers of these plants it can support.

Type A:- for holdings less than 25 cents

Sl. No.	PLANTING MATERIAL	QNTY	RATE	AMOUNT
1	Timber Plants	3 Nos	@ Rs.10 / Nos	30
2	Medcinal Plants	3 Nos	@ Rs.10 / Nos	30
			Total cost	**60**
			IWMP assistance	**50**
			Beneficiary contribution	**10**

Type B: - Holdings between 25 and 50 cents.

Sl. No.	PLANTING MATERIAL	QNTY	RATE	AMOUNT
1	Timber Plants	6 Nos	@ Rs.10 / Nos	60
2	Medcinal Plants	5 Nos	@ Rs.10 / Nos	50
			Total cost	**110**
			IWMP assistance	**90**
			Beneficiary contribution	**20**

Type C: - For holdings above 50 cents

Sl. No.	PLANTING MATERIAL	QNTY	RATE	AMOUNT
1	Timber Plants	10 Nos	@ Rs.10 / Nos	100
2	Medcinal Plants	10 Nos	@ Rs.10 / Nos	100
			Total cost	**200**
			IWMP assistance	**160**
			Beneficiary contribution	**40**

Biofencing (live hedge)

Sl. No.	Description		Qty.	Rate	Amount
1	3 Nos of Green cutting of glyricedia, muring a or any other Easily available vegetative cutting 1 m length having approximate 3 to 5 cm dia. required to plant at a spacing of 20 cm between to two cutting including conveyance from source to side.				
	Green cutting	LS	5 Nos	3.00/E	15.00
2	Reapers required for cross fencing Stabilization of plants				
	Cutting	LS	2 Nos	1.50/Rm	3.00
3	Coring yarn for tying reapers and planted cuttings				
	Cuttings	LS	0.05 kg	30/Kg	1.50
4	Labour charges for planting the cuttings at a depth of 20 cm and filling the holes with earth completing and cross typing the green cutting etc complete.				
			0.04	125/Rm	5.00
Total					**24.50**
Rs. 24.50/Rm					

Fodder

Sl. No.	COMPONENTS	QNTY	DESCRIPTION	AMOUNT/ha
1	Fodder cultivation (slips)	10 cent	Total cost = Number of slips required for 10 cent is 100 @ Rs.1/one + Land preparation and planting labour 5 man days @ 400/one + Cost of organic manure is Rs. 2000/-	1000 + 2000 + 2000 = 5000
			Total cost	**5000**
			IWMP assistance (80% of cost)	**4000**
			Beneficiary contribution	**1000**

Tree Planting 400 plants / Ha at a spacing 5 x 5 m

Sl.No.	Activity	Mandays	Rate	Amount
1	Taking pits – 0.5x0.5x0.5m/One	1 pit = 0.125m^3 400 pits	Rs. 206.407/m^3 Rs. 26/pit	10400
2	Covering pits, digging planting holes	150 Nos/Man 2.6 Men	Rs.400/Man	1040
3	Cost of seedlings		10/One	4000
4	Transporting seedlings	200 pits/Woman 2 Women	Rs.300/Woman	600
5	Planting seedlings	100 pits/ Woman 4 Women	Rs.300/Woman	1200
6	First weeding and slight digging up of pits to remove weeds	40pits/Woman 10 Women	Rs.300/Woman	3000
7	Second weeding	60pits/ Woman 7 Women	Rs.300/Woman	2100
8	Third weeding	80 pits/Woman 5 Women	Rs.300/Woman	1500
9	Pot irrigation	16 irrigation in 5 months($^{1/2}$ Woman/irrigation) 8 Women	Rs.300/Woman	2400

10	Tree guard [LS](materials)		75/One	30000
11	Labour for fixing tree guard	15Nos/Woman 26 Women	Rs.300/Woman	7800
GRAND TOTAL				**64040**

Physical measures (Mechanical or Structural or Engineering measures)

Land development work plans

Strip terraces (platform terraces)

Strip Terracing Platform New

Sl. No	Description of Work	No	L	B	D	Qty.	Amount
1	Earth work Excavation in ha rd soil of cutting the earth for making strip terrace 1.125 m^3 @ 898/ 10 m^3	1	.5	1.5	1.5	1.125m^3	101
Say@ Rs. 101/ NO							

Strip Terracing Platform repair

Sl. No	Description of Work	No	L	B	D	Qty.	Amount
1	Earth work Excavation in hard soil of cutting the earth for making strip terrace 1.125 m^3 @ 898 / 10 m^3	1	.5	1.5	1.5	1.125m^3	101
Say@ Rs.101/No							

Stone pitched bunds (kayyala)

SI NO	COMPONENTS	QTY	RATE
1	Stone pitch bund - New	m^2	143.52/m^2
2	Stone pitch bund - Repair	m^2	143.52/m^2

Contour earthen bunds

SI NO	COMPONENTS	QTY	RATE
1	Earthern bund - New	Rm	27/Rm
2	Earthern bund - Repair	Rm	14.5/Rm

Field bunding (paddy field)

SI NO	Description of Work	UNIT	L	B	H	QUANTITY	AMOUNT
1	Earth work Excavation in clay soil of cutting the earth for making field bunds. 7.5 m^3 @ 583/10^3	1 acre (300 m)	100 m	1.5 m	0.05 m	22.5 m^3	437
Say @ Rs. 437/100m							

Field bunding (Ethamadal)

SI NO	Description of Work	UNIT	L	B	H	QUANTITY	AMOUNT
1	Earth work Excavation in ordinary clay soil of cutting the earth for making field bunds. 22.5 m^3 @ 583/10^3	1 acre	100 m	1.5 m	0.15 m	22.5 m^3	1312
Say @ Rs.1093 /100m							

Ridge area treatment plans

Staggered trenches

Sl. No	Description of Work	No	L	B	D	Qty.	Amount
1	Earth work Excavation in ordinary soil and depositing on bank with initial lead for foundation of Bit trenches	1	1	1+0.50/2=0.75	0.5	0.37m^3	18

