INTEGRATED WATERSHED MANAGEMENT PROGRAMME (IWMP)

IWMP IV/2009-10

DETAILED PROJECT REPORT (DPR)

P I A

SULTHAN BATHERY BLOCK PANCHAYATH

Prepared and Submitted by

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About the TSO

(Technical Support Organization)

ARSHABHARATH

ARSHABHARATH (Arshabharath Bahujana Bodhavalkarana Grama Vikasana Samithi) is a voluntary development mission for sustainable development. The main aim is promotion of holistic and spiritual values, concern and a care of nature, sustainable development of women, rural poor and weaker sections of the society. The organization was started in 1987 and registered under Indian charitable society Act-1860. ARSHABHARATH is has 'A'-grade affiliation with the State Commission for Women in Kerala and also a selected accredited NGO and Programme Implementing Agency (P.I.A) by Government and local body for watershed development projects. The organization having wide range of experience in the field of implementation of grass root level developmental projects, especially watershed based projects in the participatory manner. The organization has 25 years of practical experience especially in sustainable development activities.

CONTENTS

I. INTRODUCTION

India, one of the largest countries in the world, is blessed with diverse and abundant resources. In India agriculture is heavily dependent on the monsoon rains. Only judicious use of resources will help the development of a country. Erratic nature of rainfall has been compounded by climate change. India is facing unprecedented crisis and challenges on the agricultural front, calling for all our efforts at improving agronomic practices across the country. Sustainable development demands that we protect our environment and conserve our natural resources.

As a watershed is a natural unit of sustainable development, Watershed development approach has been advocated as the best strategy for conserving the natural resources of water, soil and bio-mass. The IWMP IV H5 project, comprising four micro watersheds and covering four Grama Panchayaths in a total of 4598 Ha in Sulthan Bathery Block Panchayat, in the Western Ghats region, is inhabited by 5257 families, mostly of small and marginal farmers. Sulthan Bathery Block Panchayath has been selected as the Implementing Agency of this project. As a prelude to the implementation phase of the project with a view to preparing the Detailed Project Report, a feasibility study has been conducted.

This project is the most relevant and effective response to the crisis experienced by the farming community in the four micro watersheds namely, Padavayal, Vattathimoola, Thekkankolly and Manjalam-Kottoor. It has the potential of turning out a shining example and replicable model of participatory sustainable rural development. It is also a good example of what partnership

among government departments, banks, local governments, voluntary agencies and community based organizations can achieve for our country.

GENERAL DESCRIPTION OF THE PROJECT AREA

The Integrated Watershed Management Program is aimed at the restoration of natural resources by harnessing conserving and managing the degrading natural resources of soil, water and biomass. The project IWMP IV H5 is located in Sulthan Bathery Block Panchayath consisting of four micro watersheds covering 5 Grama Panhatyats in the Block. Sulthan Bathery Block Panchayat is acting as the PIA for the project from 2010 and the total area under this project is 4598 ha. Most of the people of the IWMP IV H5 area are migrants from different parts of Kerala, especially from Central Travancore. The intensity of migration was from 1950 to 1974. No basic amenities were available in the area till recent years. The main livelihood of the people was agriculture. Several people died by starvation, acute diseases and attack of wild animals. Roads and other communication facilities were totally absent in the area at that time.

General Description

Project name	:	IWMP IV (Sulthan Batheri H 5)
State	:	Kerala
District	:	Wayanad
Block	:	Sulthan Bathery
Taluk	:	Sulthan Bathery

Grama Panchayats Covered	:	Sulthan Bathery, Nenmeni, Ambalavayal and Meenanagadi
Wards Included	:	Sulthan Bathery-12, 13, 14, 15
		Meenangadi- 5, 6, 8
		Ambalavayal -4, 5, 7, 8, 9, 10, 11
		Nenmeni -1, 2, 3, 20, 21, 22, 23
Total Treatable Area	:	4598 Ha
Latitude	:	11^0 32' 33'' N - 11^0 40' 42'' N
Longitude	:	76^0 11' 24'' E - 76^0 15' 50'' E
Soil	:	Clay loam to Forest soil
Total Households	:	5257
Total Population	:	22091
Major Catchment	:	Kabani and Chaliar Rivers
Highest Elevation	:	1750 m
Lowest Elevation Point	:	752 m
Number of Micro Watersheds	:	Four

Details of watersheds coming under the Block

Sl No	Name of Watershed	Code	Total area	Treatable area
1	Padavayal	27K15g	798 Ha	798 Ha
2	Vattathimoola	27K15h	1308 Ha	1295 Ha

3	Thekkankolly	24C42d	1945 Ha	1912 Ha
4	Manjalam- Kottur	24C42c	593 Ha	593 Ha
Total			**4644 Ha**	**4598 Ha**

Criteria for selection

The following criteria may broadly be used in selection and prioritization of watershed development projects:

a. Acuteness of drinking water scarcity.

b. Extent of over exploitation of ground water resources.

c. Preponderance of wastelands/degraded lands.

d. Contiguity to another watershed that has already been developed/treated.

e. Willingness of village community to make voluntary contributions, enforce equitable social regulations for sharing of common property resources, make equitable distribution of benefits, create arrangements for the operation and maintenance of the assets created.

f. Proportion of scheduled castes/scheduled tribes.

g. Area of the project should not be covered under assured irrigation.

h. Productivity potential of the land.

ABOUT THE PROJECT

Location and Area

IWMP IV H 5 project is located in the western part of Sulthan Bathery Block Panchayat which covers the areas of Meenangadi, Sulthan Bathery, Ambalavayal and Nenmeni Grama panchayats of Wayanad District, Kerala and it spreads over 4598 Ha. The main drainage lines are the Padavayal Thodu and Kottur Puzha.

Project Boundaries

North - Padavayal Arivayal Kunnu

South – Baderi Valavu, Kottur

West – Ambalavayal Town, Kuppamudi

East - Thovarimala

Micro Watershed Boundaries

Sl No	Name of Watershed	Watershed boundaries
1	Padavayal	North - Arivayal Kunnu South - Kuppamudi West - Padavayal East - Beenachi Estate
2	Vattathimoola	North - Beenachi South - Thovarimala West - Ambukuthi Mala East - Chettimoola, Poomala
3	Thekkankolly	North - Ambukuthi Mala South – Thattiad West – Ambalavayal East - Thovarimala
4	Manjalam-Kottur	North – Onneyar South – Baderi Valavil West – Thomattuchal, Vaduvanchal East - Kottur

Physiography

The IWMP IV H5 is composed of mountainous regions of Central Sahyadri. The area has rolling to undulating topography in majority of the places and intermittent with narrow valleys and broad valleys in the downstream area. The highest point is Ambukuthi Mala(1100 msl), where Edakkal caves are situated. The lowest point is at Padavayal, situated at about 770 metres above mean sea level.

Relief and Drainage

About 60% of the project area is drained by the Kabani River and its tributaries, while 40% is drained by Chaliyar and its tributaries. The relief is normal in the hilly areas and normal to sub normal in the valley portion. The Padavayal and Vattathimoola Watersheds in this Project is drained by Kabini river and its tributaries namely Kolagappara – Padavayal thodu and Malavayal – Kuppamudi thodu respectively. The Thekkankolly and Kottur watersheds are drained by Chaliyar river and its tributaries namely Thekkankolly thodu and Kottur Puzha respectively.

Climate

The Project area has a salubrious climate. The mean average rainfall in this area has been 2900 mm during the past ten years. High velocity winds are common during the southwest monsoon and dry winds blow in March–April. High altitude regions experience severe cold. The mean maximum and minimum temperatures for the last five years were 29°C and 18°C respectively. This place experiences a high relative humidity, which goes even up to 95 per cent during the Southwest Monsoon period. Generally the year is classified in four seasons are noticed, namely, cold weather (December–February), hot weather (March–May), Southwest monsoon (June–September) and Northeast monsoon (October–November).

Table: Rainfall data for the past ten years

Sl No	Year	June-Sept	Oct-Dec	Jan-May	Total
	2000	2637.2	260.0	188.4	3085.6
	2001	1600.2	274.6	525.4	2400.2
	2002	1362.6	530.6	409.8	2303
	2003	1503.8	318.8	268.1	2090.7
	2004	2187.3	297.8	555.4	3040.5
	2005	2734.1	421.4	403.0	3558.5
	2006	2651.2	347.6	785.8	3784.6
	2007	3431.0	304.8	690.1	4425.9
	2008	2312.5	489.4	327.0	3128.9
	2009	1399.4	505.4	265.8	2170.6
	2010	1934.6	489.4	372.4	2796.4
	2011	2836.6	367.0	326.4	3530.0
Average		2106.64	395.35	419.983	2921.98
%		70.35	13.91	15.74	100.00

Hydro Geology

The major water bearing formations in the district are weathered/fractured crystallines, alluvium and valley fills. Alluvial aquifers are represented in the project area. The hard rock's (crystalline) can also be seen with deposits of alluvium and valley fills in the area. The weathered migmatite and gneiss can also be seen.

Ground Water

Ground water recharge from rainfall during monsoon in Sulthan Bathery Block is 79.52 MCM and that during non-monsoon season is 22.43 MCM. Among the four Blocks, Manathavadi and Kalpetta are considered safe whereas Sulthan Bathery and parts of Panamaram Block categorized as semi-critical and it is due to the decline in the water level.

Ground Water Management Strategies

Wayanad, a hilly district, the district, especially Sulthan Bathery Block needs specific and accurate ground water management strategies. Sulthan Bathery Block, categorized as semi-critical and the percentage of run-off is ranked as very high and the ground water levels in the valleys are shallow needs more care and scientific management of resources and there is an emergency to implement appropriate civil structures

Ground Water Details of the Project Area

Sl. No.	Name of Micro Watershed	Type of Well	Height of Measuring point(in meters)	Water Level	
				Monsoon	Summer
1	Padavayal	Dug Well	.80	6.61	7.09
		Bore Well	.40	16.06	15.89
2	Vattathimoola	Dug Well	.90	2.43	4.54
		Bore Well	.40	16.06	15.89
3	Thekkankolly	Dug Well	.55	3.94	4.27
		Bore Well	.40	16.06	15.89
4	Manjalam-Kottur	Dug Well	.70	8.57	8.95
		Bore Well	.40	15.34	14.74

(Source: - Kerala State Ground Water Department - Well locations are the nearest measuring points identified by KSGWD)

Demographic Particulars

The total population of the project area is 22091. The male and female populations are 11342 and 10749 respectively. The male female sex ratio is 1000: 942. The density of population is 328 per sq km. The literacy rate in the area is 83.76% the male literates being 87.7% and the female literates are 75.4%.

Table : Demographic Details

Total No. of households/families					**5257**	
Average Family size					4	
Population						
Sex	**AGE-GROUP**					
	O<5	**5<15**	**15<40**	**40<60**	**60 and above**	**Total**
Males	692	2403	5094	2431	722	11342
Females	723	2007	4923	2286	810	10749
Total	1415	4410	10017	4717	1532	22091
Education	**Male**			**Female**		
Read and write only	379			452		
Primary	1408			1320		
Secondary	2843			2784		
Matriculate	1142			1075		

Graduate and above	461	500	
	SC	**ST**	**Other**
No. of households	304	446	4507
% to Total	5.78	8.48	85.94

Land Holding Pattern

Sl. No.	**Land Holding class (in ha.)**	**House holds**		**Land held**	
		Number	**% to Total**	**Ha.**	**% to Total**
1	Landless	246	4.67	-	0.00
2	0 to <1	2172	41.31	1900	39.45
3	1 to <2	2556	48.89	1787	38.50
4	2 to <4	167	3.18	435	9.76
5	4 to <8	91	1.73	381	8.55
6	More then 8	25	0.47	95	2.13
TOTAL		**5257**	**100**	**4598**	**100**
Average gross land holding per household = 0.84 ha.					

Soils

The soil types in the watershed can be classified into four. The texture of these soil ranges from Clay loam, Gravelly Clay loam, Sandy Clay Loam and Gravelly Sandy clay loam. The four categories may be subcategorized into nine major soil series are identified viz. Anchukunnu (Aku), Chundakkara (Cdk), Ezhamchira (Ezc) Meenangadi (Mgd), kambalakkadu (Kbd), Madakkimala (Mkm), nayikkolli (Nyk), and Palliyora (Plr) and Thariyode (Prd). (Soil Survey Organization 2007) The soil depth is identified as Deep (100-150cm) and Very Deep (>150cm) (*Soil Survey Organization 2007)*

Agriculture and Land Use

Agriculture is the principal occupation of the people in the project area. The major crops are coffee, tea, paddy, pepper etc. The other important cash crops are Rubber, Cardamom, Ginger, Turmeric and Arecanut. The back bone of the economy of this district is plantation crops- Tea, Coffee, Pepper, Rubber etc. Coffee based farming system is a notable feature of Wayanad. Coffee is grown both as pure crop and mixed crop along with pepper.

At present Paddy growing area is remarkably decreasing. Ginger cultivation in the area has substantially increased in recent times. Ginger produced is mainly marketed in the form of green ginger. The frequent drought alternated by flood since 2000 has affected the production of different crops very severely. Banana is cultivated abundantly in this area.

Table - Land Use Pattern, LCC and Slope

Land Use	Area (in ha)
Rubber	235
Coffee	2515
Viruppu (First crop)	566
Banana	129
Arecanut	117
Degraded land under plantation crops(Coffee)	175
Residential and Built up area	211
Residential Converted from paddy	92
Tapioca	58
Mixed crops (Converted from paddy)	201
Broken Rocky Land/Stony Waste land	33
Land with scrub	121
Tea	52
Open forest	55
Total	4598

Land Capability Classification	
Class	Area (in ha)
III W	342
IV es	482
VI e	372
IIw	667
IIIe	489
Rock Land	194
Tea plantation	53
Other	59
IIws	2
IVe	1938
Total	4598
Slope	
Slope	area
S2	1582
S1	1281
S3	1717
RC	18
Total	4598

Details of land in the Project Area *(in ha.)*

Sl. No.	Name of Micro Watershed	Area under Irrigation	Extent of degraded land	Details of fallow land	Area under single crop	Area under double crop	Waste land	Land put under non agricultural use	Present level of management
1	Padavayal	There are no notable irrigation facilities in the project area. But in major plantation areas, especially tea plantation areas seasonal irrigation is practicing.				798		8	Natural resource management practices are following in the area mainly concentrating on area treatments and drainage line treatments but these are not sufficient.
2	Vattathimoola					1295		97	
3	Thekkankolly					1912		81	
4	Manjalam Kottur					593		8	

Details of area under irrigation *Area in ha.*

Sl.No.	Name of watershed	Existing area under irrigation (A)						Additional area expected to be brought under irrigation (B)						Total area (A+B)
		Source of Irrigation						Source of Irrigation						
		Well	Tank	Pond	Canal	Check Dam	Total	Well	Tank	Pond	Canal	Check Dam	Total	
1	Padavayal	-	-	-	-	-	-	10	-	10	20	15	55	55
2	Vattathimoola	-	-	-	-	-	-	10	-	40	-	20	70	70
3	Thekkankolly	-	-	-	-	-	-	25	-	150	-	35	210	210
4	Manjalam-Kottur	-	-	-	-	-	-	-	-	15	5	-	20	20
Total		-	-	-	-	-	-	**45**	**0**	**215**	**25**	**70**	**355**	**355**

Details of area under paddy cultivation *Area in ha.*

Sl. No.	Name of watershed	Existed area under paddy cultivation				Additional area expected to be brought under paddy cultivation			
		First Crop	Second Crop	Third Crop	Net Area	First Crop	Second Crop	Third Crop	Net Area
1	Padavayal	21.55	-	-	21.55	30	10	-	40
2	Vattathimoola	75.09	-	-	75.09	80	35	-	115
3	Thekkankolly	99.29	-	-	99.29	120	75	-	195
4	Manjalam-Kottur	10.61	-	-	10.61	25	10	-	35
Total		**206.5**	**-**	**-**	**206.54**	**255**	**130**	**0**	**385**

Resource Details in the Project Area as a Whole

Anganwadies	:	42
Temple	:	14
Church	:	15
Mosque	:	14
Private resort	:	19
Milk society & Collection centre	:	17
Industries	:	13
Community centers	:	6
Play ground	:	9
Gramapanchayat Offices	:	2
Banking institution	:	5
LP, UP, HS School	:	11
Hospital including Ayurvedic homeo	:	4
Veterinary centre	:	28
Police station	:	1
Tourist places	:	3 (Edackal caves, Museum & RARS)

Sales tax check post	:	1
Village office	:	1
Krishibhavan	:	1
KDS Project Office	:	1
KSEB section office	:	1
Post Office	:	2
Telephone exchange	:	1
Soil testing unit	:	1
Krishi vikjan Kendra	:	1

Soil Types

The soil types in the project area can be classified into five and these five categories may be sub categorized into 12 sub groups. The five categories are Pulpally series, Battuvadi series, Sulthan Bathery, series Periya series and Meppadi Series of Soils.

