THIRUVANANTHAPURAM DISTRICT

Endline Evaluation of PMKSY-WDC Watershed Projects

REPORT: VAMANAPURAM BLOCK (Thiruvananthapuram District)

Brief History of the Watershed:

The Vamanapuram watershed, which has got an area of 7985 ha lies in the Vamanapuram Riverbasin, which is between 8^0 35' to 8^0 50' North latitudes and 76^0 40' to $77^0$15' East longitudes and is spread over the districts of Thiruvananthapuram and Kollam of Kerala State. It is bounded by Kottarakara taluk of Kollam district in the North, Nedumangad taluk of Thiruvananthapuram district in the South, Tamil Nadu in the East and Arabian Sea in the West. The riverbasin has a total area of 766.89 sq.km (76689 ha) covering 31 villages spread over 33 Panchayats, 8 blocks and two districts.

The major river draining through the watershed is the Vamanapuram River which has a length of 88 km. It starts from Chemmunji Motai at 1717 m above MSL and flows westward to fall into the Anjengo Lake at Chirayankeezhu. The general elevation ranges from 76m to 1717 m in the upper region, 45 m in the middle region to less than 4 m the lower region. The shape of the river basin is almost elliptical with a length width ratio of 2:1. The erosion status of the area is moderate to severe.

Table 1.General Features of Vamanapuram Watershed Project:

Name of Project	Vamanapuram Watershed
Name of Program	IWMP-I
Location	$8^0$38'39" to $8^0$45'50" North Latitude and $76^0$51'01" to 76^0 59'25" East Longitude
Type of project area	Hilly, undulating
District	Thiruvananthapuram
Blocks	4- Vamanapuram, Chirayinkeezhu, Nedumangad & Pothencode
Gram Panchayats	13 - Pangode, Kallara, Pullampara, Nellanad, Manikkal, Nanniyode, Vamanapuram, Mudakkal, Vembayam, Panavoor, Anad, Mangalapuram and Pothencode.
Villages	14 - Pangode, Kallara, Vamanapuram, Palode, Pullampara, Nellanad, Manikkal, Koliyakode, Thekkada, Panavoor, Anad, Elamba-Mudakkal,

	Melthonakkal and Keezhthonakkal.
No. of micro watersheds	6 –Aruvippuram (4V10a), Cheruvalam (4V11a), Kanchinada (4V11b), Ayanikuzhi (4V25a), Moozhi (4V26a) & Nellanad (4V29b)
Total Watershed Committees	6
Total Geographical Area	7985.61 Ha
Total Treatable Area	7492.00 Ha
Agro climate zone	Southern midland zone
Major crops	Coconut, Rubber, Banana, Tapioca, Vegetable
Major slope range	10-15 %
River Basin	Vamanapuram
Rainfall	1509 mm
Marginal farmers	more than 60%
Total Sanctioned Cost	Rs. 1123.80 Lakhs
Actual Expenditure	Rs. 383.1 Lakhs (34.08%)