	0.37 m^3 @ 485.85/ 10 m^3						
Say@ Rs.18/ No							

Moisture collection pits

Sl. No	Description of Work	No	L	B	D	Qty.	Amount
1	Earth work Excavation in mix soil and depositing on bank with initial lead for foundation of Bit trenches	1	1.2	0.6	0.6	0.43m^3	30
	0.43 m^3 @ 692/10m^3						
Say@ Rs.30/ No							

others

Centripetal terracing and mulching

Centripetal terracing for Coconut

1	Earth work excavation in ordinary soil and depositing on bank with in initial lead and lift for forming the circular trench including neat banking etc. complete.	
	3.14 x (1.5^2-0.50^2) x 0.15 = 0.942	
	Say 0.942m^3@Rs. 485.85/10m^3	**46/No**

Centripetal terracing for Arecanut

1	Earth work excavation in ordinary soil and depositing on bank with in initial lead and lift for forming the circular trench including neat banking etc. complete.	
	3.14 x ($.75^2$-0.15^2) x 0.15 = 0.254	
	Say 0.254m^3@Rs. 485.85/10m^3	**12/No**

Centripetal terracing for Nutmeg

1	Earth work excavation in ordinary soil and depositing on bank with in initial lead and lift for forming the circular trench including neat banking etc. complete.	
	3.14 x (2^2-0.45^2) x 0.05 = 0.5962075 **Say 0.5962075m^3@Rs. 485.85/10m^3**	**Rs: 29**
2	Formation of varambu	
	6.28m x 0.5m x 0.15m = 0.471 m^3	
	0.471 m^3@Rs. 583/10 m^3	**Rs: 27.4593**
	Total	**Rs: 56 / No.**

Tillage

SI NO	COMPONENTS	QTY	AMOUNT/Ha
1	Tillage operations in ordinary soil m^2 @ 82/10m^2	ha	82000

Cover cropping

Cover cropping for Rubber

SI NO	COMPONENTS	QNTY	RATE	AMOUNT/Ha
1	Cover cropping for Rubber	1 ha (500 trees)	1.25 kg/ha	900
			Total cost	**900**
			IWMP assistance (80% of cost)	**720**
			Beneficiary contribution	**180**

Agrostological measure

SI NO	COMPONENT	QTY	RATE
1	Agrostological measures	100 m	710/100m

Allied activity

Crop Demonstration

Integrated Nutrient Management (INM)

This involves judicious blend of organic, inorganic fertilizers and biofertilisers in providing all the vital nutrients required for plant growth.

INM in coconut

Application of green manure

Sl. No	COMPONENTS	QNTY	RATE	AMOUNT/ha
1	Green manure crops (even cowpea)	200 No	100g per palm @ Rs.65/kg	1300
			Total cost	**1300**
			IWMP assistance (80% of cost)	**1040**
			Beneficiary contribution	**260**
Minimum plot size : 25 cents/plant population of 20 palms				

Application of lime

Sl. No	COMPONENTS	QNTY	RATE	AMOUNT/ha
1	Lime	200 No	1kg per palm @ Rs.9/kg	1800
			Total cost	**1800**
			IWMP assistance (80% of cost)	**1440**
			Beneficiary contribution	**360**
Minimum plot size : 25 cents/plant population of 20 palms				

Total cost for INM Coconut = Rs.3100/ha

IWMP assistance (80% of cost) = Rs.2500/ha

Beneficiary contribution = Rs.600/ha

INM in Arecanut

Application of lime

Sl. No	COMPONENTS	QNTY	RATE	AMOUNT/ha
1	Lime	1300 No	250g per palm @ Rs.9/kg	3000
			Total cost	**3000**
			IWMP assistance (80% of cost)	**2400**
			Beneficiary contribution	**600**
Minimum plot size : 20 cent or 100 palms				

INM in Nendran Banana

Application of Green manure crops

Sl. No	COMPONENTS	QNTY	RATE	AMOUNT/ha
1	Green manure crops (including cowpea)	2500 No	20g per plant @ Rs.65/kg	3250
			Total cost	**3250**
			IWMP assistance (80% of cost)	**2500**
			Beneficiary contribution	**1250**
Minimum plot size : 100 plants				

Application of lime

Sl. No	COMPONENTS	QNTY	RATE	AMOUNT/ha
1	Lime	2500 No	250g per plant @ Rs.9/kg	5625
			Total cost	**5625**
			IWMP assistance (80% of cost)	**4500**
			Beneficiary contribution	**1625**
Minimum plot size : 100 plants				

Total cost for INM Nendran Banana = Rs. 8875/ha
IWMP assistance (80% of cost) = Rs.7100/ha
Beneficiary contribution = Rs.1775/ha

Integrated Pest Management (IPM)

IPM in Nutmeg

Application of Chitin Pseudomonas

Sl. No	COMPONENTS	QNTY	RATE	AMOUNT/ha
1	Application of Chitin enriched Pseudomonas	150 No	spray concentration20g/litre/100g per tree@ Rs.60/kg (spray solution of 5 liters per tree)	900
			Total cost	**900**
			IWMP assistance (80% of cost)	**700**
			Beneficiary contribution	**200**
Minimum plot size : 25 cents/15 trees				

IPM in Vegetables

Type A: - For Pandal type Vegetables

Application of Chitin Pseudomonas

Sl. No	COMPONENTS	QNTY	RATE	AMOUNT/ha
1	Application of Chitin enriched Pseudomonas	ha	spray concentration20g/litre/6 kg/ha @ Rs.60/kg (spray solution of 300 l/ha)	360
			Total cost	**360**
			IWMP assistance (80% of cost)	**290**
			Beneficiary contribution	**70**
Minimum plot size : 25 cents				