Soil Depth

The thickness of the soil is more than 150 cm, often limited by water table in Pulpally, Battuwadi, Sulthan Bathery, and Periya series. In Meppadi series the thickness of the solum is identified as 170 to 200 cm

Soil Problems and Limitations

Battuwadi soils are very strongly acidic in reaction. The nutrient holding capacity of this soil is generally low. Hence split application of fertilizers at critical stages with controlled irrigation is required. Pulpally soils occurring on moderately sloping to steep hill slopes are susceptible to soil erosion. This series have now become less productive due to intensive cropping. Sulthan Bathery series are acidic in nature and are prone to severe soil erosion. Meppadi series is also prone to severe soil erosion.

II. METHODOLOGY

Grama Sabha

As a prelude to the preparation of the Detailed Project Report Neerthada Samooha Sabhas(Grama Sabha) were convened in all the four micro watersheds and in the watershed community meeting, SHGs and UGs were constituted.

SHGs and UGs

The Grama Sabha formed SHGs and UGs in the project area with the help of WDT and TSO from amongst poor, small and marginal farmer households, land/asset less poor agriculture laborers, women and SC/ST persons. In IWMP IV H5, 308 numbers of SHGs have been formed and the watershed wise details are as follows.

Table - Total NHGs in the Project

Sl No	Name of Block/Panchayath	Name of Watershed	No. of SHGs formed
1	Meenangadi, Ambalavayal, Sulthan Bathery	Padavayal	50
2	Sulthan Bathery, Nenmeni	Vattathimoola	75
3	Nenmeni, Ambalavayal	Thekkankolly	145
4	Ambalavayal	Manjalam-Kottur	38

Watershed Committee

The Gramasabha has constituted the watershed committee in the four watersheds to implement the project with the technical support of the WDT. The majority of the watershed committee members are the office bearers of the SHGs who are of the representatives from SC/ST communities, women and landless persons in the villages.

Capacity building

The various capacity building activities will have relevant themes for their content, including:

- Concept of watershed and integrated watershed development
- Urgency for NRM activities
- Roles and responsibilities of participants/beneficiaries
- Group dynamics
- Community participation and community organization

- Leadership role of W.C.
- Communication and leadership development
- Gender mainstreaming and development
- Project accounting
- Social auditing

Integrated Approach

People should be involved in all the stages of planning, implementation and post project management. The study was conducted from October 2011 to March 2012 by a team composed of watershed community, members of the SHG, external experts and WDT members as well as T.S.O (ARSHABHARATH) personnel. The study was, we can say "of the people for the people and by the people".

In order to ensure efficiency, transparency and accountability a participatory approach is essential. For ensuring people's participation, the programme should be need-based. Hence the primary step was to initiate PRA to identify the problems and priorities of the community. The process built trust in the people and generated interest in these for managing their problems in a long- term perspective.

Participatory Rural Appraisal

A detailed PRA was conducted with the maximum involvement of the watershed community, in collaboration with development experts, WDT, TSO and WC members. Transect walk in the watershed, focus group discussion, different

mappings, timeline, diagramming and ranking methods were used to develop the data regarding the problems and existing methods of agricultural practices.

Social Mapping

Social mapping revealed how the institutions and civic amenities were unevenly distributed across the watershed, indicating a clear social imbalance, which needs to be corrected.

Flow Chart

It was an exercise in charting the inflow and outflow patterns of the watershed. The patterns that emerged helped the team to identify the imbalances in the watershed, namely the preponderance of inflow of commodities into the watershed over the outflow of resources from the watershed.

Focus Group Discussion

Focus group discussions were conducted for identifying the major problems and their remedies as observed by the people. The participants came up with observations and new understanding they developed as a result of the exercise. The important learning, consolidated by the facilitator, included:

- Natural resources of the watershed are being severely depleted.
- Paddy fields are fast disappearing to give way to cash crops and otherland uses.
- Water scarcity in the area is becoming increasingly acute by the day.

Transect Walk

The PRA team was taken on a walk across the watershed. This exercise was aimed at rechecking the findings of the previous exercises by physically verifying them.

Micro Planning

After the PRA the next step taken was Micro Planning which included the following components.

Socio Economic and Technical Survey

A socio-economic survey was conducted in the watershed. The primary data and other technical details were collected during the process. Along with this, detailed drainage line survey was also carried out in the watershed. Experts from the line departments also participated in the process.

Preparation of Various Maps

Plot base cadastral map, LCC map, google maps and other GIS maps, Toposheet of the watershed etc. were collected from the concerned departments. Contour mapping of the watershed was also done. Plot base cadastral map is prepared with the help of surveying experts.

Well Inventory

A well inventory was conducted as part of the socio-economic survey. This was done by the village resource team with the help of SHG and WDT and TSO. About 25% of the total wells were surveyed and the data recorded. The depth, water table level and diameter of wells were checked as part of the survey.

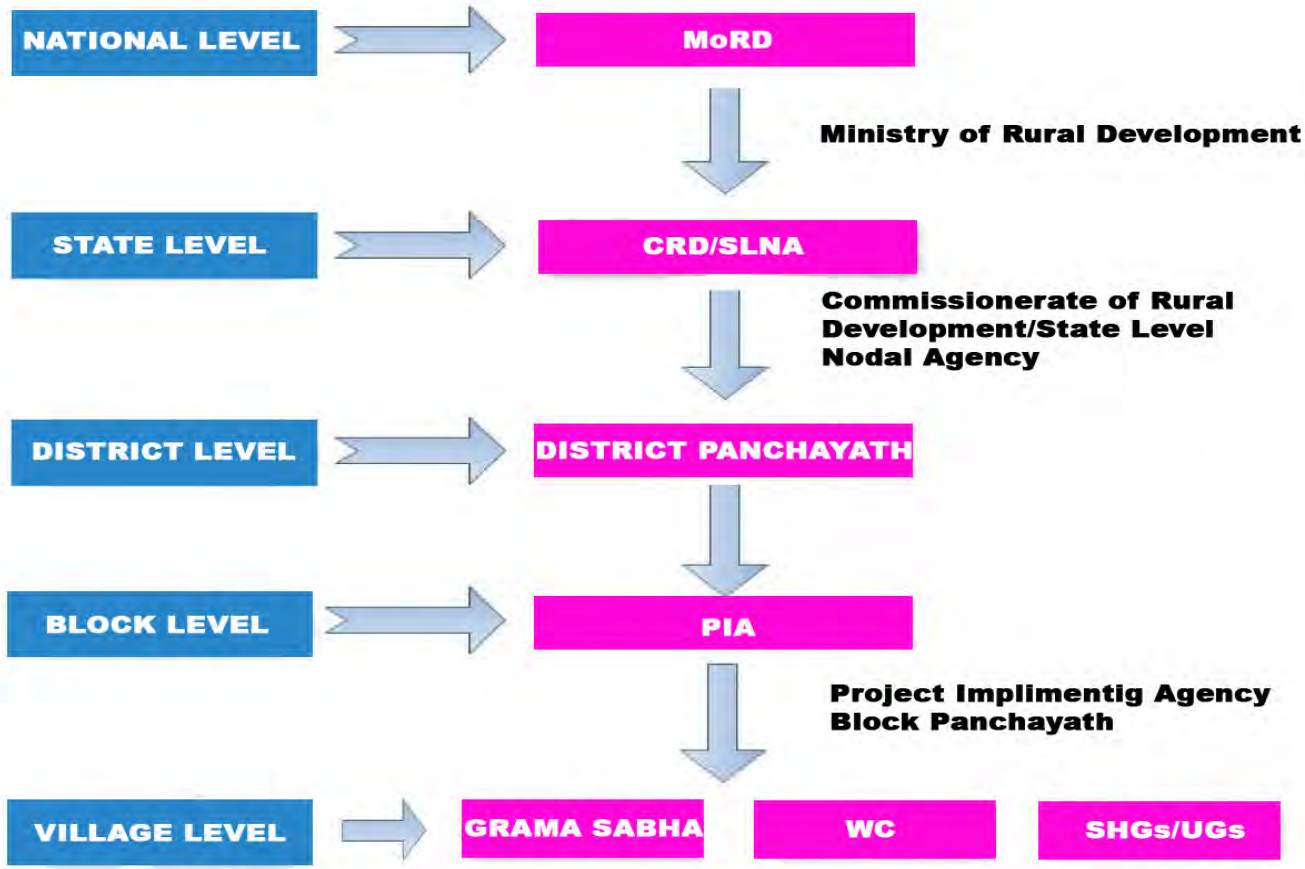
Livelihood Support System Planning

During the PRA Exercise, several livelihood support activities were proposed. Experts in various departments were also consulted, with focus on viable and more sustainable options. Various production system management methods were also proposed like Bio Gas Plants, Agro Horticulture Nursery to make the watershed stakeholders self reliant.

Data Analysis and Report Generation

The collected primary and secondary data were coded, computerized and analyzed. The farmer-wise net plan was prepared with the help of experts. Simultaneously digitization of the various maps was also undertaken.

III. INSTITUTIONAL ARRANGEMENTS FOR IWMP AT A GLANCE



Institutional Arrangements at State and District Levels

Appropriate institutional arrangements are made at various levels for effective and professional management of watershed development projects. Peoples organizations coupled with the smooth functioning of the government institutions hold the key to the successful implementation and completion of the project. NRAA has formed a State Level Nodal Agency to coordinate and look after the progress of the program. The various institutional arrangements at the state level are as following:

State Level Nodal Agency

A dedicated State Level Nodal Agency (SLNA is constituted by the State Government having an independent bank account. The state should be given the flexibility to utilize or strengthen an existing state level agency/department/organization. Central assistance for SLNA will be transferred directly to the account of SLNA and not into the State Government budget. There would be multi-disciplinary professional support team at the State level to implement the programme. The Agricultural Production Commissioner is nominated by the State Government as the Chairperson of the SLNA. The State Level Nodal Agency will have a full-time CEO in order to ensure the smooth functioning of the program

Watershed Cell cum Data Centre (WCDC)

A separate Cell, called the Watershed Cell cum Data Centre (WCDC) is established at the district level, which will oversee the implementation of watershed programme in the district and will have separate independent accounts for this purpose. WCDC will function in close co-ordination with the District Planning Committee.

Institutional Arrangements at Project Level

Project Implementing Agency (PIA)

The Block Panchayath in which the project lies is selected as the Project Implementing Agency (PIA) by the SLNA for IWMP in Kerala. PIAs are implanting the project. For IWMP IV H5, Sulthan Bathery Block is selected as the Project Implementing Agency. The Project Implementing Agency (PIA) is constituted to provide necessary technical guidance to the Gram Panchayat for preparation of development plans for the watershed through Participatory Rural Appraisal (PRA) exercise, undertake community organization and training for the village communities, supervise watershed development activities, inspect and authenticate project accounts, encourage adoption of low cost technologies and build upon indigenous technical knowledge, monitor and review the overall project implementation and set up institutional arrangements for post-project operation and maintenance and further development of the assets created during the project period. The PIA, after careful scrutiny, shall submit the Action Plan for Watershed Development Project for approval of the WCDC/PAU and other arrangements.

The PIA shall submit the periodical progress report to WCDC. The PIA shall also arrange physical, financial and social audit of the work undertaken. It will facilitate the mobilization of additional financial resources from other government programmes, such as MGNREGA, BRGF, SGRY, National Horticulture Mission, Tribal Welfare Schemes, Artificial Ground Water Recharging, Greening India, etc.

Watershed Development Team

The WDT is an integral part of the PIA and will be set up by the PIA. Each WDT should have at least four members, broadly with knowledge and experience in agriculture, soil science, water management, social mobilization and institutional building. At least one of the WDT members should be a woman it must be ensured that the WDT should function in close collaboration with the team of experts at the district and state level. The expenses towards the salaries of the WDT members shall be charged from the administrative support to the PIA. The WDT will guide the Watershed Committee (WC) in the formulation of the watershed action plan and assist Gram Panchayat / Gram Sabha in constitution of the Watershed Committee and their functioning. They are also entrusted with the duty of organizing and nurturing User Groups and Self-Help Groups and Mobilizing women to ensure that the perspectives and interests of women are adequately reflected in the watershed action plan. They undertake engineering surveys, prepare engineering drawings and cost estimates for any structures to be built. Other duties of the WDT include monitoring, checking, assessing, undertaking physical verification and measurements of the work done.

Watershed Committee (WC)

The Gram Sabha will constitute the Watershed Committee (WC) to implement the Watershed project with the technical support of the WDT in the village. The Gram Sabha may elect/appoint any suitable person from the village as the Chairman of Watershed Committee. The secretary of the Watershed Committee (WC) will be a paid functionary of the Watershed Committee (WC). In Kerala it is decided that the President of Gram Panchayat will act as the Chairman and Village Extension Officer (VEO) as the Secretary. The Watershed Committee (WC) will comprise of at least 9 members, half of the members shall be representatives of SHGs and User Groups, SC/ST community, women and landless persons in the village. One member of the

WDT shall also be represented in the Watershed Committee (WC). Where the Panchayat covers more than one village, they would constitute a separate subcommittee for each village to manage the watershed development project in the concerned village. Where a watershed project covers more than one Gram Panchayat, separate committees will be constituted for each Gram Panchayat. In IWMP IV H5 four watershed committees have been formed in the Gramasabhas. The Watershed Committee has a separate bank account to receive funds for watershed projects and will utilize the same for completing the activities.

Institutional Arrangements at the Village Level

Self Help Groups

The Watershed Committee has constituted SHGs in the watershed area with the help of WDT from amongst poor, small and marginal farmer households, landless/asset less poor agricultural laborers, women, and SC/ST persons. These Groups shall be homogenous groups having common identity and interest who are dependent on the watershed area for their livelihood. Each Self Help Group will be provided with a revolving fund of an amount to be decided by the Nodal Ministry.

With a view of developing the capacities of the above said groups, Steps have been taken place to form these stakeholders in to SHGs and planned to impart trainings at various levels for the integrated development of the community.

User Groups

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

List of Watershed Records to be maintained:

Records/ Registers to be maintained at PIA Level:

1. Register for Grant received
2. UC Register (UC to be submitted)
3. UC Register (UC received from Committee)
4. Cheque Register
5. Bank Reconciliation Register
6. Cash Book
7. Advance Ledger

8. Honorarium Register
9. Meeting Register at PIA Level
10. Training Register- Block Level (PIA Level)
11. Training Register (Individual WS Wise)
12. Project Control Register
13. Stock Register (i) Consumable (ii) Permanent
14. Letter received Register
15. Letter Issue Register
16. Money Receipt
17. MB
14. Distribution Register
15. Contingency bill Register
16. Community Mobilization
17. Plan and Estimate
18. Register of Registers
19. Physical and Financial progress register

Records/ Registers to be maintained at WC Level:

1. Cash Book
2. Stock Book i. Consumable stock ii. Permanent stock
3. Contingency bill Register
4. Project Control Register
5. Voucher Register
6. Bank Reconciliation Register
7. Advance/Adjustment Register
8. Bank cheque book Register
9. Asset Register
10. UC Register (UC submitted)
11. Income Register showing income coming from watershed asset
12. WDF Account Register
13. Revolving fund Register
14. Physical & Financial progress Register
15. Grant received Register
16. Letter Receive Register
17. Letter Issue Register
18. Register of Register

IV. CAPACITY BUILDING

The effective delivering of required services in any project basically depends upon the human capacity along with the capacity to manage appropriately such inputs and their dynamics. Capacity endowment at institutional and personal front is always regarded as vital for accelerating the process of a project and initiating the successful criteria in achieving all the necessary spheres of project activities. Capacity, inherited or acquired plays a significant role in performing the activities and succeeding amicably in the work front. In the changing scenario and emerging trend it is highly essential for the development facilitators and for the community to cope with the changing face and challenges and acquire necessary capacity to address the required needs of the project environment. Besides skill formation, skill up gradation, skill perfection of human capital as primary stakeholders of the project is essential to drive the efforts towards achieving development agenda.