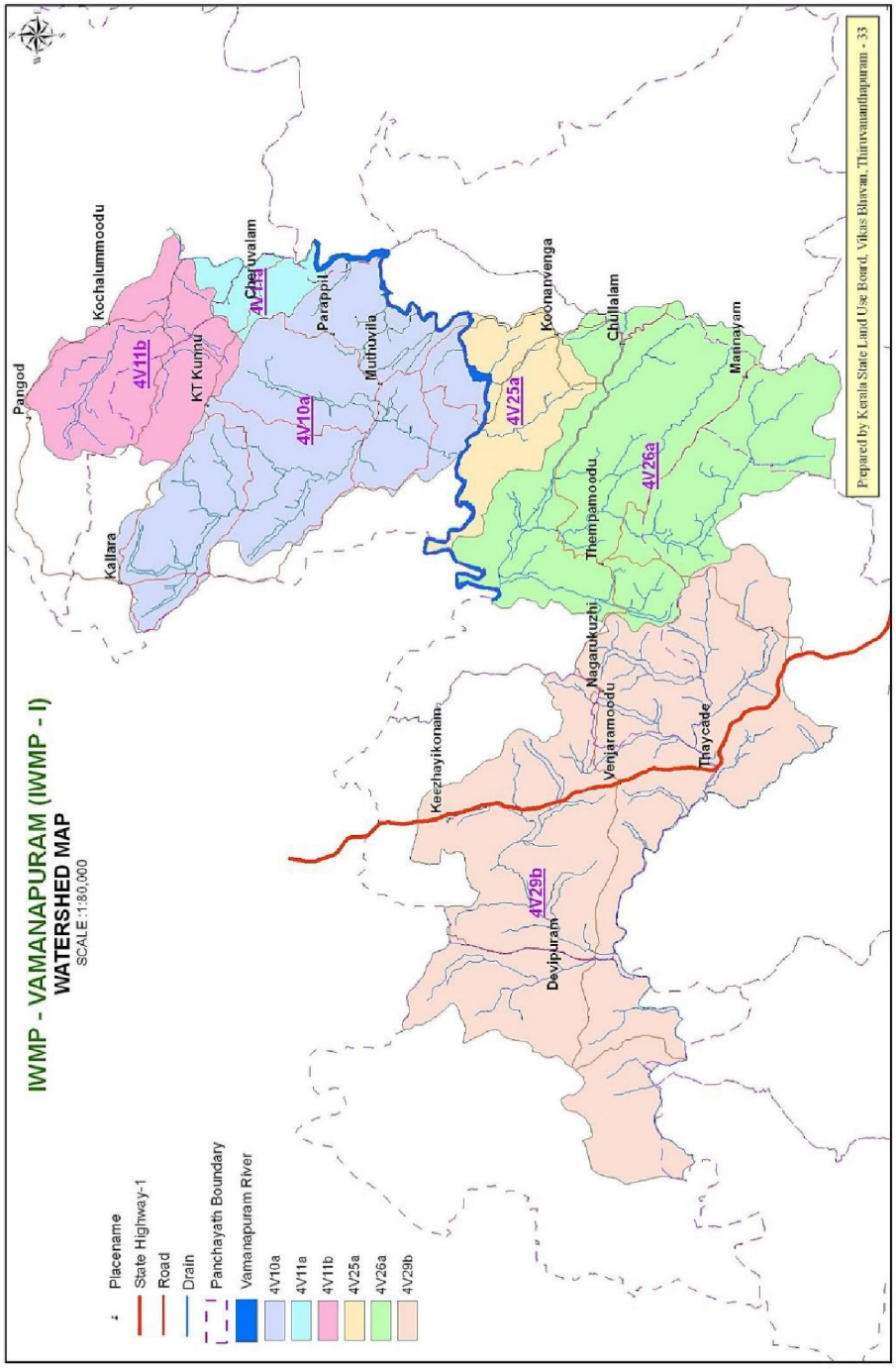

Figure 1: Map showing the micro watersheds

Table 2. Details of the micro watersheds:

SI.No.	Name of watershed	Code of watershed	Name of Grama Panchayat	Area (ha)	Percentage
1	Aruvipuram	4V10a	Kallara	1598.36	21.57
			Vamanapuram	5.04	
			Nandiyodu	13.07	
2	Cheruvalam	4V11a	Kallara	118.05	2.20
			Pangode	34.60	
			Nandiyodu	12.25	
3	Kanchinada	4V11b	Pangode	419.90	9.09
			Kallara	261.86	
4	Ayanikuzhi	4V25a	Pullampara	413.28	5.51
5	Moozhi	4V26a	Pullampara	1185.01	23.69
			Manickal	278.18	
			Vembayam	251.27	
			Panavoor	60.11	
			Anad	1.71	
6	Nellanad	4V29b	Nellanad	1171.98	37.94
			Mudakkal	757.46	
			Manickal	580.80	
			Pullampara	288.27	
			Vamanapuram	21.31	
			Mangalapuram	20.81	
			Pothencode	2.24	
Total				**7985.61**	100.00

The major town in the project area is Venjarammood which lies in the State Highway and connects with other major towns of the district. The project area lies in the edges of the Vamanapuram Reserve Forest. The livelihood of the people is primarily based on agriculture, animal husbandry, wage labour, rearing cows and buffaloes for milk production.