Application of Verticillium laccani

Sl. No	COMPONENTS	QNTY	RATE	AMOUNT/ha
1	Application of Verticillium laccani	ha	spray concentration20g/litre/12 kg/ha @ Rs.50/kg (spray solution of 300 l/Ha, two time application)	600
			Total cost	**600**
			IWMP assistance (80% of cost)	**480**
			Beneficiary contribution	**120**
Minimum plot size : 25 cents				

Placing Cuelure Pheromone traps

Sl. No	COMPONENTS	QNTY	RATE	AMOUNT/ha
1	Placing of Cuelure Pheromone traps for control of Fruit flies	ha	Rs.230/one,one number/ Ha,	250
			Total cost	**250**
			IWMP assistance (80% of cost)	**200**
			Beneficiary contribution	**50**
Minimum plot size : 25 cents				

Total cost for Biocontrol agents per hectre (1+2+3) = Rs.1210/ha
IWMP assistance (80% of cost) = Rs.970/ha
Beneficiary contribution = Rs.240/ha

Type B: - For Non Pandal type Vegetables

Application of Chitin Pseudomonas

Sl. No	COMPONENTS	QNTY	RATE	AMOUNT/ha
1	Application of Chitin enriched Pseudomonas	ha	spray concenteration20g/litre/6 kg/ha @ Rs.60/kg (spray solution of 300 l/ha)	360
			Total cost	**360**
			IWMP assistance (80% of cost)	**290**
			Beneficiary contribution	**70**
Minimum plot size : 15 cents				

Application of Verticillium laccani

Sl. No	COMPONENTS	TIMES OF APPLICATION	RATE	AMOUNT/ha
1	Application of Verticillium laccani	2	spray concentration20g/litre/12 kg/ha @ Rs.50/kg (spray solution of 300 l/Ha, two time application)	600
			Total cost	**600**
			IWMP assistance (80% of cost)	**480**
			Beneficiary contribution	**120**
Minimum plot size : 15 cents				

Total cost for Biocontrol agents per hectre (1+2) = Rs. 960/ha
IWMP assistance (80% of cost) = Rs.770/ha
Beneficiary contribution = Rs.190/ha

IPM in Paddy

Application of Pseudomonas fluorescens

Sl. No	COMPONENTS	QNTY	RATE	AMOUNT/ha
1	Application of Pseudomonas fluorescens as seedling dip before transplanting seedlings	ha	Pseudomonas 2.5 kg/ha @ Rs.50/kg	125
			Total cost	**125**
			IWMP assistance (80% of cost)	**100**
			Beneficiary contribution	**25**

Placing of Tricho cards

Sl. No	COMPONENTS	TIMES OF APPLICATION	DESCRIPTION	AMOUNT/ha
1	placing of Trichocards (to be applied for three consecutive weeks starting from two weeks after transplanting	3	Trichogramma chelonis @2.5CC/Ha + Trichogramma Japonicum **@** 2.5CC/Ha ie, 5CC/Hafor one time application. Cost of tricho cards @ Rs.30/CC, and Rs.150/Ha	450
			Total cost	**450**
			IWMP assistance (80% of cost)	**350**
			Beneficiary contribution	**100**

Total cost for Biocontrol agents per hectre (1+2) = Rs.575/ha
IWMP assistance (80% of cost) = Rs.450/ha
Beneficiary contribution = Rs.125/ha

Insitu Budding in Nutmeg

Sl. No	COMPONENTS	QNTY	RATE	AMOUNT/ha
1	Budding charges (insitu)of nutmeg	150 nos	Converting a single three year old seedling through budding into a female bearer @ Rs.100/seedling	15000

			Total cost	15000
			Assistance proposed through IWMP(Assistance for planting material under SHM)	10000
			Beneficiary contribution	5000
Minimum plot size : 25 cents/15 plants				

Rehabilitation of pepper gardens

Pepper cuttings

Sl. No	COMPONENTS	QNTY	DESCRIPTION	AMOUNT/ha
1	Pepper cuttings	600 nos	15 additionals for a plot of 25 standards, 600 nos /ha @ Rs. 2/one	1200
			Total cost	**1200**
			IWMP assistance (80% of cost)	**1000**
			Beneficiary contribution	**200**
Minimum plot size : for plots with at least 25 standards				

Application of Trichoderma mix

Sl. No	COMPONENTS	QNTY	DESCRIPTION	AMOUNT/ha
1	Trichoderma Mix	1000 standards	For 100 kg mixture (1kg Trichoderma, 90 kg dried cow dung, 10 kg Neemcake). Dose:- 2.5 kg mixture per standards. Trichoderma 25 kg /ha @ Rs.70/ kg with Rs.1750 . Cost of cowdung and neemcake rounded to Rs. 3250	1750 + 3250 = 5000
			Total cost	**5000**
			IWMP assistance (80% of cost)	**4000**
			Beneficiary contribution	**1000**
Minimum plot size : for plots with at least 25 standards				

Total cost for Pepper Rejuvenation (1+2) = Rs.6200/ha
IWMP assistance (80% of cost) = Rs.5000/ha
Beneficiary contribution = Rs.1200/ha

Area Expansion

Area Expansion of Plantain

Sl. No	COMPONENTS	QNTY	RATE	AMOUNT/ha
1	providing suckers of plantain as intercrop	100 nos	10 suckers for 25 cents. Cost of planting materials @ Rs. 10/ sucker , plant population of 100 plants /ha	1000
			Total cost	**1000**
			IWMP assistance (80% of cost)	**800**
			Beneficiary contribution	**200**
Minimum plot size : 25 cents				

Area Expansion of Capsicum

Sl. No	COMPONENTS	QNTY	RATE	AMOUNT/ha
1	Providing seedlings of Capsicum	1250 nos	Cost of seedlings @ Rs.1/seedlings	1250
			Total cost	**1250**
			IWMP assistance (80% of cost)	**1000**
			Beneficiary contribution	**250**
Minimum plot size : 10 cents				

Area Expansion of Cool season Vegetables.