Capacity building primarily thrust upon developing human resources associated with project at different level. It is a process of key intervention for strengthening and overall improvement of the skill in implementation of the plan in a meaningful way. Social mobilization, trainings, group discussion, exposure and demonstration are the basic processes of the Capacity building. Various trainings focus on building the confidence of the communities and creating an environment bringing the communities to the forefront.

The Capacity building strategy thus focuses on facilitating process that help to build a positive approach to peoples knowledge in technology ,management , sensitivity to equity and gender issue, peoples' empowerment, understanding the programme language and developing skill necessary for project implementation.

Capacity Building Strategy

Capacity building support is a crucial component to achieve the desired results from watershed development projects. Various awareness and training programs were organized as part of the DPR preparation, Organization of SHGs and UGs and Entry point activities. Themes like importance of watershed development in the present scenario, Natural resource management, Entrepreneurship development etc were discussed in the awareness and training programmes. A detailed plan is also prepared with the participation of WDT, WC, SHGs and UGs with an aim of enhancing the skills and capacities of the stakeholders of the project. It is planned to conduct these training and awareness programs in the second, third and final year of the project.
Important aspects will be touched upon, such as:

- Concept of watershed and integrated watershed development
- Urgency for NRM activities
- Roles and responsibilities of participants/beneficiaries
- Group dynamics
- Community participation and community organization
- Leadership role of W.C.

- Communication and leadership development
- Gender mainstreaming and development
- Project accounting
- Social auditing

Fund Allocation for Capacity Building in IWMP IV H 5

Sl. No.	Name of Watershed	Fund Allocated
1	Padavayal	` 598500.00
2	Vattathimoola	` 971250.00
3	Thekkankolly	` 1434000.00
4	Manjalam-Kottur	` 444750.00
Total for IWMP IV H 5		` **3448500.00**

Strategic Action Plan for Capacity Building

Level of Stake holders	During the Year 2012-13	During the Year 2013-14	During the Year 2014-15	Total
	Target	Target	Target	
SLNA	2	1	1	4
WCDC	2	2	2	6
WDT	3	3	3	9
WC	4	4	4	12
SHG	4	4	4	12
UG	4	4	4	12

Topics of training	Level for which it was meant (SLNA,WCDC,WDT,WC etc)	Name of institution
Project planning, Implementing and Monitoring	WDT	SLNA
Record keeping of the project	WDT	SLNA
Community participation and community organization	WDT	SLNA
Empowering peoples representatives for IWMP	District, block and Gramapanchayat members	WCDC, PIA

Awareness programme of IWMP	WC	PIA, WDT
Concept of watershed management, roles and responsibilities	WC	PIA, WDT
Roles and responsibilities of participants/beneficiaries Leadership role of W.C.	WC	PIA, WDT
Social auditing	WC	PIA, WDT
Project accounting	WC	PIA, WDT
Planning and implementation of project related to creation of common assets	SHGs, UGs	PIA, WDT
Awareness program on Production System Microenterprises (PS&M) and Livelihood Support System (LSS)	SHGs	WC, PIA, WDT
Gender mainstreaming and development	SHGs, UGs	PIA, WDT
Communication and leadership development	SHGs, UGs	PIA, WDT
Group dynamics	SHGs, UGs	PIA, WDT

Details of important trainings as planned are following;

I. Empowering peoples representatives for IWMP

1.	Title of the training programme	Empowering peoples representatives for IWMP
2.	Rationale	The need for watershed based development programs, concepts involved in watershed development, IWMP – its objectives, steps involved in the implementation of the program, financial management etc.
3.	Objectives	1. To create awareness among the peoples representatives regarding the need for watershed based development programs 2. Concept of IWMP 3. Project involved in the programs 4. Scope of the project 5. Roles and responsibilities 6. Financial management
4.	Target group	District, block and gramapanchayath members
5.	Duration	2 days
6.	No. of participants	200
7.	No. of batches	5 batches
8.	Expected outcomes	Ensure smooth implementation of the projects, interfere with issue if any while implementation, financial transparency, ensure peoples participation etc.

Number of participants (One batch) : 40
Total Programs : 5

II. Awareness programme of IWMP

1.	Title of the training program	Awareness programme of IWMP
2.	Rationale	The watershed community must be made aware of the programme, its concept, the need of the hour, motivate them to become part of the programme
3.	Objectives	a. To familiarize the concept of IWMP b. To familiarize the basics of watershed c. The scope of watershed development in their area. d. Various activities proposed under NRM, PSM and LSS. e. To ensure their participation for the success of the project
4.	Target group	Watershed community
5.	Duration	1 day
6.	No. of participants	50/60
7.	No. of batches	10
8.	Expected outcomes	Community awareness and ensure peoples participation.

Target Group	:	Members of Watershed Committee
Duration	:	One Day
Number of Participants	:	60
Number of Batches	:	10

III. Concept of watershed management, roles and responsibilities

1.	Title of the training program	Concept of watershed management, roles and responsibilities
2.	Rationale	Impart awareness among the watershed committees regarding the concept of watershed management, roles and responsibilities, operational guidelines, financial management etc.
3.	Objectives	1. To create awareness among the WCs regarding the concept of watershed management 2. To define the roles and responsibilities of WC 3. Financial management of the project 4. Management of WDF
4.	Target group	WCs
5.	Duration	1 day
6.	No. of participants	30 per batch
7.	No. of batches	2
8.	Expected outcomes	Empowerment of WCs proper for effective implementation of the project and proper maintenance of commonly created assets

IV. Planning and implementation of project related to creation of common assets

1.	Title of the training program	Planning and implementation of project related to creation of common assets
2.	Rationale	Create awareness among UGs regarding the mode of creation of common assets
3.	Objectives	1. Make aware the UGs regarding their responsibility 2. The need for establishing common assets 3. The mode of operation in establishing common assets 4. Financial procedures involved
4.	Target group	UGs
5.	Duration	1 day
6.	No. of participants	2-3 persons from each UG
7.	No. of batches	One per watershed
8.	Expected outcomes	Empower the UGs to take up the responsibility of creating common assets as well as their future maintenance

Number of participants for one programme 15 x 3 = 45

V. Awareness program on Production System Microenterprises (PS&M) and Livelihood Support System (LSS)

1.	Title of the training program	Awareness program on Production System Microenterprises (PS&M) and Livelihood Support System (LSS)
2.	Rationale	The watershed community must be made aware of the various PS&M and LSS programs envisaged in the project, group formation, credit support through banks, Accounting procedures etc.
3.	Objectives	a. To motivate the community to initiate various PS&M b. To generate additional income from such activities c. To attain self sustainability d. To ensure women empowerment

4.	Target group	SHGs: rearing cattle, fodder cultivation, Pisiculture, Apiculture, Horticulture, Mushroom cultivation, food processing etc
5.	Duration	1 day
6.	No. of participants	10-25
7.	No. of batches	For each of the above group one batch (10 batch or more)
8.	Expected outcomes	Increase the standard of living through increase in per capita income, attain self sustainability etc.

Number of participants : 25

Exposure Visit

No. of programme : 1

Number of participants : 35

Target group : Block Panchayat members, Panchayat Presidents, WDT members, TSO representatives etc

Duration : 4 days

V. MAJOR PROBLEMS IDENTIFIED

Major problems identified in the study are briefly discussed below.

Soil Erosion and Heavy Surface Run off

Soil erosion and unscientific use of water resources have been identified as the key problems in the watershed area. The small hills on either boundaries of the watershed cause excessive surface runoff, resulting in soil erosion. Most of the farmers have adopted certain primitive and unscientific methods of soil and soil conservation models in a scattered manner and the impact on the area is insignificant and invisible. Large-scale deforestation in the Watershed and introduction of plantation crops in highlands replacing the natural vegetation reduced the storage capacity of soil and resulted in surface soil erosion in watersheds and sedimentation in streams and rivers. Years ago, there were perennial streams and head ponds. Now most of them have dried up or are neglected by the people. A coordinated attempt is required for their rejuvenation and maintenance. Scientific mass programmes are to be launched with maximum participation of the people for the implementation of various water conservation measures including rain water harvesting.

Bio-mass

Break down of agriculture, climate change, unscientific agricultural practices, environmental degradation, deforestation; rising population density, low knowledge level of people and exploitation etc. have increased the rate of depletion of bio-mass. The future of food security depends on the success of our efforts in the conservation of agro-biodiversity. Wayanad is in the tropical and sub-tropical regions and is home to many indigenous species which are fast becoming extinct and watershed development may support conservation of such resources. Traditional knowledge dissemination will also help to protect and use biodiversity

sustainably. The major obstacles to the conservation of biodiversity are under valuation of living natural resources, ruthless exploitation of biological and genetic resources for profit, poor knowledge of species and eco-systems, insufficiency in using applied management practices etc.

Disappearance of Paddy fields

Economically, the area is dominated by the primary sector. More than 80 % of the population directly or indirectly is connected to agriculture. There is a trend in conversion of paddy fields for the construction of residential buildings, commercial establishments etc. in Kerala prices of land under food crops like paddy etc. are found to be relatively lower than the prices of land under cash crops. The mere conversion of land from the cultivation of food crops to cash crops in itself enhances the property value. The comparatively lower prices of land under food crops lead to its widespread conversion for non-agricultural uses. Changes in land use pattern can also be attributed to the growing number of absentee landowners in the state. Since the food crops need more care and personal supervision than cash crops, landowners are more inclined to cultivate the latter which tends to the decline of area under food crops.

Unscientific Cultivation and Growing Cost of Production

Unscientific agricultural practices are a major problem faced by the community. Effective information dissemination and capacity development should be taken up to address these problems.

Poor Soil Fertility

Soil erosion and unscientific use of soil are the main causes behind the poor soil fertility. This will lead to low productivity and many other problems.

Shortage of Agricultural Laborers

Acute shortage of agricultural labourers is severely felt in the area. Attractive wages and social status in other fields force workers to switch their occupation. This compels the farmers to limit their farming options.

Pests and Diseases

Unscientific use of pesticides and chemical fertilizers has led not only to nutrient deficiency of soil and health problems of the farmers, but also to low production and productivity. Non-availability of organic manures is another problem in the area.

Stream Bank Erosion

Wrong agricultural practices by the side of streams and on river banks during rainy season cause stream bank erosion and sedimentation in rivers and lead to lowering of water table and environmental problems. The drainage line must be protected and the treatment deserves first priority under the programme.

Insufficient Income

The area is dominated by small and marginal farmers. Low agricultural productivity and increasing cost of production, rising prices, unemployment are leading to insufficient income. The only way to overcome this issue will be adequate livelihood support, capacity building of the farmers, promotion of multi tier cropping, farm technology transfer from lab to land etc.

Low Level of Human Resource Development

Low capacity of the stakeholders is another problem which demands more attention in the watershed area. The low level of knowledge base about new technologies, lack of knowledge regarding the protection of environment, and overexploitation of

natural resources like Soil, Water and Bio-mass, non availability of frequent trainings and capacity building on new practices in the agricultural sector, lack of interventions by agricultural experts etc. make the farmers more vulnerable.

Low Status of Women

Women are facing growing challenges due to fall in agricultural income, unemployment etc. They are deprived of fundamental needs and rights. Low levels of participation in agricultural practices and increasing atrocities have made them the most vulnerable group. Low levels of social consciousness, participation are the reason behind the backwardness of women community. Awareness and trainings for skill development, formation and strengthening of women groups in the area will surely enhance the status of women stakeholders in the watershed area.

VI. ENTRY POINT ACTIVITY

Entry Point Activity plays a major motivational role in the proper implementation and management of the watershed project. It aims at innovative and needful ideas of EPA are capable to bring about a positive air in the project area.

Sl No.	Name of Micro watershed	Name of Activity	Area Benefitted	No. of Beneficiaries	Total Cost (in Rs)
1	Padavayal	Formation of Irrigation Canal at Kolagappara	15 ha	100	` 600000
2	Vattathimoola	Valiyamoola Drinking Water Supply Programme	30 ha	150	` 580000
		Formation of Irrigation Well at Poothikkad	15 ha	100	` 400000
3	Thekkankolly	Water Supply Programme at Neerchal	30 ha	150	` 900000
4	Manjalam-Kottur	Distribution of Agro-horticulture Plants	593 ha	712	` 278800
Total					` **2758800**

Entry Point Activity Padavayal Watershed

Formation of Irrigation Canal at Kolagappara

Block	:	S. Bathery
Watershed	:	Padavayal
Grama Pachayat	:	Meenangadi
Entry point Activity	:	Formation of Irrigation Canal at Kolagappara
Total cost	:	` 600000/-

Introduction

Based on the wish of the people and the resolution of the concerned neighborhood groups and Grama sabhas and the approval of the Watreshed Committee, the Panchayat level Committee as well as the Block Panchayat Committee, it has been decided by the Sulthan Bathery Block Panchayat to go ahead with the formation of the irrigation canal at Kolagappara as Entry Point Activity under the IWMP IV H 5 project in the Padavayal Watershed.

Justification

- Formation of irrigation canal at Kolagappara will trigger intensive farming, particularly paddy cultivation in the watershed.
- The implementation of the proposed activity will enhance the self-confidence of the people and ensure their whole-hearted involvement in the project activities.

Objectives

- To form the irrigation canal in the watershed.
- To encourage the participation of the people in the project activities.

Beneficiaries

Inhabitants of the watershed, particularly farmers and SC/ST. communities

Activities

Work for forming the farm irrigation canal.

Organization

The Block Panchayat Committee approves the project formulated by the watershed committee on the basis of suggestions made by the people and Grama sabha. The Block Technical Committee gives technical sanction. The project is implemented by the UG under the supervision of the W.C. and with the guidance of the WDT. Monitoring will be done by the WDT.

Budget Total cost : ` 600000/-

Entry Point Activity Vattathimoola Watershed

1. Valiyamoola Drinking Water Supply Programme

2. Formation of Irrigation Well at Poothikkad

Block	:	S. Bathery
Watershed	:	Vattathimoola
Grama Pachayat	:	Nenmeni, Sulthan Bathery
Entry point Activity	:	1. Valiyamoola Drinking Water Supply Programme
		2. Formation of Irrigation Well at Poothikkad
Total cost	:	1. Valiyamoola Drinking Water Supply Programme - ` 580000
		2. Formation of Irrigation Well at Poothikkad - ` 400000

Introduction

Based on the wish of the people and the resolution of the concerned neighborhood groups and grama sabhas and the approval of the Watreshed Committee, the Panchayat level Committee as well as the Block Panchayat Committee, it has been decided by the Sulthan Bathery Block Panchayat to go ahead with the two programs namely formation of irrigation well at Poothikkad and water supply Programme at Valiyamoola as Entry Point Activities under the IWMP IV H 5 project in the Vattathimoola Watershed.

Objectives

- To put an end to the age–old waiting for water by people especially SC/ST, OBC and women.
- Construction of irrigation well will trigger intensive farming.
- To ensure high peoples participation in the IWMP Watershed programmes and builds confidence in the people.

Beneficiaries

The inhabitants of Vattathimmola Watershed, particularly SC/ST and small and marginal farmers.

Organization

- The Watershed Committee implements the project approved by the Block Panchayat with the help of User Groups.
- Beneficiary Committee is formed and beneficiary contribution is collected.
- Beneficiaries directly supervise the project activities.
- WDT and TSO etc. provide the needed guidance and support at the appropriate time.
- Monitoring is done by WDT/TSO
- Funds are spent by the watershed committee through the beneficiary committee.