Evaluation team from CWRDM visited Vamanapuram block on 26/03/2019 and held discussions with some of the project team members, BDO and also with the Panchayath President. Later they also made a field visit and inspected the interventions made in the Watershed areas along with the officials/ staff of Block who have associated with the implementation of the project. The interventions carried out in the watershed areas are summarised in the following table.

Table 3: Interventions carried out in the watershed area

SI.No.	Work/activity	Sub category	Details	
			Unit	Quantity
1	Natural Resource Management works:			
i.	Land development (Productive use)	Afforestation	Ha	80
		Horticulture	Ha	43
		Agriculture	Ha	73
ii.	Water harvesting structures (new created)	Check dams	Nos.	1
		Percolation tanks/ ground water recharge structures	Nos.	278
iii.	Water harvesting structures (old rejuvenated)	Farm ponds	Nos.	9
		Nallah Bunds	Nos.	18
		Percolation tanks/ ground water recharge structures	Nos.	363
2.	Production system and micro-enterprise	Vegetable cultivation	Ha	10.66
3	Livelihood security	Self Help Groups	Nos.	171
Summary				
Total rain water harvesting structures created			Nos.	278
Total rain water harvesting structures rejuvenated			Nos.	391
Additional area brought under protective irrigation			Ha	850
Number of farmers benefited out of project			Nos.	1750
Direct employment created in the project area			Man days	24372

Activities conducted in the watershed includes construction of farm ponds, live fencing, side wall protection, well recharge, pond renovation, terracing, mulching, stream side protection etc. Around 25,000 tree seedlings were also distributed among the beneficiaries as part of the afforestation work in the watershed area. Awareness and training also provided to the beneficiaries of the watershed with respect to different soil and water conservation practices. Apart from this, a revolving fund is also generated with the help of JLGs, so that the amount will be used by the beneficiaries of the watershed for livelihood activities.

The works visited by the team are:

1. Parameswaran Chira pond renovation

   This work lies in the Nellanad watershed of Nellanad Gram Panchayath. The water from the pond is used for irrigation and also for drinking water supply scheme. The groundwater table of the nearby wells is significantly enhanced by this pond.

2. Renovation of pond near Govt. Pre- Metric Hostel

   The pond is situated in the Nellanadu watershed of Nellanadu Gram Panchayath. The pond is situated near a SC Colony, but the water in the pond is unfit for drinking due to waste dumping. There is no committee to follow up the proper maintenance of the pond

3. Rainwater recharge structure

   The structure is installed in the premises of KVUP School, Pangode in Palode watershed. The school also has vegetable garden, apiary, fowl farm etc. The vegetables are cultivated using growbags.

Summary of the Evaluation of Outcomes of PMKSY- WDC Project

1. Project Details

Project No	IWMP I 2010-11
Name of Block	Vamanapuram
Sanctioned Area (ha)	7492
Sanctioned Cost (Rs. in lakh)	1123.80
Actual cost (Rs. in lakh)	383.1 Lakhs (34.08%)
Name of Villages included in the project	Pangode, Kallara, Vamanapuram, Palode, Pullampara, Nellannadu, Manikal, Koliyakode, Thekkada, Panavoor, Anad, Elamba-Mudakkal, Keezhthanakkad

2. Impact Details

Sl. No.	Items	Unit	Pre-project status	Status at the end of project	Remarks
1	Average depth of water table in dug wells	m	8.5	7.6	About 2-3 ft rise in water level
2	Average depth of water table in tube wells	m	35	33	Marginal increase