Sl. No	COMPONENTS	QNTY	RATE	AMOUNT/CENT
1	Providing seedlings of Cabbage and Cauliflower	100 nos	Cost of seedlings @ Rs.5/seedlings. 100 seedlings/plot of one cent	500
			Total cost	**500**
			IWMP assistance (80% of cost)	**400**
			Beneficiary contribution	**100**
Minimum plot size : 10 cents				

Total cost for Area expansion (1+2+3) = Rs.2750/ha

IWMP assistance (80% of cost) = Rs.2200/ha

Beneficiary contribution = Rs.550/ha

Crop Rotation in paddy

Sl. No	COMPONENTS	QNTY	RATE	AMOUNT/ha
1	Green manure crops (even cowpea)	1 ha	40kg per hectare @ Rs.65/kg	2600
			Total cost	**2600**
			IWMP assistance (80% of cost)	**2000**
			Beneficiary contribution	**600**

Vegetable Cultivation

Vegetable Cultivation (Non pandal) – Plot size 25 cents

A. Material Costs			
Sl NO	**DESCRIPTION**		**AMOUNT**
1	Cost of seed		100
2	Cost of lime 25kg @ 9/kg		225
3	Cost of organic manure		2900
	Cow dung 500kg @ 2/ kg	Rs. 1000	
	Neem cake 50kg @ 18/ kg	Rs. 900	
	Bone meal 50 kg @ 20/ kg	Rs. 1000	
	Total Cost	Rs. 2900	
4	Cost of fertilizers		265
	Urea 15kg @5.90/kg	Rs. 88.5	
	Rajphos 12.5kg @ 7.40/kg	Rs. 92.5	
	Muriate of Potash 5kg @16.80/kg	Rs. 84	
	Total Cost	Rs. 265	
5	Cost of plant protection chemicals		210
	Chitin Pseudomonas(20g/l spray dsolution of 30l)	Rs. 60	
	Verticiillium laccani	Rs. 50	
	Other organic Pesticides	Rs. 100	
	Total Cost	Rs. 210	
Sub Total :- (1+2+3+4+5)			**3700**
B. Labour Cost			
1	Land Preparation and Planting (3 men @ 400/day	Rs. 1200	1200
2	Weeding, Irrigation (6 Women @ 300/day	Rs. 1800	1800
3	Fertilizer, PPC application	Rs. 800	800
Sub Total :- (1+2+3)			**3800**
Total Cost Of Cultivation (A+B)			***7500***
Assistance under IWMP for material component alone			**2000**
Beneficiary contribution for materials			**1700**
Beneficiary contribution for labour (Family labour)			**3800**

Vegetable cultivation [Pandal type]

Expenditure for establishing Pandal over 25 cents				
Sl.No.	**Item**	**Quantity**	**Rate [Rs.]**	**Amount**
1	Bamboo/ Casuaerina poles	175 Nos	25/one	4375
2	Metal wire [thin type with protective coating]	12 Kg	50/Kg	600
3	Plastic rope	3 Kg	200/Kg	600
4	Labour	5 Mandays	400/Manday	2000
Total				**7575**
Say Rs. 7500				

IWMP assistance for establishing pandal = Rs. 2400

Beneficiary contribution= Rs. 5100

Cultivation of Cool Season Vegetables: (1 unit = 50 plants)

Sl NO	**DESCRIPTION**	**AMOUNT**
1	Cost of seedlings @ Rs. 5/ Plant	250
2	Cost of organic manure and fertilizers	250
3	Cost of PPC	200
4	Labour For Land preparation, Planting and Earthing up(2 men @ 400/man)	800
Total Cost Of Cultivation		***1500***
Assistance under IWMP for material component alone		**500**
Beneficiary contribution for materials		**200**
Beneficiary contribution for labour (Family labour)		**800**

Mahali Control in Arecanut:(1 unit = 25 cents/Plant Population 130 plants)

Sl NO	**DESCRIPTION**	**AMOUNT**
1	Copper Sulphate @ 2 kg/25 cent and cost @ 175/kg	350
2	Lime @ 2 kg/25 cent and cost @ 9/kg	18
Total Cost Of Chemicals for 1unit		***368***
Assistance under IWMP for material component alone		**185/unit**
Beneficiary Contribution for materials		**183/unit**

Composts

Sl NO	**TYPE**	**L**	**B**	**H**	**D**	**QTY**	**RATE**
1	Vermi Compost	2	1	0.5	-	1 m^3	9000
2	Pipe Compost	-	-	1.5	.15	2 Pipes	1000
3	Aerobic Compost	1.2	1.2	1.2	-	1.44 m^3	4000
4	Ordinary Compost	3.6	1.5	0.9	-	4.86 m^3	8000

Vermicompost Tank

Expenditure for Two tanks 2m long, 2m wide and 45cm height				
A. Labour Cost				
Sl.No.	**Description**	**Labour required**	**Rate**	**Amount**
1	Levelling and compacting soil for laying the base of the tank	½ Man	400	200
2	For construction of tank - brick work	Mason – 2	650	1700
		Assistant - 1	400	
3	Plastering of tank	Mason – 2	650	1700
		Assistant – 1	400	
Sub Total				**3600**
B. Material Cost				
Sl. No.	**Item**	**Rate**	**Quantity**	**Amount**
1	Concrete block of 30cm x 20cm x 15cm Dimension	Rs. 30/One	55	1650
2	Country bricks 20cm x 10cm x 5cm	Rs. 6/ One	420	2520
3	Cement	Rs. 350/bag	4	1400
4	River sand	Rs. 40/C.ft	40 C.ft	1600
5	Permanent roofing using G1 pipe and G1 sheet			4500
6	Transportation of materials			1200
	Country bricks	Rs. 500		
	Concrete blocks	Rs. 500		
	Cement	Rs. 200		
7	Chicken mesh net for cover	Rs. 600		600
8	Cost of cowdung (2 tanks)	Rs. 2/Kg	180Kg	360
9	Cost of worm	Rs. 1/worm	500 Nos	500
Sub Total				**14330**
Grand Total{A + B)				**17930**
Say Rs. 18000/-				