Monitoring

Monitoring will be undertaken by the IWMP Monitoring Committee with the support of WDT.

Budget

1. Valiyamoola Drinking Water Supply Programme - ` 580000

2. Formation of Irrigation Well at Poothikkad - ` 400000 **Total Cost: - ` 980000**

Entry Point Activity - Thekkankolly Watershed

Water Supply Programme at Neerchal

Block	:	S. Bthery
Watershed	:	Thekkankkolly
Grama Pachayat	:	Ambalavayal, Nenmeni
Entry point Activity	:	Water Supply Programme
Total Cost	:	` 900000/-

Introduction

The Thekkankolly watershed situated in the Grama Panchayats of Ambalavayal and Nenmeni comes under the IWMP IV H 5 watershed development project being implemented by the Sulthan Bathery Block Panchayat. Since the IWMP guidelines permit 4% of the total project fund to be used for Entry Point Activity and the Grama Sabhas and neighborhood groups have passed resolution requesting for executing the Neerchal water supply programme, long pending for decades and since it will be highly beneficial to the local people, the Bathery Block Panchayat has decided to implement the project.

Objectives

- To construct a tank on the Neerchalkunnu, desilt the pond below, pump water into it and distribute
- To ensure high peoples participation in the IWMP Watershed programmes and builds confidence in the people.
- To put an end to the age–old waiting for water by people especially SC/ST, OBC and women.

Beneficiaries

The inhabitants of Thekkankolly Watershed, particularly 150 households of SC/ST and small and marginal farmers.

Organization

- The Neerchal Neighborhood group implements the project approved by the Block Panchayat under the supervision of the Thekkankolly Watershed Committee.
- Beneficiary Committee is formed and beneficiary contribution is collected.
- Beneficiaries directly supervise the project activities.
- WDT and TSO etc. provide the needed guidance and support at the appropriate time.
- Monitoring is done by WDT/TSO
- Funds are spent by the watershed committee through the benefiary committee.

Monitoring

Monitoring will be undertaken by the IWMP Monitoring Committee with the support of WDT.

Budget

Total Cost: - `900000/-

Entry Point Activity – Manjalam - Kottur Watershed

Distribution of Agro-horticulture Plants

Block	:	S. Bathery
Watershed	:	Manjalam Koottur
Grama Pachayat	:	Ambalavayal
Entry point Activity	:	Distribution of Agro-horticulture Plants
Total cost	:	` 278800/-

Introduction

Based on the wish of the people and the resolution of the concerned neighborhood groups and Grama sabhas and the approval of the Watreshed Committee, the Panchayat level Committee as well as the Block Panchayat Committee, it has been decided by the Bathery Block Panchayat to go ahead with the distribution of agro-horticulture plants as the Entry Point Activity under the IWMP IV H 5 Project in the Manjalam-Kottur Watershed.

Justification

- Distribution of Agro-horticulture Plants will enhance the agro-horticulture production in the area.

- The implementation of the proposed activity will enhance the self-confidence of the people and ensure their whole-hearted involvement in the project activities.

Objectives

- To distribute the plants in the watershed.
- To encourage the participation of the people in the project activities.

Beneficiaries

Inhabitants of the watershed, particularly small and marginal farmers.

Activities

Work for distributing the plants.

Organization

The Block Panchayat Committee approves the project formulated by the watershed committee on the basis of suggestions made by the people and Grama sabha. The Block Technical Committee gives technical sanction.

Monitoring

Monitoring will be done by the WDT and WC.

Budget

Total cost : ` 278800/-

VII. NATURAL RESOURCE MANAGEMENT

Earthen Bund with Vegetative Cover

The earthen bunds will check soil erosion by reducing the erosive velocity of water. The focus of water conservation structures must be to make water walk rather than run. Annual repair of these is very important. These bunds may be stabilized with fodder crops such as guinea grass, Congo Signal and wild vetiver grass. Under no circumstances grazing by live stock should be allowed over the earthen bunds.

Mulching

Mulching can be done for in-situ conservation of soil moisture. Locally available materials like leaves, tree branches or any suitable organic waste materials can be spread in thick layers on soil surface. Mulching will also help in the absorption of morning dew drops, thus enriching the soil moisture.

Centripetal Terracing/ Crescent Bunding

Crescent bunding reduces soil loss, surface runoff and nutrient loss. Also it improves soil moisture content, growth of plants, yield of plants etc. In addition to this, it will improve ground water levels in nearby wells and ponds.

Rain Water Harvesting Structures

In this era of rapid climate changes and drought; popularization of proper rain water harvesting mechanisms is the need of the hour. A tank of 10000-liter capacity will serve the requirement of water for cooking and drinking. For long term activity, conversion of dried up wells or unused wells for ground water recharge can be adopted.

Stream Embankment

The main drainage lines are eroded due to the river bank agricultural practices of the farmers. Agricultural practices on the stream banks during rainy months add to sedimentation in the streams and lead to lowering of water table and create several environmental problems. Stabilization of stream banks with vegetative methods is needed to conserve the precious flora and fauna in and around the streams. Planting vetiver grass is a way of protecting the soil against erosion through its deep roots. It may become an additional income source for the watershed stakeholders as vetiver is one of the major medicinal plants. Construction of retaining walls, stone pitching, DR packing etc may be done wherever necessary.

Revitalization of Head Ponds

There are existing farm ponds which have perished due to non-maintenance by the people and these ponds could be a good source for irrigation for around 120 acres of paddy field in the watershed. Ground water recharge will also be done through these programs.

VIII. PRODUCTION SYSTEM MANAGEMENT

The growth in agriculture could be achieved mainly through the increasing of production. It is possible through managing and developing new production systems.

Agro Horticultural Nursery

The opportunity for developing or raising a variety of fruits and vegetables by taking advantage of the varying climate and other favorable features remaining largely underutilized. Horticulture has been identified as the major area for optimum exploitation in the agricultural sector of Kerala. Hence, developing Agro-horticultural nurseries is the best method to enhance the productivity potential of the project area. Production and distribution of planting materials will enhance the whole production system of the watershed.

Medicinal Plants Cultivation

Promotion of medicinal plants is identified as a major thrust area in all the development plans. The yield from different aromatic and medicinal plants will add highly to the production system and will increase the productivity potential of the project area. This programme will enable the stakeholders in value addition of their products and thereby increasing the quality and quantity of products.

Bio-gas Plants

The opportunity to exploit and develop bio gas plants along with the distribution of Milch Cows as part of the livelihood support activities will be enhancing and managing the production from the diary sector. Hence the construction of Bio-gas plants will surely help to develop or increase the productivity and to manage the major production system in the watershed area.

IX. LIVELIHOOD SUPPORT SYSTEM

A Detailed Action Plan of Livelihood Support for Landless

Milch Cow Rearing

Rationale

Landlessness, in the rural setting, begets several issues of poverty- unemployment/under employment, food insecurity, low educational status and so forth. The landless are basically asset-less, with no assured source of income. Normally they depend on seasonal farm labor for their sustenance. In the absence of farm work in the locality, they are compelled to migrate or starve.

A blessing in watershed in Wayanad is that even the landless/asset-less can eke out a living, given a chance to take to farm-related alternative occupations. Small dairying is such an occupation. Milk and milk products are in high demand and the rural folk have the know-how on small dairy management. In fact, Wayanad largely depends on milk brought from other neighboring states to meet its domestic requirement. Fodder, both green and concentrate, are locally available. The efficient milk marketing network in the district assures prompt sale and good price. The project will also effectively address the issue of food insecurity and scarcity of bio-manure. In every way this project is feasible and worthy of our support.

Objectives

1. To help the beneficiaries to augment their income and tide over persisting economic insecurity
2. To improve the availability of milk and milk products in the watershed
3. To help generate high quality organic fertilizer
4. To improve the socio-economic condition of the beneficiaries of the watershed

Participatory Livelihood Planning

This plan has the merit of having been prepared in full participation of the concerned people. As part of the PRA, conducted by the PIA, group learning exercises, including resource mapping, focus group discussion, were conducted for identifying and prioritizing the feasible livelihood options. The ideas for this plan evolved during these intensive sessions of participatory learning.

Situational Analysis

The IWMP IV H 5 watershed project has an area of 4598 ha and a population of 22091 of which 11342 are males and 10749 females. The community-wise break-up is as follows:

Table – Category Wise Population

Sl No	Name of Watershed	Population				Total Households
		Male	Female	SC	ST	
1	Padavayal	1792	1680	216	272	868
2	Vattathimoola	2965	2847	352	520	1453
3	Thekkankolly	4625	4271	472	740	2224
4	Manjalam-Kottur	1960	1951	176	252	712

The average land holding is 0.833 ha and 327 families are totally landless and 70% of the total population is marginal farmers with holdings ranging from 50 to 200 cents. The average rainfall in the watershed is 2921 mm per annum. Of the population, 14% belong to the SC/ST category. There are women-headed families and some distressed families, with a history of ill-treatment of women, suicide case etc.

Beneficiaries/Participants

The beneficiaries belong to the lowest socio-economic strata of the watershed community. Priority has been given to SC/ST, women in general and to women in distress in particular. The selection is done jointly by the watershed general body and by the Watershed Committees with the support of the PIA and WDT on the basis of certain parameters. The selected beneficiaries will be mobilized into Self Help Groups (SHGs). The Groups, thus formed will be appraised on the basis of social, technical and economical parameters.

Beneficiary Selection

The beneficiaries of this project are the poor families in the project area

The beneficiaries will be selected on the basis of following criteria including:

- Priority to landless and women, women-headed families.
- Priority will be given to widows.
- Priority to those who are in the BPL category.
- Priority for those who work outside the watershed as agricultural laborers.
- Priority for those who have not got any assistance from any government departments, NGOs or other institutions for Milch Cow rearing.
- Priority for those who have interest, skill and experience in cow rearing.
- Priority for those with unsustainable land holding (below one acre of agricultural land).

Organization

The selected beneficiaries will be organized into small Joint Liability Groups of 5 or 7. The revolving fund assistance will be transferred to a jointly managed account of the JLGs on the basis of certain security documents and a legally binding agreement after the reception of an application in the prescribed format.

Group Appraisal

Groups in the watershed will be appraised on the basis of social, technical and financial parameters. The socially as well as financially backward stakeholders will be given priority. The technical appraisal of the group and the area will also be considered.

Activities

The contemplated activities include:

- Capacity building: Training in micro-enterprise management, with focus on small dairying and other technical matters.
- Purchase of cows: Each beneficiary will be given loan from a revolving fund for purchasing two cows, the second one being supplied after six months of giving the first cow (during the dry period).
- Marketing: The respective groups will organize the marketing of the milk produced by the members of the group. There is a MILMA unit nearby.

Management

A field visit to the scheme area will be undertaken for conducting the feasibility of the programme. The following documents will be maintained for the sake of monitoring and evaluation:

- Application in prescribed format
- Legally binding agreement
- SHG resolution
- WC resolution
- Collateral security as decided by the WC

Financial Management

The required finance will be provided by PIA and the WC by way of loan. The loan will be repaid by the beneficiaries in suitable monthly installments from the income from sale of milk and other products.

Monitoring Strategy and Mechanism

A monitoring committee, composed of representatives of WC, PIA and WDT, will be in charge of monitoring. Monitoring will be conducted on monthly basis.

Repayment Strategy

1. The amount in full has to be repaid in EMI within a maximum of 36 months
2. Normal interest rate will be 5%
3. Defaulters within the time limit will be charged a fine as decided by VWC
4. Those who complete the repayment period before the term of 36 months will be given an incentive of 1% reduction in the interest rate

Total Loan	30,000.00
Rate of Interest (%)	5.00
Interest	1,500.00
Instalment Repay	11,500

Repayment Shedule

Year	Income	Expenses	Gross Surplus	Equated Annual Instalment	Net Surplus
I	79,920.00	62,645.00	17,275.00	11,500	5,775
II	86,580.00	61,675.00	24,905.00	11,500	13,405
III	87,080.00	61,030.00	26,050.00	11,500	14,550

Operation

The repaid amounts will be given to other members of the SHGs in the waiting list. This rotation will continue indefinitely, so that more and more poor people will be able to avail of the benefits.

Sustainability of the Programme

The programme will be appraised on the basis of Institutional, Technical and Economic parameters.

Institutional Sustainability/Feasibility

Involvement of the stakeholders and the cluster committees are ensured by the VWC during the project period. The formed JLGs will be further strengthened, thereby ensuring the equitable distribution of project benefits.

Technical Sustainability/Feasibility

The watershed stakeholders have accessibility to a well equipped veterinary hospital which is situated in the watershed area itself. The basic training and a breeding center are also associated with the hospital. The majority of the stakeholders are small and marginal farmers and they are engaging in farming activities. So the availability of green /dry fodder will not be a problem. There is a milk collection center situated in the watershed area for the effective marketing of their produce.

Table - Economic Feasibility

Cash Flow Analisis				
Sl. No.	Purticulers	Yerars		
		I	II	III
I	Costs			
1	Capital Cost	26,000.00		
2	Recuring Cost			
a	Feeding during Lactation Period			
	Dry Fooder	8,960.00	9,800.00	7,840.00
	Consentrate	22,400.00	22,680.00	21,840.00
	Sub Total	**31,360.00**	**32,480.00**	**29,680.00**
b	Feeding during Dry Period			
	Dry Fooder	7,000.00	7,000.00	7,000.00
	Concentrate	1,360.00	1,445.00	1,275.00
	Sub Total	**8,360.00**	**8,445.00**	**8,275.00**
c	Veterinary Aid	2,500.00	2,500.00	3,000.00
	Transportation	2,500.00		
d	Insurance for 3 Years	1,500.00	-	-
e	Labour cost	16,425.00	18,250.00	20,075.00
	Total	**62,645.00**	**61,675.00**	**61,030.00**
II	Benefits			
1	Milk Yeild (Average 12 Lts/ Day @ Rs. 22/-)	73,920.00	80,080.00	80,080.00
2	Sale of Manure (Cowdung @ Rs. 600/Ton)	6,000.00	6,500.00	7,000.00
	Total	**79,920.00**	**86,580.00**	**87,080.00**
	Totla Benefits	**79,920.00**	**86,580.00**	**87,080.00**
	Total Cost	**62,645.00**	**61,675.00**	**61,030.00**
	Profit	**17,275.00**	**24,905.00**	**26,050.00**

Expected Results

1. Income from the sale of Milk, Cow- Dung and Calf
2. Milk and Milk products for the family
3. Organic Manure
4. Increased soil fertility
5. Enhanced health Status for the family
6. Enhanced living standard for the family
7. Controlled cash outflow from the watershed

Conclusion

This is a highly need-based and feasible plan, scoring high on relevance and sustainability. Multiple benefits are expected from this eco-friendly and gender-sensitive plan. The watershed approach in itself has the potential to generate the spirit of cooperation, sharing, self help, and self reliance and would be helpful in the integration of Social Resource Management and Natural Resource Management. The livelihood plan will cover the needed beneficiaries of the watershed and this will pave the way to increase their self reliance capacity and also this will add to the protection of natural resources especially soil and biomass.

Backyard Poultry

Introduction/ Rationale

Backyard poultry has been identified as a highly profitable, woman-friendly as well as environment-friendly occupation that can be promoted among the poor women-folk in the watershed, with focus on the most needy, such as destitute women and women-headed families. Besides eggs and meat, the poultry will also produce high quality organic manure, not only ensuring steady income and economic security, but also boost agricultural productivity as well as contribute to food security. It is a well-known fact that Kerala is heavily dependent on other states for eggs and other poultry products. This project at promoting back yard poultry has several socio-economic advantages and will be critcal in ensuring the economic security of poor women and their families.