3	Number of ground water structures (dug wells + tube wells + hand pumps) rejuvenated and created	nos.	--	669	Created 278 and renovated 391 structures
4	Increase in Irrigation potential	ha	1150	2000	850 ha of additional area is brought under protective irrigation
5	Area of Wasteland brought under productive use (like agriculture, plantation, fodder, etc)	ha	--	--	
6	Change in cropping / land use pattern (i) Area under Agriculture Crop (ii) Area under plantation / forest cover (iii) Area Under Wastelands	ha	--	 2500 3500 1500	73 Ha of additional area under agriculture, 43 ha under horticulture and 80 ha under afforestation
7	Area Under Agriculture Crop (i) Area under Kharif crop (ii) Area under Rabi crop (iii) Area under double crop	ha	--	--	No Data
8	Cropping intensity	%	55	60	5% increase
9	Increase in Yield /ha of crops (i) Rabi crop (ii) Kharif crop	qt/ha	26	28	2 Qt/haVery less area under paddy
10	Area of horticulture crop	ha	--	43	Additional area
11	Employment in agriculture related activities among beneficiaries	Man days	--	24372	Additional employment generated
12	Employment in non- agricultural sectors	Man days	--	--	
13	Fodder production	qt	180	200	11% increase. Exact no. is not known
14	Fuelwood production	qt	--	--	No data available
15	Number of milch cattle	nos			10% increase. Exact no. is

					not known
16	Milk production	Kl/yr	--	--	Around 10 % increase, exact data not available
17	Duration of flow of water in streams (upto November/December/January/February…. May)		January	February	One month prolonged flow
18	Improvement of drinking water facility		Februar y	April	Around 300 rainwater harvesting structures created and 300 water harvesting structures rejuvenated
19	No. of persons engaged in ancillary activities like fishery, poultry, rural craftsmanship	nos	--	--	
20	Number of children enrolled in schools in the project area	nos	--	--	All children are enrolled
21	Reduction in migration from rural to urban area in the project area	nos	--	--	24372 man days of labour generated due to project
22	Annual mean household income	Rs	36000	40000	Rs 4000 increase
23	Any other measureable indicator of impact assessment i) Around 11 ha of area brought under vegetable cultivation as part of the project ii) Around 170 SHGs were formed/strengthened in this project iii) Total No. of farmers benefitted is 1750				

Investigation team interacting with the BDO staff

Investigation team visiting a renovated pond

A rain water harvesting structure erected in KVUP School , Pangode under the project

CONCLUDING REMARKS- THIRUVANANTHAPURAM DISTRICT

- The cluster consists of six watersheds comprising an area of 7492 ha. The beneficiaries include about 600 tribal families also. As the annual rainfall is in the order of about 1500 mm which is only 50 % of the State average, the project area is in dire need of watershed based NRM activities for solving the water crisis and shortage.
- The investigation team held a discussion with the BDO and VEOs about different aspects of project implementation before the field visit. The officers and other stakeholders are of the opinion that the project is very useful, if implemented in full as per plan. However, the fund availability was a constraint.
- About 50000 seedlings (mango, jack, sandalwood and other varieties) were distributed in this project.

- KVUPS Pangode, where rain water harvesting and well recharge system is installed as part of this project should be a model to other schools in terms of their water use, conservation and management methods and other agricultural and NRM practices.
- In all the watersheds in this Block, it has been observed that there was significant improvement in the ground water table of the area due to the implementation of recharge structures like bunds, ponds, check dams, rooftop rainwater harvesting and well recharge units.
- The irrigation potential was also found to increase in certain watersheds due to the construction of these structures.
- Soil erosion along the streams and from agricultural fields was brought under check by the side protection work of several streams in the watersheds and other soil and water conservation measures and planting of seedlings.
- Drinking water shortage was fixed by the installation of rainwater harvesting tanks and well-recharge units.
- Employment was generated both in agricultural and non-agricultural sectors during the implementation of the PMKSY project. Also, the annual mean household income was improved.
- Activities like organic farming, backyard vegetable cultivation, animal husbandry etc. were promoted under the project. Grow bags were used to cultivate vegetables.
- Periodic monitoring and evaluation of the project activities was done by the Department authorities.
- Delay in the availability of funds has affected the progress of project activities as in all other Batch II projects. Actual expenditure was only 34 % of the original sanctioned budget.

Success story

Rainwater recharge structure in School

The roof top rainwater recharge system is installed in the premises of KVUP School, Pangode in Palode watershed. This well was earlier drying up in summer has now surplus water, as told by the Headmaster. The student strength is 1100. This well water is now used for growing vegetable garden, maintaining apiary, fowl farm and 18 nature/eco clubs in the school premises. The vegetables are cultivated using growbags.