Ordinary Compost [NADEP Composting]

Methodology:

Quantity of agricultural waste required = 1100 – 1200 Kg

Quantity of cowdung required = 150 Kg

Process involves digging a pit of above dimension and a series of layers of agricultural waste, cowdung and soil are successively heaped upon each other within it. About 100 Kg waste is placed at the bottom of the dugout pit in a layer about 6 inches high. 4 Kg of cowdung mixed in 120 litres of water is applied on top of this layer. (Quantity of water is adjusted to keep the waste below sufficiently moist). Above this a second layer of cleaned and silted soil (roughly

half the weight of agricultural waste used, about 50Kg) is spread, on which a little water is sprinkled. In this manner successive layers are heaped until the waste is approximately 45 cm above the pit. The layering can be broken up to allow time for the freshly heaped waste to settle down. After the waste has settled down the top of the pit is sealed with a thick layer of cowdung and a plastering of about 3 inches thick with soil and cowdung. The pit should be protected from rain by providing temporary roofing and ridges all around to pit to prevent rain water from percolating directly in to the pit. The compost will be ready to use after 4 – 5 months.

Expense for laying a pit of dimension [3.6 x 1.5 x 0.9m]

Sl.No.	Item	Quantity	Rate	Amount
1	Procuring/ Transportation of agricultural waste	IMT		1000
2	Cowdung	150Kg	2.50/Kg	375
3	Clearing of site for taking pit [5 x 5m]	25m^2	377/Man	94.25 Say 100
4	Earth work excavation in hard soil for pit	4.86m^3	2064.07/10 m^3	1003 Say 1000
5	Processing of waste, cowdung for layering	4 Women	300/Women	1200
6	Collecting and preparing top soil for layering	½ Man & 1 Woman	300/Woman 400/Man	500
7	Layering, sealing of pit	4 men, 6 women	400/Man 300/Women	3400
8	Temporary roofing			500
Grand Total				**8075**
Say Rs. 8000/-				

Total cost for laying pit :Rs. 8000/-
IWMP assistance :Rs. 5000/-
Beneficiary contribution :Rs. 3000/-

Aerobic composting (Thumboormuzhi Model)

Methodology:

Thumboormuzhi model tank consists of a ferrocement box of dimension 4 ft x 4ft x 4 ft with slots on all four sides for allowing passage of air in to the tank [the ferrocement planks are detachable and can be fitted into slots provided on the four posts]. The base of the tank is a ferrocement slab or can be mud. The tank is to be protected from rain with a temporary roof. The basal portion of the tank can be protected from rats by attaching wire net to a height up to 1 foot, all around the tank.

Fresh cowdung is to be spread to a depth of 6 inches at the base of the tank. Another layer of dried leaves, coconut husk, dried coconut leaves, paddy straw, news paper bits etc. is spread over the base layer to a depth of 6 inches. Organic waste is then spread on top to a depth of 6

inches. After the organic waste has been added, the entire cycle is repeated starting with the fresh cowdung. The organic waste generated from households can be spread effectively in the tank. Inthis case the layering should start from the centre of the tank and progress outwards until a depth of 6 inches has been achieved. The method can also be effectively used for composting animal wastes from slaughterhouses, carcass of dead animals, without any mal odour and seepage.

After the box has been completely filled it is left without disturbing for a period of 90 days. After 90 days the compost is taken out, spread out, sieved and stored in paper bags.

Expenditure for setting up one unit of two tanks of dimension 1.2 x 1.2 x1.2m

Expense for two tanks @ 8500/ One = 17000

Expense for temporary roofing = 1000

Cost of cowdung – 500 Kg@ 2.50/Kg= 1250

Total cost = 19250

Say Rs. 19000/-

Bio Gas

SI NO	TYPE	QUANTITY	RATE
1	Biogas (portable)	1 m^3	6500
2	Biogas (Fixed)	1 m^3	10000
3	Biogas (Fixed)	2 m^3	16000

B. Drainage line treatment plans

SI NO	ITEM	DIMENSION	QUANTITY	RATE	AMOUNT
1	Desiltation thodu	100 x 3 x 0.30	90 m^3	485.85 /10 m^3	43.7265/Rm
2	Side varambu earthening both sides	100 x 1.5 x1.5	101 m^3	2317/10 m^3	234.60/Rm
3	Smoothering of weeds	2 x 100 x 2	400 m^2	328/100 m^2	13.12/Rm
4	Embankment protection (River vegetation)	500 m (250 No)	250 No	18/No	4500
5	Embankment protection (Thodu vegetation)	100 m (2 x 50 No)	100 No	18/No	1800
6	BrushWood Bunding	1 m length	-	-	547.99

	using sand bags				
7	Thodu widening	100 x 2 x 1.50	300 m^3	898/10 m^3	269.40/Rm
8	New thodu	100 x 1 x 1	100 m^3	898/10 m^3	89.80/Rm
9	Thodu Restoration	100 x 1 x 1	100 m^3	692/10 m3	69.20/Rm
10	Thodu deepening	100 x 2 x 1	200 m^3	898/10 m^3	179.60/Rm
11	Geo texteils (Thodu)	2 x100 x 2	400 m^2	191 /m^2	764.00/Rm
12	Brush wood dam	3 x 1.5 x .75	-	-	1643.97
13	Temporary Check Dam using sand bag	3 m length	900 bags	25/bag	22500
14	Desiltation of Pond (in between 150 - 300)	50 x50 x 1	2500 m^3	649/10 m^3	162250
15	Smoothering of weeds (pond)	50 x50	2500 m^2	328/m^2	8200
16	Bio fencing	50 + 50	100 m	24.50/Rm	2450
17	Geo textiles (pond)	2 (50 + 50)x2.50	500 m^2	191/m^2	95500
18	Edachal (Rennovation)	1 x 1 x 1	1m^3	898/10 m^3	89.8/Rm
19	Irrigation chanel(Desiltation)	1 x.60 x .60	. 36 m^3	485.85 /10 m^3	17.49/Rm