Objectives

- To encourage back yard poultry micro-enterprise among the most vulnerable women in the watershed as an effective measure of promoting their economic security
- To help mitigate the acute problem of food insecurity, in the area of poultry products
- To contribute to the promotion of organic farming by way of producing high quality organic fertilizers

Activities

The contemplated activities include:

- Construction of chicken coups
- Procurement and distribution of good quality fowls
- Management of the poultry units

Table - Budget for Backyard Poultry

Sl. No.	Particulars	Unit	Rate	Quantity	Unit Cost of Labour	Unit Cost of Material	Total Labour Cost	Total Material Cost
1	Cost of Pullets/fowls	No	73	25	-	73	-	1825
2	Cage (25sqf x 200/1sqf)	No	200/sqf	1	168	4496	504	4496
3	Feeds	Kg	15/Kg	12.50 Kg	-	15/Kg		187.5
4	Vaccination	1	2	25	-	2/Pullet	-	50
5	Plastic Net	M2	180	15		2700		2700
6	Insurance cost (6%of the total material cost)					110		110
	Total						504	9318.5

Pullet Variety

Gramasree – 40 days old

Total Project Cost of one unit of Backyard Poultry - 9822.50

IWMP IV H 5 - TOTAL BUDGET								
Sl. No.	**Activities**	**1st Year**	**2nd Year**	**3rd Year**	**4th Year**	**IWMP Share**	**Total**	**WDF**
A	**Natural Resources Management (56%)**							
1	Earthen Bunding	4,842,534	944,083	944,083	-	6,730,700	6,730,700	673,070
2	Centri Pit Trenching	132,300				132,300	132,300	13,230
3	Roof Water Harvesting Tanks	1,800,000	2,130,000	990,000		4,920,000	4,920,000	492,000
4	Mulching	2,336,950	944,775	574,275		3,856,000	3,856,000	385,600
5	Farm Pond	4,754,000	3,703,000	2,300,000		10,757,000	10,757,000	1,075,700
6	Stream Side Protection	650,000	400,000			1,050,000	1,050,000	105,000
7	Paddy Land Protection		363,200	152,000	250,000	765,200	765,200	76,520
8	Farm Land Protection	50,000	500,000			550,000	550,000	55,000
9	Check Dam			1,425,000	4,692,000	6,117,000	6,117,000	611,700
10	Irrigation	1,070,000	1,550,000	200,000	525,000	3,345,000	3,345,000	334,500
11	Flood Prevention Programme		400,000			400,000	400,000	40,000
	Sub Total NRM	**15,635,784**	**10,935,058**	**6,585,358**	**5,467,000**	**38,623,200**	**38,623,200**	**3,862,320**
B	**Production System Management (10%)**							
1	Formation of Herbal Park at Thatiad			824,000		824,000	824,000	82,400
2	Agro Horticultural Nursery	1,386,500				1,386,500	1,386,500	138,650

3	Bio Gas Plant	1,332,193	1,332,193	1,332,194	689,920	4,686,500	4,686,500	468,650
	Sub Total PSM	**2,718,693**	**1,332,193**	**2,156,194**	**689,920**	**6,897,000**	**6,897,000**	**689,700**
C	**Livelihood Support System (9%)**							
1	Diary Unit	1,066,913	1,066,913	1,066,913	975,361	4,176,100	4,176,100	
2	Homestead Backyard Poultry	570,300	570,300	570,300	320,300	2,031,200	2,031,200	
	Sub Total LSS	**1,637,213**	**1,637,213**	**1,637,213**	**1,295,661**	**6,207,300**	**6,207,300**	
D	**Entry Point Activity (4%)**	**2,758,800**				**2,758,800**	**2,758,800**	
E	**Management (21%)**							
1	Consolidation (3%)				2,069,100	2,069,100	2,069,100	
2	Administration (10%)	1,724,250	1,724,250	1,724,250	1,724,250	6,897,000	6,897,000	
3	Capacity Building (5%)	1,724,250	1,724,250			3,448,500	3,448,500	
4	DPR (1%)	689,700				689,700	689,700	
5	Monitoring (1%)	172,425	172,425	172,425	172,425	689,700	689,700	
6	Evaluation (1%)				689,700	689,700	689,700	
	Sub Total Management	**4,310,625**	**3,620,925**	**1,896,675**	**4,655,475**	**14,483,700**	**14,483,700**	
	Grand Total (A+B+C+D+E)	**27,061,115**	**17,525,389**	**12,275,440**	**12,108,056**	**68,970,000**	**68,970,000**	**4,552,020**

TOTAL BUDGET - PADAVAYAL WATERSHED								
Sl. No.	**Activities**	**1st Year**	**2nd Year**	**3rd Year**	**4th Year**	**IWMP Share**	**Total**	**WDF**
A	**Natural Resources Management**							
1	Earthen Bunding	1,368,950				1,368,950	1,368,950	136,895
2	Roof Water Harvesting Tanks		180,000	450,000		630,000	630,000	63,000
3	Mulching		432,250			432,250	432,250	43,225
	Total	**1,368,950**	**612,250**	**450,000**	**-**	**2,431,200**	**2,431,200**	**243,120**
4	**Farm Pond**							
i	Construction of Farm Pond near by Thressiyamma Pallithazhathu	275,000				275,000	275,000	27,500
ii	Construction of Farm Pond near Sivan Muttekottil	275,000				275,000	275,000	27,500
	Total	**550,000**	**-**	**-**	**-**	**550,000**	**550,000**	**55,000**
5	**Stream Side Protection**					-		-
i	Stream Protection nearby Balan Vengambatta	50,000				50,000	50,000	5,000
ii	Farm Land and Stream Protection near Ramakrishnan Muttekottil	150,000				150,000	150,000	15,000
iii	Stream Embankmemnt with Bamboo and Srewpines	100,000				100,000	100,000	10,000

	Total	**300,000**	**-**	**-**	**-**	**300,000**	**300,000**	**30,000**
6	**Paddy Land Protection**							
i	Paddy Field Prottection nearby V S Yacob			50,000		50,000	50,000	5,000
ii	Paddy Field Protection near Padikolly Check Dam			102,000		102,000	102,000	10,200
	Total	**-**	**-**	**152,000**	**-**	**152,000**	**152,000**	**15,200**
7	**Farm Land Protection**							
i	Farmland Protection at Kuppamudi near by Ahammed Kurukkanveetil	50,000				50,000	50,000	5,000
	Total	**50,000**	**-**	**-**	**-**	50,000	**50,000**	**5,000**
8	**Check Dam**							
i	Construction of Check Dam Near by Balu Choorimala				300,000	300,000	300,000	30,000
ii	Checkdam Renovetion and Canal Work at Kalappan kolly				775,000	775,000	775,000	77,500
iii	Checkdam and Canal Repair at Kuzhivayal				775,000	775,000	775,000	77,500
	Total	**-**	**-**	**-**	**1,850,000**	**1,850,000**	**1,850,000**	**185,000**
9	**Irrigation Canal & Well**							

i	Construction of Irrigation Well nearby Paulose Peringattu	310,000				310,000	310,000	31,000
ii	Construction of Irrigation Canal at Kolagappara School thazhe	150,000				150,000	150,000	15,000
iii	Formation of Canal near by Health Center Kolagappara	150,000				150,000	150,000	15,000
iv	Construction of Irrigation Well nearby A V Mathai	310,000				310,000	310,000	31,000
v	Formation of Irrigation Canal near by T K Shaji	150,000				150,000	150,000	15,000
	Total	**1,070,000**	**-**	**-**	**-**	**1,070,000**	**1,070,000**	**107,000**
10	**Flood Prevention Programme**							
i	Flood Relief Programme at Kolagappara School Thazhe		300,000			300,000	300,000	30,000
	Total	**-**	**300,000**	**-**		300,000	**300,000**	**30,000**
	Sub Total NRM	**3,338,950**	**912,250**	**602,000**	**1,850,000**	**6,703,200**	**6,703,200**	**670,320**
B	**Production System Management**					-		-
1	Agro Horticultural Nursery	350,000				350,000	350,000	35,000
2	Biogas Plants (2 m3 Capacity)-30 Units - Rs 28233 per unit	282,333	282,333	282,334	-	847,000	847,000	84,700
	Sub Total	**632,333**	**282,333**	**282,334**	**-**	**1,197,000**	**1,197,000**	**119,700**

C	**Livelihood Support System**					-		
1	**Diary Unit** - 19 units -Rs 30384 per unit	151,921	151,921	151,921	121,537	577,300	577,300	
2	**Homestead Backyard Poultry -** 50 units -Rs 10000 per unit	150,000	150,000	150,000	50,000	500,000	500,000	
	Sub Total	**301,921**	**301,921**	**301,921**	**171,537**	**1,077,300**	**1,077,300**	
D	**Entry Point Activity**					-		
1	Formation of Irrigation Canal at Kolagappara	600,000				600,000	600,000	
	Sub Total	**600,000**				**600,000**	**600,000**	
	Grand Total (A+B+C+D)	**4,873,204**	**1,496,504**	**1,186,255**	**2,021,537**	**9,577,500**	**9,577,500**	**790,020**

TOTAL BUDGET - VATTATHIMOOLA WATERSHED								
Sl. No.	**Activities**	**1st Year**	**2nd Year**	**3rd Year**	**4th Year**	**IWMP Share**	**Total**	**WDF**
A	**Natural Resources Management**							
1	Roof Water Harvesting Tanks	450,000	450,000	540,000		**1,440,000**	**1,440,000**	**144,000**
2	Mulching	555,750	512,525	574,275		**1,642,550**	**1,642,550**	**164,255**
3	Earthen Bunding	944,084	944,083	944,083		**2,832,250**	**2,832,250**	**283,225**
4	**Farm Pond**					-	-	-
i	Construction of Farm Pond - Near by Annamma Thenmoola	150,000				150,000	150,000	15,000
ii	Construction of Farm Pond - Near by Jacob Madana	300,000				300,000	300,000	30,000
iii	Construction of Farm Pond near by Sulaiman Choorakuni	300,000				300,000	300,000	30,000
iv	Construction of Farm Pond - Near by Subramaniyan, Palakattil	200,000				200,000	200,000	20,000
v	Construction of Farm Pond - Near by Santhamma, Kalayattolickal	300,000				300,000	300,000	30,000
vi	Construction of Farm Pond - Near by Ramankunju	200,000				200,000	200,000	20,000
vii	Construction of Farm Pond - Near by Ealiyas Palpath	200,000				200,000	200,000	20,000

viii	Construction of Farm Pond - Near by Vattathimoola Ummen Master	200,000				200,000	200,000	20,000
	Total	**1,850,000**	**-**	**-**		**1,850,000**	**1,850,000**	**185,000**
5	**Stream Side Protection**							
i	Stream protection at Govindhanmoola	100,000				100,000	100,000	10,000
ii	Drainage Protection at Kunthani, Manjadivayal	150,000				150,000	150,000	15,000
iii	Side Protection near Janardhanan	100,000				100,000	100,000	10,000
	Total	**350,000**	**-**	**-**		**350,000**	**350,000**	**35,000**
6	**Paddy Land Protection**							
i	Paddy Field Protection at Choorakuni		163,200			163,200	163,200	16,320
ii	Paddy Field Protection near by Surendran Vattathimoola		200,000			200,000	200,000	20,000
	Total	**-**	**363,200**	**-**		**363,200**	**363,200**	**36,320**
7	**Farm Land Protection**							
i	Farm Land Protection near by Ramla Erassan		150,000			150,000	150,000	15,000
ii	Farm Land Protection by Manjadi Culvert		100,000			100,000	100,000	10,000
iii	Farm Land Protection Chandrapakash,		100,000			100,000	100,000	10,000

	Malavayal							
	Total	**-**	**350,000**	**-**		**350,000**	**350,000**	**35,000**
8	**Check Dam**							
i	Construction of Check Dam at Manjadi thodu			300,000		300,000	300,000	30,000
ii	Construction of Check Dam near George Madayickal			300,000		300,000	300,000	30,000
iii	Construction of Check Dam at Choorakuni Thodu			525,000		525,000	525,000	52,500
iv	Construction of Check Dam near Neelimanga Colony			300,000		300,000	300,000	30,000
	Total	**-**	**-**	**1,425,000**		**1,425,000**	**1,425,000**	**142,500**
9	**Irrigation Canal & Well**							
i	Farm Irrigation Programme at Valiyamoola				525,000	525,000	525,000	52,500
	Total		**-**	**-**	**525,000**	**525,000**	**525,000**	**52,500**
10	**Flood Prevention Programme**							
i	Flood Relief programme at Choorakuni, Ambika		100,000			100,000	100,000	10,000
	Total	**-**	**100,000**	**-**		**100,000**	**100,000**	**10,000**
	Sub Total	**4,149,834**	**2,719,808**	**3,483,358**	**525,000**	**10,878,000**	**10,878,000**	**1,087,800**

B	**Production System Management**					-		-
1	Agro Horticultural Nursery	336,500				336,500	336,500	33,650
2	Biogas Plants (2 m3 Capacity)-55 Units - Rs 29200 per unit	438,000	438,000	438,000	292,000	1,606,000	1,606,000	160,600
	Sub Total	**774,500**	**438,000**	**438,000**	**292,000**	**1,942,500**	**1,942,500**	**194,250**
C	**Livelihood Support System**					-		
1	Diary Unit - 40 units -Rs 31206 per unit	312,062	312,062	312,062	312,064	1,248,250	1,248,250	
2	Homestead Backyard Poultry - 50 units -Rs 10000 per unit	150,000	150,000	150,000	50,000	500,000	500,000	
	Sub Total	**462,062**	**462,062**	**462,062**	**362,064**	**1,748,250**	**1,748,250**	
D	**Entry Point Activity**					-		
1	Valiyamoola Drinking Water Supply Programme	580,000				580,000	580,000	
2	Formation of Irrigation Well at Poothikkad	400,000				400,000	400,000	
	Sub Total	**980,000**				**980,000**	**980,000**	
	Grand Total (A+B+C+D)	**6,366,396**	**3,619,870**	**4,383,420**	**1,179,064**	**15,548,750**	**15,548,750**	**1,282,050**

TOTAL BUDGET - THEKKANKOLLY WATERSHED								
Sl. No.	**Activities**	**1st Year**	**2nd Year**	**3rd Year**	**4th Year**	**IWMP Share**	**Total**	**WDF**
A	**Natural Resources Management**							
1	Earthen Bunding	2,529,500				**2,529,500**	**2,529,500**	**252,950**
2	Centri Pit Trenching	132,300				**132,300**	**132,300**	**13,230**
3	Roof Water Harvesting Tanks		1,500,000			**1,500,000**	**1,500,000**	**150,000**
4	**Farm Pond**							
i	Construction of Farm Pond - Near by Bhagheerathan	200,000				200,000	200,000	20,000
ii	Construction of Farm Pond - Near by Subhash Palliyalil	200,000				200,000	200,000	20,000
iii	Construction of Farm Pond - Near by Joseph Periyassery	450,000				450,000	450,000	45,000
iv	Construction of Farm Pond - Near by Harindranadh, Komalavilasam Estate	250,000				250,000	250,000	25,000
v	Construction of Farm Pond - Near by Joseph Mullanmadackal	252,000				252,000	252,000	25,200
vi	Construction of Farm Pond -Near by Pauly Thomas	150,000				150,000	150,000	15,000
vii	Construction of Farm Pond - Near by George Puthanveetil	200,000				200,000	200,000	20,000

viii	Construction of Farm Pond - Near by Bushara Basheer	252,000				252,000	252,000	25,200
ix	Construction of Farm Pond - Near by Basheer Vazhakodan	200,000				200,000	200,000	20,000
x	Construction of Farm Pond - Near by Dharmarajan	200,000				200,000	200,000	20,000
xi	Construction of Farm Pond - Near by Joby Chacko		250,000			250,000	250,000	25,000
xii	Construction of Farm Pond - Near by P K Reji		200,000			200,000	200,000	20,000
xiii	Construction of Farm Pond - Near by Rukumini Kunnamangalath		220,000			220,000	220,000	22,000
xiv	Construction of Farm Pond - Near by K K Raghavan		220,000			220,000	220,000	22,000
xv	Construction of Farm Pond - Near by C K Sreenivasan		200,000			200,000	200,000	20,000
xvi	Construction of Farm Pond - Near by A P Kunjumuhammed		252,000			252,000	252,000	25,200
xvii	Construction of Farm Pond - Near by Paruvathi Mankombu		400,000			400,000	400,000	40,000
xviii	Construction of Farm Pond - Near by Chandhu		311,000			311,000	311,000	31,100
xix	Construction of Farm Pond - Near by Pathumma Chundangethil		400,000			400,000	400,000	40,000

xx	Construction of Farm Pond - Near by K B Venugopal		400,000			400,000	400,000	40,000
xxi	Construction of Farm Pond - Near by Prabhakaran Mankombu			250,000		250,000	250,000	25,000
xxii	Construction of Farm Pond - Near by Udhayakumar			200,000		200,000	200,000	20,000
xxiii	Construction of Farm Pond - Near by Kunjikannan			200,000		200,000	200,000	20,000
xxiv	Construction of Farm Pond - Near by B V Chackochan			200,000		200,000	200,000	20,000
xxv	Construction of Farm Pond - Near by B V Mathai			200,000		200,000	200,000	20,000
xxvi	Construction of Farm Pond - Near by Chandrasekharan Nambiar			250,000		250,000	250,000	25,000
xxvii	Construction of Farm Pond - Near by Saji Parackal			300,000		300,000	300,000	30,000
xxviii	Construction of Farm Pond - Near by Abraham Parackal			300,000		300,000	300,000	30,000
xxix	Construction of Farm Pond - Near by Dasan Mechery (Panchayathu Property)			200,000		200,000	200,000	20,000
xxx	Construction of Farm Pond - Near by Preman Karipadathu			200,000		200,000	200,000	20,000
	Total	**2,354,000**	**2,853,000**	**2,300,000**		**7,507,000**	**7,507,000**	**750,700**