ESTIMATES FOR LIVELIHOOD AND PRODUCTION PLANS

Banana Nendran variety Chengalikodan Nursery

Cost of cultivation – 100 plants

A. Material Costs

SI NO	DESCRIPTION	AMOUNT
1	Cost of suckers	1000
2	Cost of fertilizers and organic manure	2300
3	Cost of PPC	500
4	Cost of stakes @ 50/one	5000
	Sub Total :- (1+2+3+4)	**8800**
	B. Labour Cost	
1	Land Preparation including taking pits (tractor+2 men)	1400
2	Preparation of suckers (1 ½ woman)	450
3	Planting (2 men)	800
4	Weeding – twice (2 men)	800
5	Filling of pits (1/2 man)	400
6	Intercultivation, earthing up (2 men)	800
7	Plant protection (1 men)	400
8	Staking - including preparation of stakes (1 man and 1 woman)	700
9	Formation of irrigation channels (1man)	400

10	Covering of bunches including collection of dried leaves (2 men + 1 woman)	1100
11	Separating healthy suckers (1 ½ men and ½ women)	750
Sub Total		**8000**
Total Cost Of Cultivation (A+B)		***16800***
One unit of nursery = 200 plants		
Unit Cost of cultivation @ Rs.170/plant		**34000**
Assistance under IWMP for producing 3 suckers per plant (total 600 suckers/Unit, healthy suckers separated and kept ready) @Rs.16.66/sucker.		**Rounded off 10000**
Beneficiary contribution		**24000**

The suckers thus produced will have to be purchased from the farmer using IWMP fund provided under the component Horticulture in DPR and supplied for area expansion of the crop.

Lease land Nendran Banana Cultivation(Chengalikodan Variety)

Cost of cultivation as shown above;

Material cost for cultivation of 100 plants = Rs.8800

Assistance under IWMP (80% above cost) to lease farmers = Rs.7000 (Rs.70/plant)

Number of plants to be cultivated by a group provided with revolving fund Rs.25000 = 360

Cost of cultivation of 360 plants = Rs.106250

IWMP assistance (revolving fund) = Rs.25000

Nursery for Plantain varieties

1 unit/ 1 nursery = 600 plants

Cost of cultivation of 10 suckers		
Sl.No	**DISCRIPTION**	**AMOUNT**
1	Cost of suckers including transportation @ Rs.15/sucker	150
2	Labour for planting-½ men	200
3	Manures (Organic + Inorganic)	100
4	Plant Protection Chemicals (Pseudomonas)	100
5	Collection of healthy suckers – ½ men	200
Total cost		**750**
Cost of cultivation @ Rs.75/one		**45000**
Assistance under IWMP for producing 3 suckers per plant (total 1800 suckers/Unit, separated and kept ready) @Rs.13.33/sucker.		**Rounded off 24000**
Beneficiary contribution		**21000**

One nursery can be laid in the plots of a group of farmers ranging from 5-25 (depending upon the availability of land with them)

The suckers thus produced will have to be purchased from the farmer using IWMP fund provided under the component Horticulture in DPR and supplied for area expansion of the crop.

Paddy cultivation [1 Ha]

A. Machinery hire charges

Sl.No.	Description	Rate	Amount
1	For land preparation, 2 rounds of tractor (20 hrs)	Rs. 400/hr	8000
2	For transplanting, use of transplanter	Rs. 3000/acre	7500
Sub Total			**15500**

B. Material Cost

Sl.No.	Item	Rate	Quantity	Amount
1	Paddy seed	Rs. 25/Kg	80Kg	2000
2	Lime	Rs. 9/ Kg	350Kg	3150
3	Organic manures a) Cow dung b) Neem cake	 Rs. 2/Kg Rs. 18/Kg	 2000Kg 200Kg	 4000 3600 } 7600
4	Fertilizers a) Urea b) Rajphos c) Muriate of potash	 Rs. 5.90/Kg Rs. 7.40/Kg Rs. 16.80/Kg	 150Kg 175Kg 60Kg	 885 1295 1008 } 3188
5	Cost of plant protection chemicals			600
Sub Total				**16538**

C. Labour cost

Sl.No.	Description	Labour required	Rate	Amount
1	Formation of field bunds (Varamb)	2.5 men	Rs. 400/Man	900
2	Pulling over of weeds	5 Women	Rs. 300/ Women	1500
3	Application of lime, organic manure	1 man and 2 women		1000
4	Application of fertilizer	1 man and 1 woman		700

5	Weeding	20 Women		6000
6	Application of plant protection chemicals	2 men and 2 women		1400
7	Harvesting, threshing and winnowing	2 men and 40 women		20000
Sub Total				**31500**
Grand Total (A+B+C)				**63538**
Say Rs. 63500/- (25 cents = 6353.8 Say Rs. 6400/-)				

IWMP assistance as; Rs. 25000/- for groups for undertaking cultivation over 1Ha
Rs. 24000/Ha assistance to individuals for paddy cultivation, minimum area of 25 cents
Mushroom Cultivation

Expenditure for preparation of 500 beds				
A. Material cost				
Sl.No.	**Item**	**Rate**	**Quantity**	**Amount**
1	Spawn	Rs. 25/200g	50Kg	6250
2	Paddy straw	Rs. 12/bundle	500 bundle	6000
3	Plastic cover	Rs. 2/One	500 Nos (200 Guage)	1000
4	Preparation of shed			1750
Total Cost				**15000**

IWMP assistance limited to Rs. 12500/- as revolving fund to group for laying 500 beds or assistance to individuals for cultivation @ Rs. 25/bed, a minimum of 20 beds per person.
Beneficiary contribution Rs. 5/bed.
Expected yield: Group activity – from 500 beds – 250Kg Mushroom
Individuals - from minimum 20 beds – 10Kg Mushroom

Cost of cultivation of bush jasmine (Area 75 cents)