5	**Check Dam**							
i	Construction of Check Dam at Padiparambu Kavu				450,000	450,000	450,000	45,000
ii	Check Dam Repair at Ayiramkolly				220,000	220,000	220,000	22,000
iii	Construction of Check Dam near by Andoor Paniyacolony Vayal				270,000	270,000	270,000	27,000
iv	Construction of Check Dam at quarry Valavu near by Sivadasan`				252,000	252,000	252,000	25,200
v	Construction of Check Dam at Andoor Vayal near by Santhaprasad				450,000	450,000	450,000	45,000
vi	Construction of Check Dam near by Andoor Naika Colony				450,000	450,000	450,000	45,000
vii	Check Dam Repair & Construction of canal at Kurijilakam				750,000	750,000	750,000	75,000
	Total	**-**	**-**		**2,842,000**	**2,842,000**	**2,842,000**	**284,200**
6	**Irrigation Canal & Well**							
i	Construction of Irrigation Well Near by Sathyanadhan		310,000			310,000	310,000	31,000
ii	Construction of Irrigation Well - Near by Prabhakaran Ozhackal		310,000			310,000	310,000	31,000
iii	Construction of Irrigation Well - Near by Abraham Velikkara		310,000			310,000	310,000	31,000

iv	Construction of Irrigation Well- Near by Sivadasan Nair		310,000			310,000	310,000	31,000
v	Construction of Irrigation Well- Near by M T Anil		310,000			310,000	310,000	31,000
	Total	**-**	**1,550,000**	**-**		1,550,000	**1,550,000**	**155,000**
	Sub Total	**5,015,800**	**5,903,000**	**2,300,000**	**2,842,000**	**16,060,800**	**16,060,800**	**1,606,080**
B	**Production System Management**					-		-
1	Formation of Herbal Park at Thatiad			824,000		824,000	824,000	82,400
2	Agro Horticultural Nursery	350,000				350,000	350,000	35,000
3	Biogas Plants (2 m3 Capacity)-55 Units - Rs 30800 per unit	462,000	462,000	462,000	308,000	1,694,000	1,694,000	169,400
	Sub Total	**812,000**	**462,000**	**1,286,000**	**308,000**	**2,868,000**	**2,868,000**	**286,800**
C	**Livelihood Support System**					-		
1	Diary Unit - 60 units -Rs 30000 per unit	450,000	450,000	450,000	450,000	1,800,000	1,800,000	
2	Homestead Backyard Poultry - 78 units -Rs 10015 per unit	200,300	200,300	200,300	180,300	781,200	781,200	
	Sub Total	**650,300**	**650,300**	**650,300**	**630,300**	**2,581,200**	**2,581,200**	
D	**Entry Point Activity**					-		
1	Neerchal Water Supply Programme	900,000				900,000	900,000	
	Sub Total	**900,000**	**-**	**-**	**-**	900,000	**900,000**	
	Grand Total (A+B+C+D)	**7,378,100**	**7,015,300**	**4,236,300**	**3,780,300**	**22,410,000**	**22,410,000**	**1,892,880**

TOTAL BUDGET - MANJALAM-KOTTUR WATERSHED								
Sl. No.	**Activities**	**1st Year**	**2nd Year**	**3rd Year**	**4th Year**	**IWMP Share**	**Total**	**WDF**
A	**Natural Resources Management**							
1	Roof Water Harvesting Tanks	1,350,000				**1,350,000**	**1,350,000**	**135,000**
2	Mulching	1,781,200				**1,781,200**	**1,781,200**	**178,120**
3	**Farm Pond**							
i	Construction of Farm Pond - Near by Vasrijackshan	-	250,000			250,000	250,000	25,000
ii	Construction of Irrigation Pond - Near by Saramma George		250,000			250,000	250,000	25,000
iii	Construction of Irrigation Pond - Near by C G Thomas		350,000			350,000	350,000	35,000
	Total	**-**	**850,000**	**-**		**850,000**	**850,000**	**85,000**
4	**Farm Land Protection**							
i	Protection of Sacred Groves (Kavu) at Karivalam		150,000			150,000	150,000	15,000
	Total	**-**	**150,000**	**-**		**150,000**	**150,000**	**15,000**
5	**Stream Side Protection**							

i	Stream Side Protection near by Valassery Paniya Colony		200,000			200,000	200,000	20,000
ii	Stream Embankment with Bamboo and Srew pines at Thattiad -Kottur Puzha		200,000			200,000	200,000	20,000
	Total	**-**	**400,000**	**-**	**-**	**400,000**	**400,000**	**40,000**
6	**Paddy Land Protection**							
i	Protection of Paddy field at Karivalam				150,000	150,000	150,000	15,000
ii	Paddy Field Protection near by Jacob Valassery				100,000	100,000	100,000	10,000
	Total		**-**	**-**	**250,000**	**250,000**	**250,000**	**25,000**
7	**Irrigation Canal & Well**							
i	Construction of Irrigation Canal at Revindran padi			200,000		200,000	200,000	20,000
	Total	**-**		**200,000**		200,000	**200,000**	20,000
	Sub Total	**3,131,200**	**1,400,000**	**200,000**	**250,000**	**4,981,200**	**4,981,200**	**498,120**
B	**Production System Management**					-		-
1	Agro Horticultural Nursery	350,000				350,000	350,000	35,000
2	Biogas Plants (2 m3 Capacity)-18 Units - Rs 29972 per unit	149,860	149,860	149,860	89,920	539,500	539,500	53,950

	Sub Total	**499,860**	**149,860**	**149,860**	**89,920**	**889,500**	**889,500**	**88,950**
C	**Livelihood Support System**					-		
1	**Diary Unit** - 18 units -Rs 30586 per unit	152,930	152,930	152,930	91,760	550,550	550,550	
2	**Homestead Backyard Poultry -** 25 units -Rs 10000 per unit	70,000	70,000	70,000	40,000	250,000	250,000	
	Sub Total	**222,930**	**222,930**	**222,930**	**131,760**	**800,550**	**800,550**	
D	**Entry Point Activity**					-		
1	Distribution of Agro-horticulture Plants	278800				278,800	278,800	
	Sub Total	278,800				**278,800**	**278,800**	
	Grand Total (A+B+C+D)	**4,132,790**	**1,772,790**	**572,790**	**471,680**	**6,950,050**	**6,950,050**	**587,070**

X. COVERGENCE UNDER IWMP IV H 5

INTRODUCTION

The policy decision to undertake convergence of different rural development schemes of the Government of India with Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) is one of the most significant steps towards comprehensive rural development. This will specifically help the Integrated Watershed Management Programme (IWMP) to reach its logical impact level with complementary funds from MGNREGS. Today, MGNREGS is the biggest programme of rural development in terms of scope and fund base. Other sectoral programmes relating to rural development with limited fund base can benefit immensely by converging with MGNREGS and in turn, can help MGNREGS fulfill its stated objective of providing assured wage employment to the rural poor along with creating rural infrastructure.

NEED FOR CONVERGENCE

a) **Saturation approach and filling the fund gap:** Watershed development involves treatment of natural resource base as well as creating meaningful livelihood opportunities. Thus there is a perceivable gap in demand for and supply of funds. Integrate Watershed Management Programme (IWMP) has been implemented throughout India since 2009-10 after the commencement of the new watershed guidelines, 2008. Prior to the Integrated Watershed Management Programme (IWMP), unit cost of a watershed project was Rs. 6000 per hectare (approximately Rs.4500 was available for watershed treatment). Under

IWMP, it has been increased to Rs. 12,000 - Rs. 15,000 per hectare depending upon the characteristic of the project area (out of the total project cost, 56% is available for watershed treatment, which amounts to Rs. 6700 to Rs. 8500). Though this increase is a great initiative, the amount is still not enough. According to a study conducted by ICRISAT (International Crops Research Institute for the Semi-Arid Tropics), scientific and holistic development of an area on watershed basis requires at an average Rs. 20,000 per hectare.

This gap can be filled by convergence with different other schemes of the government, especially, MGNREGS. MGNREGS, after becoming an act, is here to stay and has significantly large fund-base. Huge amount of fund can be released depending upon the requirement of the village community, and the labour budget. MGNREGS is very much open for convergence purpose; IWMP should take the opportunity and undertake all round development of the projects areas.

b) Covering 100% population of the project area: In earlier watershed projects, selective households got the benefits of the programme. So, a number of needy households had to be left out due to lack of sufficient funds. This can now be amended by covering all the needy households and all the needy survey numbers.

c) Holistic development: A watershed approach can be holistic when it is undertaken in three stages- (i) augmentation/conservation of natural resource base, (ii) building livelihood options based on the natural resource augmentation and then (iii) establishing linkages for sustaining the activities taken up. It requires integration with different agencies working on rural development and convergence with other schemes.

d) To stop duplication of works: Since a number of departments of the government are working for rural development and carry out similar kinds of activities, it is often observed that works are being duplicated. To stop this duplication, proper convergence of projects should be done at project implementation level.

e) Post project management: For long term benefit from a watershed development programme, appropriate post-project management has to be in place. It involves largely repair and maintenance of structures made under the programme. This in turn requires substantial money after the project period. Post- project management can be smooth if convergence takes place with a programme like MGNREGS.

SCOPE FOR CONVERGENCE

a) Water conservation and water harvesting
b) Drought proofing, including afforestation and plantation
c) Irrigation canals, including micro and minor irrigation works
d) Provision of irrigation to poor households
e) Renovation of traditional water bodies
f) Land development
g) Flood control and protection works
h) Rural connectivity

A look at the above permissible works shows that most of the watershed works under IWMP can be taken up under MGNREGS.

STRATEGY FOR CONVERGENCE

For facilitating the process of convergence, committees at different levels (state, district and Block) representing different departments can be formed. These committees oversee the planning process. The following steps can include in the process of convergence for its effectiveness:

- Issuing required circulars
- Regular information sharing mechanism
- Common workshops and training programmes
- Sharing of human resources
- Supplying GIS based thematic maps to the functionaries and the villagers
- Establishing consortium of institutions

INSTITUTIONAL MECHANISM FOR CONVERGENCE

Under IWMP micro-planning is done at village/project level by the Watershed Development Team (WDT) and Watershed Committee together. After net planning (process is briefly discussed below), the convergence plan is shared with the concerned responsible authority at Block level, which then goes to the district level for approval. For example, once the activities for convergence with MGNREGS are identified, it is placed before the Gram Sabha for approval. This approved plan then moves

through the Block Panchayat to the district level where it is approved and incorporated in the Labour Budget of MGNREGS for the district.

Planning for convergence will be much more comprehensive if done in the above manner. So, we can decide to undertake a number of pilot projects in the area. This has been done in collaboration with the IWMP.

CONVERGENCE PLANNING OF IWMP

IWMP gives utmost importance to convergence. This has been made mandatory by making convergence an integral part of every Detailed Project Report (DPR). Necessary circulars have been issued to the district levels regarding the same. While preparing the DPR, the project management team has to study the total fund requirement of the village or the project area.

As stated above, the DPR preparation process is comprehensive enough to estimate the total fund requirement of the village; because it ensures every household and each survey number is surveyed. Once the survey and the net planning are completed, the physical measures required are converted into financial figures. Thus the total financial requirement comes into picture. The gap in fund requirement is calculated by deducting the funds available from the funds required. The Watershed Committee and the Watershed Development Team then identify options for convergence.

ACTIVITES CAN BE TAKEN UP FOR CONVERGENCE IN IWMP IV H5

1. Construction and renovation of check dams
2. Deepening and desilting of ponds

3. Extension and renovation of existing irrigation projects
4. Flood protection works
5. Lift irrigation works
6. Construction of new drains and renovation of existing drains
7. Construction and maintenance of other NRM works such as earthen bunding, stone pitched bunding, staggered trenching, centri pit trenching etc.

XI. ANNUAL ACTION PLAN

Sl. No.	Name of Activity	Name of Subactivity	Unit	Target									
				First Year		Second Year		Third Year		Fourth Year		Total	
				Physical	Financial	Physical	Financial	Physical	Financial	Physical	Financial	Physical	Financial
I	Land Development	Afforestation	ha										
		Horticulture	ha									0	0
		Agriculture	ha									0	0
		Pasture	ha									0	0
		Others	ha									0	0
II	Soil & Moisture Conservation	Straggred trecnching	ha									0	0
		Countour Bunding	ha	394	4842534	77	944083	77	944083			548	6730700
		Graded Bunding	ha									0	0
		Bench Terracing	ha									0	0
		Others	ha	563	3169250	273	2607975	138	726275	30	250000	1004	6753500

III	Vegetative and Engineering Structure	Earthen Checks	Cubic meter									0	0
		Brushwood Checks	Rmt									0	0
		Gully plugs	Cubic meter									0	0
		Loose bolder	Cubic meter									0	0
		Gabian structure	Cubic meter									0	0
		Others	nos									0	0
IV	Water Harvesting Structure (New created)	Farm ponds	nos	20	4754000	13	3703000	10	2300000	0	0	43	10757000
		Check dams	nos					4	1425000	8	3722000	12	5147000
		Nallah Bunds	nos									0	0
		Percolation tanks	nos									0	0
		Ground Water recharge structure	nos									0	0
		Others	nos	65	2870000	76	3680000	31	1190000	1	525000	173	8265000
	Water Harvesting Structure (Renovated)	Farm ponds	nos									0	0
		Check dams	nos							2	970000	2	970000

		Nallah Bunds	nos									0	0
		Percolation tanks	nos									0	0
		Ground Water recharge structure	nos									0	0
		Others	nos									0	0
V	Livelihood activities for the asset-less persons	No. of farm activities	nos	2		2		2		2		2	0
		No. of Beneficiaries	nos	92	1637213	92	1637213	92	1637213	64	1295661	340	6207300
		No. of off farm activities	nos									0	0
		No. of Beneficiaries	nos									0	0
VI	Production system &micro-enterprises	Area	ha									0	0
		No. of Beneficiaries	nos	445	2718693	45	1332193	145	2156194	23	689920	658	6897000

XI. WATERSHED DEVELOPMENT FUND

One of the mandatory conditions for selection of villagers in Watershed Development Programme is people's contribution towards Watershed Development Fund (WDF). The contribution to WDF shall be a minimum 10% of the cost of works executed in individual lands. However, in case of SC/ST and persons identified below the poverty line, the minimum contribution shall be 5% of the cost of works executed on their lands. Contribution to the Fund in respect of community properly may come from all the beneficiaries, which shall be a minimum of 5% of the development cost incurred. It should be ensured that the contribution comes from the beneficiary farmers and is not deducted from the wages paid to the laborers who are engaged to treat the private lands. These contributions would be acceptable either in cash/voluntary labor or material.