Sl.No.	**Description**	**Amount**
1	Land preparation(20 mandays x Rs.400)	8000
2	**Cost of fertilizers**	
	Urea	450
	Factomphos	1000
	MOP	1500

3	Cost of cuttings (1250 Nos x Rs. 10)	12500
4	Cost of Neemcake (125Kg)	1900
5	Cost of PPC	460
6	Cost of FYM	1390
Grand Total		**27200**

Cost of cultivation of Marigold (Area 50 cents)

Sl.No.	Description	Amount
1	Cost of seed (100 packets @ Rs. 10/- packet)	1000
2	Labour for land preparation and weeding (15 mandays x Rs.500)	7500
3	**Cost of fertilizer**	
	Urea 50 Kg	300
	Factomphos 60 Kg	1000
	Potash 20 Kg	350
4	Farmyard manure 4 tonnes @3.71	14850
Total		**25000**

Cost of cultivation of medicinal plants [like Kacholam, Koduveli, raised of close spacing] and also spicecrops like ginger, turmeric.

Plot size: 1 acre

A. Material cost		
Sl. No.	**Description**	**Amount**
1	Cost of planting material	20000
2	**Organic manures**	
	Cowdung 1000Kg @ 2.50/Kg	2500
3	**Fertilizer**	
	Urea 40Kg@5.90/Kg	236
	Rajphos 100Kg@7.40/Kg	740
	Muriate of potash 30Kg@16.80/Kg	504
4	Cost of PPC like Pseudomonas	500
Subtotal [1+2+3+4]		**24480**

B. Labour Cost			
Sl.No.	**Description**	**Amount**	
1	Land Preparation: a. Tractors charges for 10 hrs @ Rs. 400/Hrs b. Formation of drainage channels – 17 Men @ 400/Men c. Levelling land and formation of ridges/ beds – 20 Men @ 400/Men	4000 6800 8000	**18800**

2	Organic manure application and planting – 30 Women @ 300/Woman	9000
3	Weeding (Minimum 2 rounds) – 30 Women@ 300/Woman	9000
4	Fertilizer application and earthing up – 40 Women @ 300/Women	12000
5	Plant protection operations (2 rounds) – 2 men @400/Man	800
6	Harvesting – 10 Men @ 400/Men	4000
	Harvesting – 15 Women @ 300/Women	4500
7	Separating and cleaning of rhizomes – 10 Women @ 300/Woman	3000
Subtotal [1+2+3+4+5+6+7]		**61100**
Grand Total [A + B]		**85580/-**

Total cost of cultivation of 1 acre = 85580
IWMP assistance (for material components, machinery hire charges) = 25000
Beneficiary contribution, (labour) = 60580

Establishment of Forest Nursery

Expenditure for Establishing forest Nursery (10000 bags)				
A. Material Costs				
Sl.No.	**Item**	**Rate**	**Quantity**	**Amount**
1	Polythene Covers	130/Kg	20 Kg	2600
2	River sand	8000/ 200 C.ft	400 C.ft	16000
3	Topsoil	1000/200 C.ft	400 C. ft	2000
4	Cowdung	2/Kg	2000 Kg	4000
5	Seed			1000
6	Cost of pandal materials			8000
Sub Total				**33600**
B. Labour Cost				
Sl. No.	**Activity**	**Mandays**	**Rate**	**Amount**
1	Land Preparation, formation of seed beds – beds of 1m width, 10 m length ($10m^2$) – 10 numbers.	1 bed of 10 m^2 / Woman – 10 W	164	1640

2	Seiving of soil, sand for filling polythene covers	500 Bags/ Woman – 20 W	164	3280
3	Potting mixture preparation (24 m^3)	0.3 m^3 / Woman – 8 W	164	1312
4	Filling potting mixture in cover	200 bags / Woman – 50 W	164	8200
5	Preparation of Pandals	2.5 Woman/ bed of 10m^2 - 25 W	164	4100
6	Dibbling seeds in beds	0.25 Woman/ bed – 2.5 W	164	410
7	Pricking seedlings and planting in cover	6 Woman / bed – 60 Woman	164	9840
8	Watering, maintenance, removal of dead plants, restacking and other activities. [15 months]	150 Woman	164	24600
9	Unforscen			1428
Sub Total				**54810**
Grand Total (A+B)				**88410**

Nursery raised through convergence with MNREGS.

The above material, labour cost is to be met from MNREGS.

IWMP assistance, as revolving fund: Rs. 25000/-

This fund is to be used for meeting contingencies that cannot be met using MNREGS fund.

The seedlings produced by the women group should be purchased from them and distributed under IWMP Agroforestry component and Assisted Natural Regeneration component [ANR].

Pepper Nursery

Expenditure for raising 10000 cuttings (2500 bags)				
A. Material Costs				
Sl.No.	**Item**	**Rate**	**Quantity**	**Amount**
1	Pepper vines	Rs: 2/No.	3200 m	6400
2	River sand	Rs: 8000/200 C.ft	100 C.ft	4000
3	Top soil	Rs: 1000/200 C.ft	100 C.ft	600
4	Cow dung	Rs: 2/Kg	1500 Kg	3000

5	Polythene sheet for solarisation		1.25Kg	163
6	Polythene cover	Rs: 130/Kg	10Kg	1300
7	Poles for Pandal	Rs: 180/One	5 Nos	900
8	Arecanut poles (cross)	Rs. 100/One	2 Nos	200
9	Plaited coconut leaves	Rs:6/One	2 Bundles	240
10	Coir (Muppiri)	Rs:150/Kg	2Kg	300
11	Coir (Ezhakayar)	Rs:100/Kg	1Kg	100
12	Trichoderma	Rs: 70/Kg	3Kg	210
13	Pseudomonas	Rs: 50/Kg	3Kg	150
14	Neem cake	Rs: 18/kg	30 Kg	540
Sub Total				**18103**

B. Labour Cost

Sl. No.	**Activity**	**Mandays**	**Rate**	**Amount**
1	Preparation of potting mixture, solarisation	10	Rs:164/Women	1640
2	Construction of pandal	10	Rs:164/Women	1640
3	Filling of potting mixture in cover	6	Rs:164/Women	984
4	Preparation of cuttings	10	Rs:164/Women	1640
5	Planting of cuttings	15	Rs:164/Women	2460
6	Plant protection	6	Rs:164/Women	984
7	Weeding	4	Rs:164/Women	656
8	Removing unsprouted vines	2	Rs:164/Women	328
9	Irrigation	2	Rs:164/Women	328

10	Shade regulation	2	Rs:164/Women	328
Sub Total				**10988**
Grand Total (cost for raising 10000 cuttings) (A + B)				**29091**
Say Rs. 29000/-				

Nursery raised through convergence with MNREGS.
The above material, labour cost is to be met from MNREGS.
IWMP assistance, as revolving fund: Rs. 25000/-
This fund is to be used for meeting contingencies that cannot be met using MNREGS fund.
The rooted cuttings thus produced are to be purchased from the women group and distributed under IWMP schemes or other Panchayath schemes.

Fodder Nursery
For raising 36000 slips
Seed requirement = 1Kg
Nursery area = 40 m^2

Grass seeds should be sown densely 25g seed/m^2 of bed. Several thousand seeds germinate per m^2. They are to be shaded, hessian (loosely woven jute) spread over them to keep them moist always. Once stems are 1 cm long the jute cover and shade is removed. The beds should be profusely watered and kept weed free. Replant gaps when seeds have failed to germinate, as soon as possible.

Grass seedlings will then need to be thinned heavily after they have started to grow out, each week, to allow clumps to develop, so that eventually we have about 250 plants/ sqm.

When they grown and completely filled up the bed there are two options; usual one is to cut the shoots off to about 15cm above soil and encourage new shoots to develop. They can also be split up at this stage and replanted into another bed. One bed of large plants can be separated and planted out into 3 – 7 beds from where they can be cut back and separated out into slips. Two stage nurseries will thus yield more number of slips per kg of seed used but the slips can be distributed only during the second year.

Depending upon the urgently with which slips are to be distributed we can go for single stage nursery (using twice the quantity of seed) or double stage nursery (with lesser quantity of seed).

Expenditure for raising 36000 slips				
A. Material Cost				
Sl. No.	**Item**	**Rate**	**Quantity**	**Amount**

1	Cost of seed		1 Kg	500
2	Cost of organic manure	Rs. 2/Kg	750 Kg	1500
3	Temporary fencing, shading using hessian (closely woven jute)			1500
Sub Total				**3500**
B. Labour Cost				
Sl. No.	**Activity**	**Mandays**	**Rate**	**Amount**
1	Land Preparation, formation of beds (1m x 5m – 8 Nos.)	12	164	1968
2	Application of organic manure, sowing (25g/m^2), shading	2	164	328
3	Construction of temporary fence	4	164	656
4	Weeding, thinning and irrigation (plant population 9000/ cent)	10	164	1640
5	Maintenance for one year	10	164	1640
6	Separation in to slips (one plant in to 4 clumps)	30	164	4920
Sub Total				**11152**
Grand Total (A+B)				**14652**
Say Rs. 15000				

Bee Keeping

Expenditure for 3 boxes per family				
Sl.No.	**Item**	**Nos**	**Rate**	**Amount**
1	ISI bee boxes with bees and hive stand [5 frames]	3	Rs. 1600/One	4800
2	Honey extractor	1	Rs. 1500/One	1500
3	Smoker	1	Rs. 200/One	200
4	Bee knife	1	Rs. 100/One	100
5	Queen cage	1	Rs. 50/One	50
6	Queen gate	1	Rs. 200/One	200
7	Bee veil	1	Rs. 100/One	100

8	Bee capturing nest	1	Rs. 100/One	100
Grand Total				**7050**
Say Rs. 7000/-				

Expenditure for a group of 5 families - @ Rs. 7000/family - Rs. 35000/-
IWMP assistance as revolving fund - Rs. 25000/group
Beneficiary contribution - Rs. 10000/group ie, Rs. 2000/family

Animal Husbandry estimates

Sl.No.	Description	Unit specification	Totalcost	IWMP assistance	Beneficiary contribution	MNREGS
1	Cow rearing: Providing animals	One animal with 8 l/ day milk yield	35000	15000	20000	
2	Repair of shed : Construction of shed floor in cement concrete	65 sqft/animal	5000	4000	1000	
	Construction of urine pit	0.041m^3/animal				
3	Goat rearing	Malabar goats 2 number, six months old. (Rs.3000/one)	6000	3000	3000	
		Construction of shelter - 50 sqft [25 sqft/one]	5000	NIL		5000
4	Backyard poultry rearing (BYP)	5 birds 61 – 70 days old (Rs. 75/One)	375	280	95	
		Construction of shed – 5 sqft [Rs. 250/sqft]	1250	NIL	NIL	1250
5	Goat breeding unit	Malabar goats, 6 months old, 8	24000	19200	4800	

		numbers				
6	Cow breeding unit	One cow yielding 8 l/ milk perday	35000	24000 (80% cost)	11000	
7	Backyard poultry for SC households	10 birds 61 -70 days old	750	560 (75% cost)	190	
		Construction of shed(cage) 25sqft	6250	NIL	NIL	6250
8	Backyard poultry to women headed households landless (<5 cents)	10 birds 61 – 70 days old	750	560 (75% cost)	190	
		Construction of shed (cage) 25 sqft	6250	NIL	NIL	6250
9	Rabbit rearing for women	4 animals six months old – 3 females 1 male (Rs. 500/One)	2000	1000	1000	
		Cage of bamboo 4 nos (Rs. 1000/One)	4000	NIL	NIL	4000

Project Team

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Project Coordinators	**S. Edison** *Joint Director* **Nizamudeen. A** *Deputy Director*
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