A sum equivalent to the monetary value of the voluntary labour and materials would be taken from the watershed project account and deposited in this Fund. The Watershed Committee shall maintain the Watershed Development Fund separately. The Chairman and Secretary, Watershed Committee will operate the WDF account jointly, Individuals as well as charitable institutions should be encouraged to contribute generously to this Fund. The proceeds of this Fund shall be utilized in maintenance of assets created on community land or for common use after completion of project period Works taken up for individual benefit shall not be eligible for repair/maintenance out of this Fund.

User Charges

The Watershed Committee shall impose user charges on the User Groups for use of common utilities like water for irrigation from village tanks/ponds, grazing from community pastures etc. While one – half of the user charges so collected may be credited to the WDF for maintenance of assets of the projects, the remaining one –half may be utilized by the Watershed Committee for any other purpose as it may deem fit.

XII. EXPECTED OUTCOMES

Increase in good quality water harvesting structure:

In all the watershed areas in the project there are good quality water harvesting structures have proposed for irrigation and drinking purpose of the watershed community.

Reduction in soil erosion:

There will be a reduction in soil erosion in the watershed areas. However, the variation in the percentage of reduction primarily depended on quality of soil and moisture conservation activities in the respective regions.

Increase in ground water level:

There will be a marginal increase in ground water level after the completion of the soil and water conservation measures such as earthen bunding, staggered trenching, stone pitched bunding etc. in the project.

Maintaining runoff reduction:

With the help of soil and water conservation measures such as earthen bunding, staggered trenching, stone pitched bunding etc. we can reduce the level of runoff in the project area.

Positive change in the land use pattern:

There will be a positive change in the land use pattern after the implementation process of the project. More waste land will converted for productive use by the farmers. This will result in the increase in net sown area in majority of the micro watersheds. Further, better land use pattern will help increase in agricultural intensification and thus enhance agricultural production.

Crop diversification increases:

Increase in crop diversification will result out of more irrigation facilities available in the watershed areas. However, the concern is that the people invest more in good class of land. The investment in low quality land has not received much attention.

Reducing the workload of women:

Watershed development programmes will result positively in reducing the workload of women in terms of fetching drinking water, collecting fuel wood and fodder for livestock in almost all the watershed areas.

Increase in active involvement of the community

The Watershed Committees are actively involved in the implementation of watershed programmes. NHGs are formed in all the watersheds, and their degree of involvement increase. The NHGs will visible in watershed activities after completion of the project. Some other NHGs, SHGs and UGs seem to have survived after withdrawal of the project. It was realized that participation of local community member is key to success of the watershed projects. Participation also enhances community empowerment. The participation of beneficiaries in planning and execution of the watershed is more appreciable.

Reduction in Migration:

Migration will mostly reduce during the project implementation stage. But further attempt is necessary to stop migration completely.

Increase in women participation:

The women participation is very much adequate in watershed programmes. Mostly, women lack in mobility, voice in decision making at home or in community. Same is the case with landless members. This issue will be reduce and involve the women community in the project at its maximum especially in livelihood programmes.

Improvement in the standard of living of the households:

Majority of the households across all the watershed areas will have significant improvement in their standard of living.

Summarize Table of Expected Outcomes

Sl. No.	Item	Unit of measurement	Pre-project Status	Expected Post-project Status	Remarks
1	Status of water table (Depth to Ground water level)	Meters	8	10	Open well in the middle reach
2	Quality of drinking water	-	Moderate	Safe	Increased availability of drinking in open wells
3	Availability of drinking water	months	8 months	12 months	Through insitu conservation of rain water
4	Increase in irrigation potential	ha.	-	200 ha	Through renovation and construction of water bodies, new farm ponds.
5	Change in cropping/ land use pattern	ha.	128 ha.(Mono)	180 ha(Mixed)	Gross cropped area
6	Area under agricultural crop				
	Area under single crop	ha.	128 ha.(Mono)	180 ha(Mixed)	Mixed cropping and 2 tier cropping system in Plantation areas
	Area under double crop	ha.	-	20 ha	Paddy , Banana and vegetable in winter.
	Area under multiple crop	ha.	-	10 ha	Mixed cropping and 2 tier cropping system in Plantation areas
	Net increase in crop production area	ha.	50 ha	150 ha	Through cultivation of food crops such as tubers and vegetables
7	Increase in area under vegetation	ha.	4598 ha	5500 ha	Through area treatments which enables the stability of soil moisture
8	Increase in area under horticulture	ha.	50 ha	150 ha	Plantation of horticulture crops

9	Increase in area under fuel	ha.	60 ha	250 ha	Reduction in tree loping
10	Increase in area under Fodder	ha.	150 ha	300 ha	Through fodder cultivation as the agrostological measure on bunds
11	Increase in milk production	Liters/ Day	5	10	Importing improved varieties of milch animals
12	No. of SHGs Promoted	nos.	-	250	Through new formation
13	Increase in no. of livelihoods	nos.	-	350	Assistance for Milch cow rearing and backyard Poultry
14	Increase in income	Rs.	25000	30000	Average Annual income of the households
15	Migration	%	50% of total laborers	30% of total laborers	Through employment generation by labour oriented works and providing alternate livelihood option.
16	SHG Federations formed	nos.	-	4	Uniting all the SHG under IWMP IVH 5
17	Credit linkage with banks	%	-	100% of formed SHGs	Credit linkage of SHGs with banks for group activities
18	WDF collection & management	Rs.	-	4552020	Contribution by the beneficiaries for different activities in private lands.
19	Employment	nos.	-	75000	75000 nos of man days will be generated during the project period through different activities in the project area.

XIII. EXIT PROTOCOL

The last two years are the Consolidation and Withdrawal Phase of the Watershed development programme. This is the crucial phase of the project as the local institutions will be trained to manage the project independently after withdrawal of the Government Institutions from the project area.

The activities those will be under taken during this phase are:

1. Completion of various works under taken during work phase.
2. Consensus among the villagers to take up any new works out of any unspent amount.
3. Preparation of Project completion report with details about status of each asset.
4. Documentation of successful experiences as well as lessons learnt for future use.
5. Evolving mechanisms to improve the sustainability of various interventions made in the project area.
6. Formulation of mechanisms for allocation of user right over common property resources.
7. Formulation of mechanisms to collect user charges for common property resources.
8. Creation of awareness and building capacity of the community to repair, maintain and protection of common property resources.
9. Training the user groups for optimum utilization of the developed natural resources.

10. Up scaling of successful experiences related to farm production system and off-farm livelihood activities undertaken through revolving fund under the project as well as credit and technical support from external institutions.
11. Evolving marketing arrangements of the farm produce as well as the off- farm and other micro enterprises.
12. Formation of Farmers' Federation for credit, input procurement, sale of local produce etc.
13. Forward and backward linkage of the SHGs and User groups for sustainable livelihoods.
14. Formulating mechanisms for empowering Watershed Committee and its smooth management in a long run.
15. Formulating mechanism for utilizing the Watershed Development Fund.

Withdrawal Mechanism:

At the end of the project, The Watershed Committee is to take the responsibility for post project management. For which the Memorandum of Agreement is to be formulated between the PIA and Watershed Committee basing on the following terms and conditions.

1. The list of assets created under EPA, NRM, Farm production system and Livelihood support system is to be prepared with joint signature of the Chairman, Secretary of the Watershed committee and PIA. The Watershed Committee will retain one copy of the list for future reference.
2. The amount lying unspent as on closing date will be transferred to the Watershed Development Fund.
3. Watershed Committee will be authorized to use only one Bank account i.e. WDF account.
4. Yearly auditing of the accounts by the Chartered Accountant will be mandatory and to be adhered strictly.

5. The office bearer of the Watershed Committee shall involve all the community irrespective of caste, creed and religion.
6. The Gram Sabha shall have the right to decide the user charges to be collected from the beneficiaries which shall be deposited under the watershed development fund.
7. The cost of repair and maintenance of the assets created out of NRM component shall be borne out of Watershed development fund by using maximum 50% of the amount collected in a year.
8. The WDF account will primarily run as revolving fund.
9. No individual beneficiary should be granted any sort of grant or financial assistance in any form.
10. The SHGs and UGs shall have the eligibility to take loan from the WDF with marginal interest as decided by Gram Sabha.
11. The Watershed Committee is also at their liberty to start new profit making ventures by utilizing WDF as security deposit and the profit earned should go to the WDF.
12. The remuneration for the Watershed secretary will be finalized in the Gram Sabha.
13. The Watershed Committee may collect financial assistance from any other sources to augment the WDF. All donations, interests, fines and fees shall be deposited in the WDF.
14. The WDF shall be jointly operated by the Chairman and Secretary of the watershed committee.
15. All the expenditure shall be authenticated by the Watershed committee.
16. Annual meeting of the Gram Sabha is mandatory. However it may meet at any time if required.
17. The Watershed Committee should meet in every quarter to review the income and expenditure.
18. Any change in the Watershed Committee or its office bearer shall be made once it is resolved in the Gram Sabha. The Gram Sabha should believe in rotational leadership.

19. All the group representatives, at least one from each group shall be ensured in the Watershed Committee.
20. The decision approved and resolved in the Gram Sabha will only be implemented by the Watershed Committee.
21. In case of any embezzlement of fund, the Administrative system shall proceed according to Rules and Laws.
22. In the event of Gram Sabha and watershed Committee become defunct, the assets created under the project and WDF will be transferred to the Panchayat.

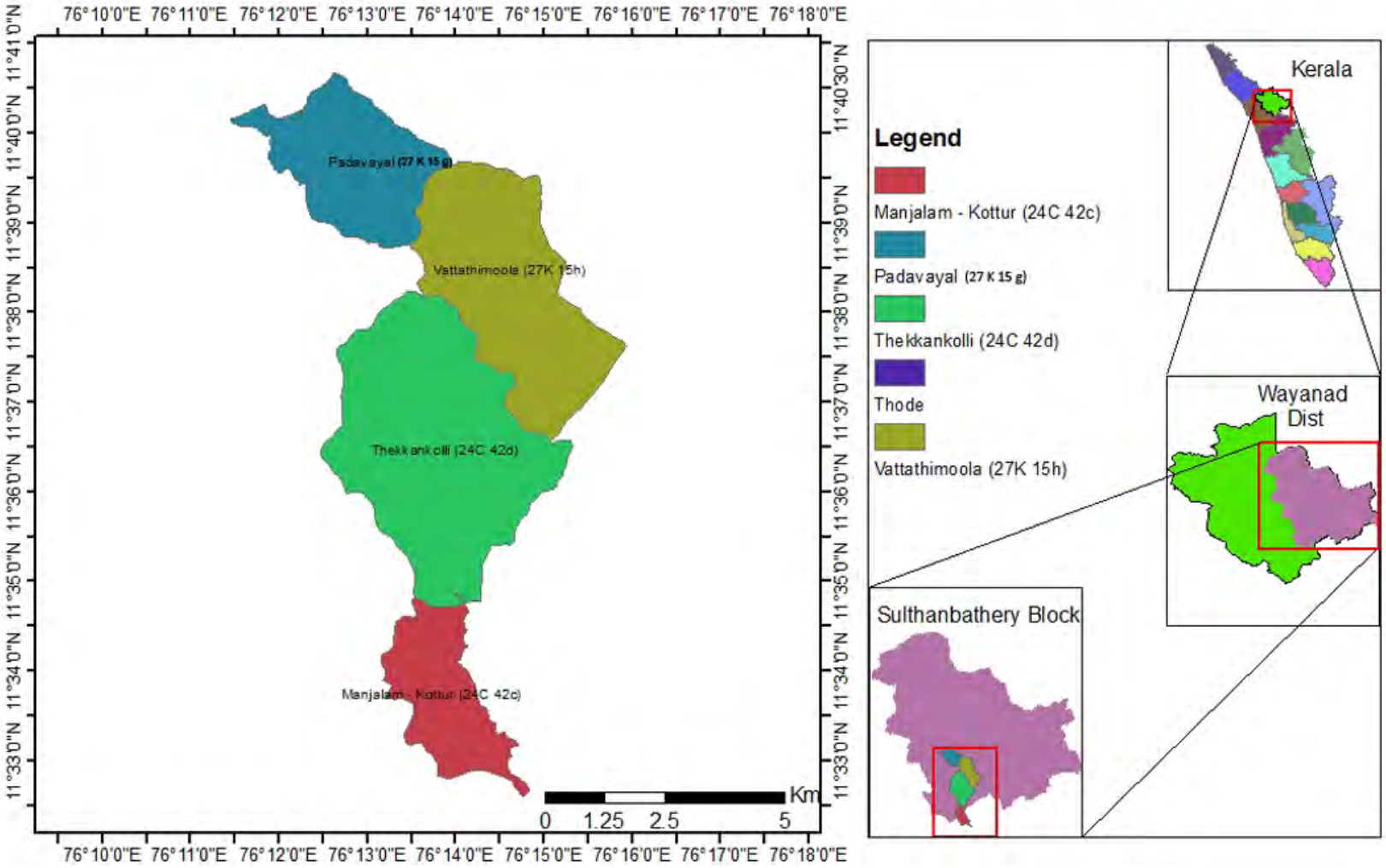
Conclusion

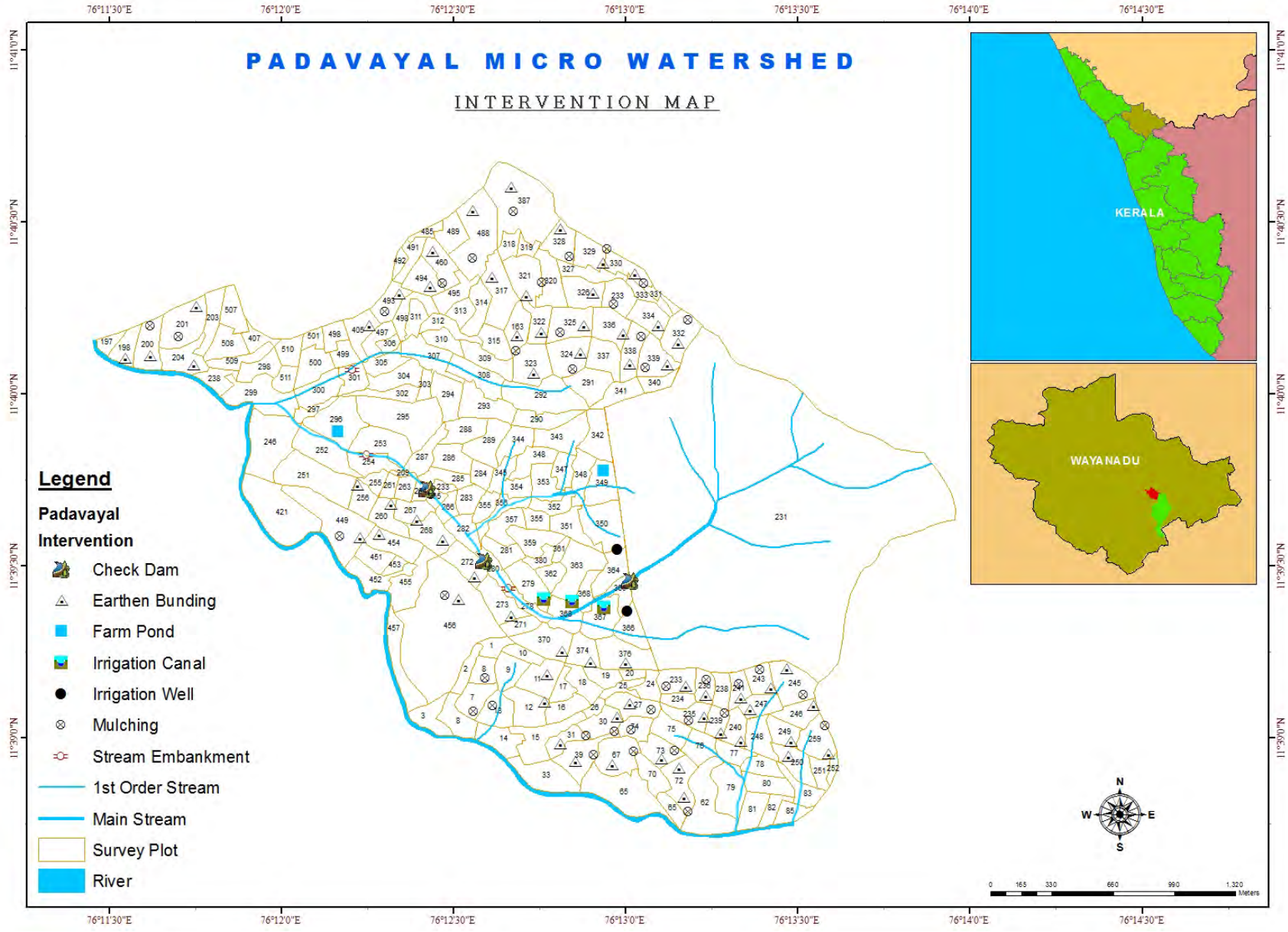
Watershed development programmes are one of the most popular development programmes implemented across the country. It is widely admitted that watershed development programmes are seen as the panacea. This programme has been directed towards the promotion of overall economic development and improvement of the socio-economic conditions of the resource poor sections of people inhabiting the programme areas through natural resource enhancement. Over the years there is much visible impact of watershed development programmes among different communities across various regions.

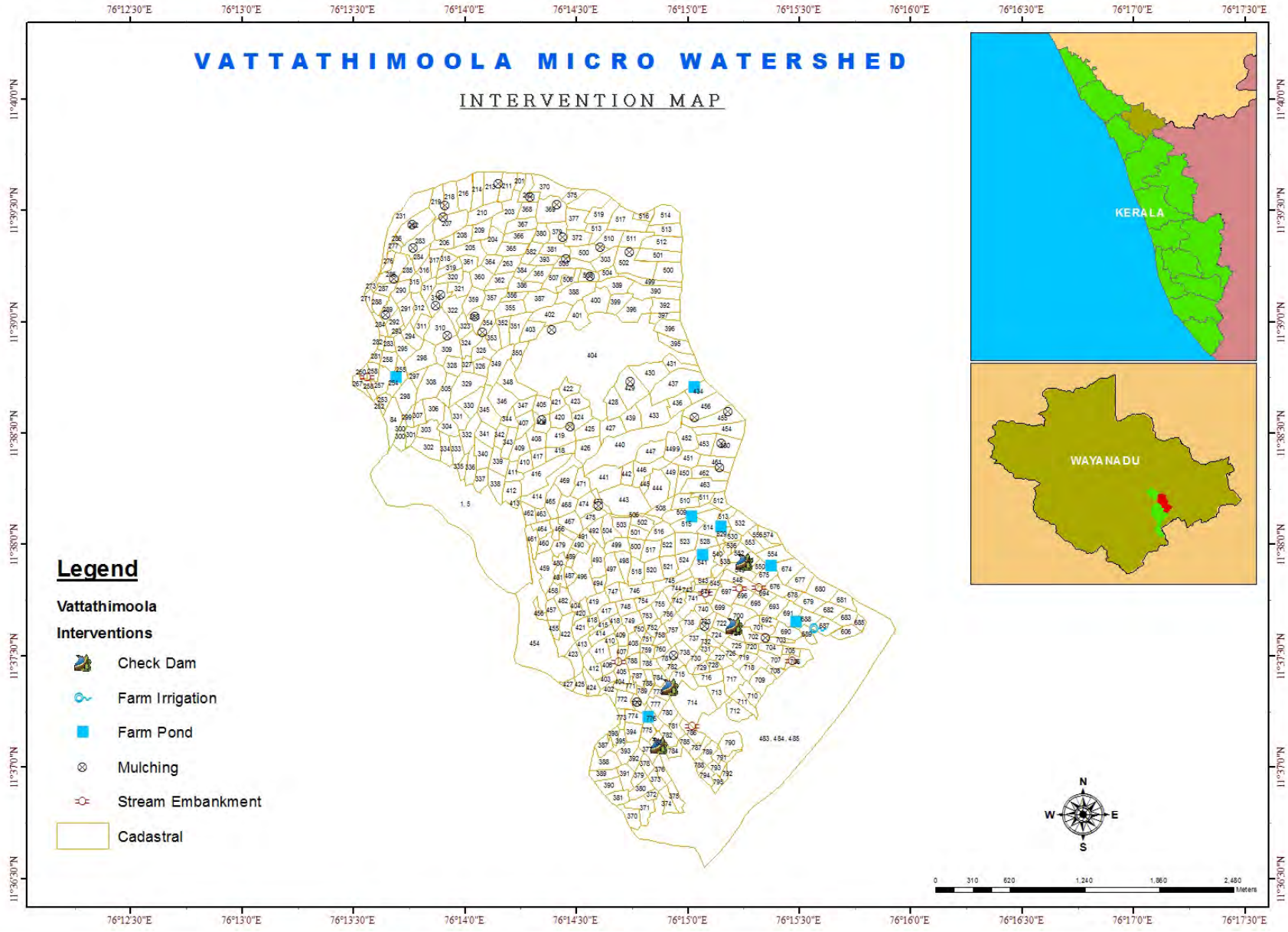
Water and soil management for more sustainable use of water resources should be considered in two aspects, water quality and quantity because both farmers and consumers are concerned about environment impacts derived from water consumption by agriculture. Therefore, it will be very important to protect water resources from pollution for the supply of water of high quality or to give a right direction for sustainable water use. As for water quantity, policies should be frame to raise the agricultural land in order to reduce a potential risk of soil erosion. For example, it needs to encourage farmers to maintain the shape of the paddy

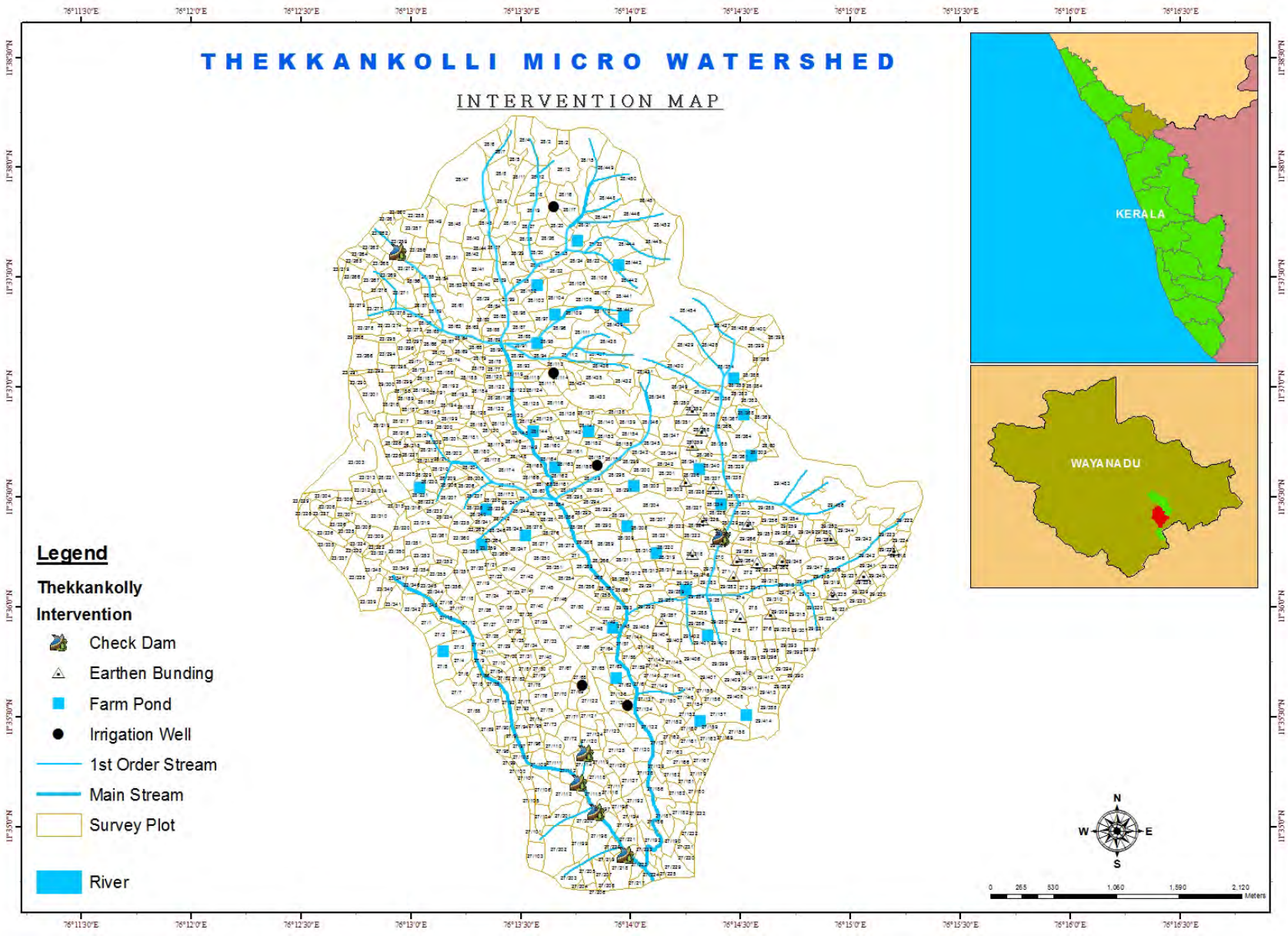
field though the field is idled without cropping. A national project to promote the construction of basic facilities for conservation practices that can reduce soil erosion and run-off will be also available. Watershed management is one of the best strategies for sustainable use of water to maintain the dykes and shapes of farm lands without the destruction of arable land for the construction of facilities not having water storage capacity such as roads, houses and industrial complexes. Conclusively, we think that the first step in order to minimize water scarcity and to acquire water resource for sustainable use is to compartment the watershed based on topographical characteristics of land and species of mother locks, and the second is to seize soil erosion within the watershed, the third is to identify alternate sources, the forth is to categorize land use pattern. The fifth is to assess runoff, drainage in farm land and soil erosion potential in non-paddy land and the sixth is to determine soil conservation practices depending on soil erosion grade in each field of land. The last one is to apply appropriate management practices for water, soil and biomass in each field.

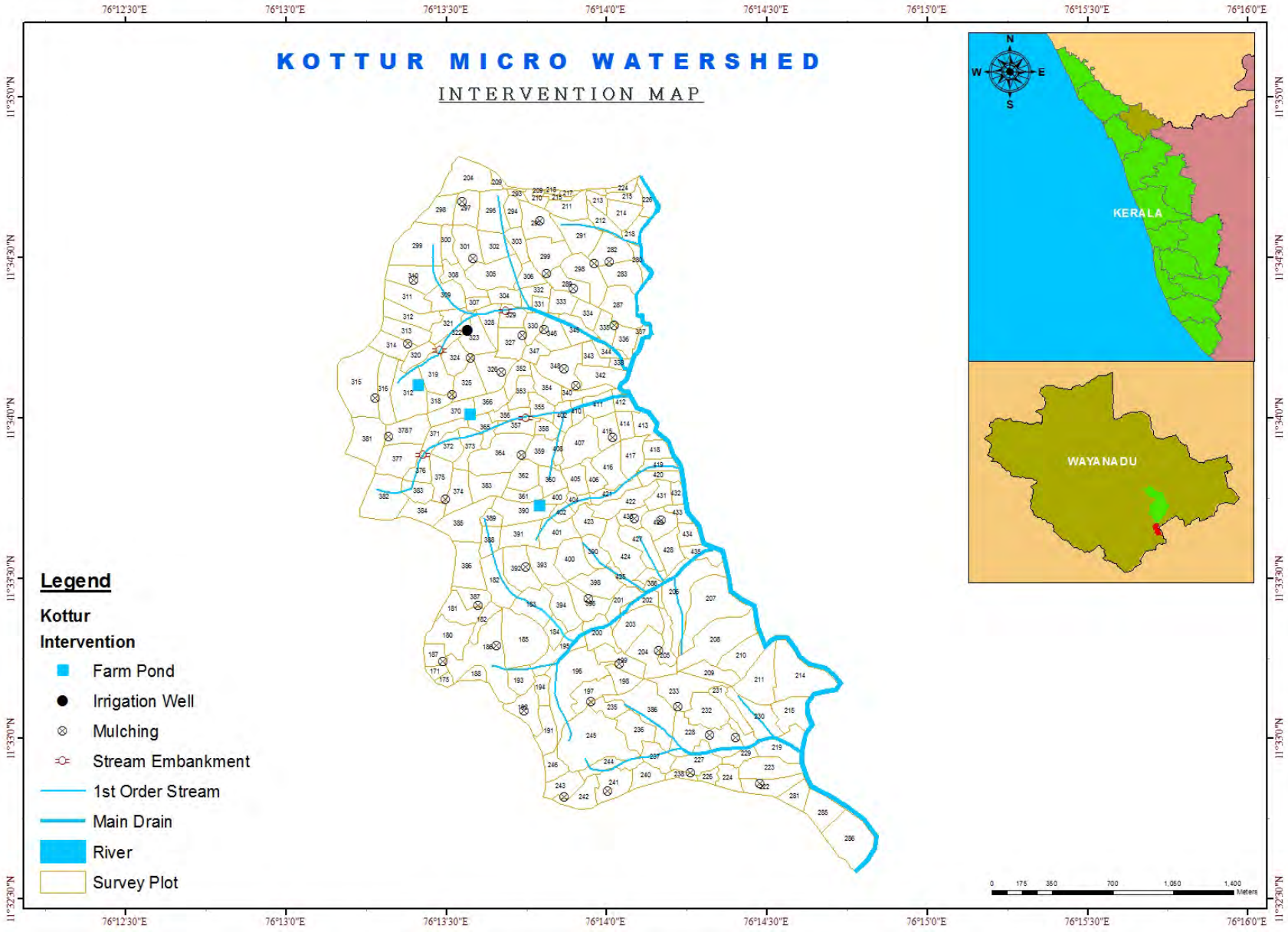
IWMP IV H 5 - PROJECT AREA MAP




PADAVAYAL MICRO WATERSHED
INTERVENTION MAP
76°11'30"E
76°12'0"E
76°12'30"E
76°13'0"E
76°13'30"E
76°14'0"E
76°14'30"E
KERALA
WAYANADU
Legend
Padavayal
Intervention
Check Dam
Earthen Bunding
Farm Pond
Irrigation Canal
Irrigation Well
Mulching
Stream Embankment
1st Order Stream
Main Stream
Survey Plot
River
N
S
E
W
0 165 330 660 990 1,320
Meters


VATTATHIMOOLA MICRO WATERSHED
INTERVENTION MAP
76°12'30"E
76°13'0"E
76°13'30"E
76°14'0"E
76°14'30"E
76°15'0"E
76°15'30"E
76°16'0"E
76°16'30"E
76°17'0"E
76°17'30"E
KERALA
WAYANADU
Legend
Vattathimoola
Interventions
Check Dam
Farm Irrigation
Farm Pond
Mulching
Stream Embankment
Cadastral
N
W
E
S
0 310 620 1,240 1,860 2,480
Meters


THEKKANKOLLI MICRO WATERSHED
INTERVENTION MAP
KERALA
WAYANADU
Legend
Thekkankolly
Intervention
Check Dam
Earthen Bunding
Farm Pond
Irrigation Well
1st Order Stream
Main Stream
Survey Plot
River
N
S
E
W
0 265 530 1,060 1,590 2,120
Meters


KOTTUR MICRO WATERSHED
INTERVENTION MAP
76°12'30"E
76°13'0"E
76°13'30"E
76°14'0"E
76°14'30"E
76°15'0"E
76°15'30"E
76°16'0"E
11°35'0"N
11°34'30"N
11°34'0"N
11°33'30"N
11°33'0"N
11°32'30"N
N
S
E
W
KERALA
WAYANADU
Legend
Kottur
Intervention
Farm Pond
Irrigation Well
Mulching
Stream Embankment
1st Order Stream
Main Drain
River
Survey Plot
0 175 350 700 1,050 1,400
Meters