IDUKKI DISTRICT

Endline Evaluation of PMKSY-WDC Batch II Watershed Projects

REPORT: ELAMDESOM BLOCK (IWMP I) (Idukki District)

Elamdesom (IWMP I) project is located in Elamdesom Block Panchayath of Idukki District, Kerala. Elamdesom Block is located in the western part of Idukki District. Major part of the Block area is hilly and enriched with variety of flora and fauna. Elamdesom is the catchment area of Muvattupuzha River. The region is famous for crops like Rubber, Cocoa, Pepper, Coconut, Arecanut, Ginger, Turmeric, Rice, Banana etc.

The project area lies between 9º48'03" & 9º53'48" North latitude and 75º51'09" & 75º57'09" east longitudinal extension. The project comprises of five micro-watersheds namely Anchukallingal thodu, Koovapally, Muthiyamalathodu, Alakode and Thalayanadu - Malankara. The project, with an area of 2172 hectares has been selected for treatment under the Integrated Watershed Management Programme (IWMP). The project area covers the Gram Panchayaths of Alakode, Muttom, Velliyamattom and Kudayathoor coming under Elamdesom block and Thodupuzha block.

Table 1 Details of micro watersheds in the project area

Name	Code	Gram Panchayath	Area (Ha)
Alakode	13M41b	Alakode	625
Thalayanadu - Malankara	13M43a	Alakode, Kudayathoor	255
Muthiyamalathodu	13M45a	Kudayathoor, Velliyamattom	191
Koovappally thodu	13M48a	Kudayathoor	798
Anchukallingal thodu	13M50a	Muttom, Kudayathoor	303
		Total	**2172**

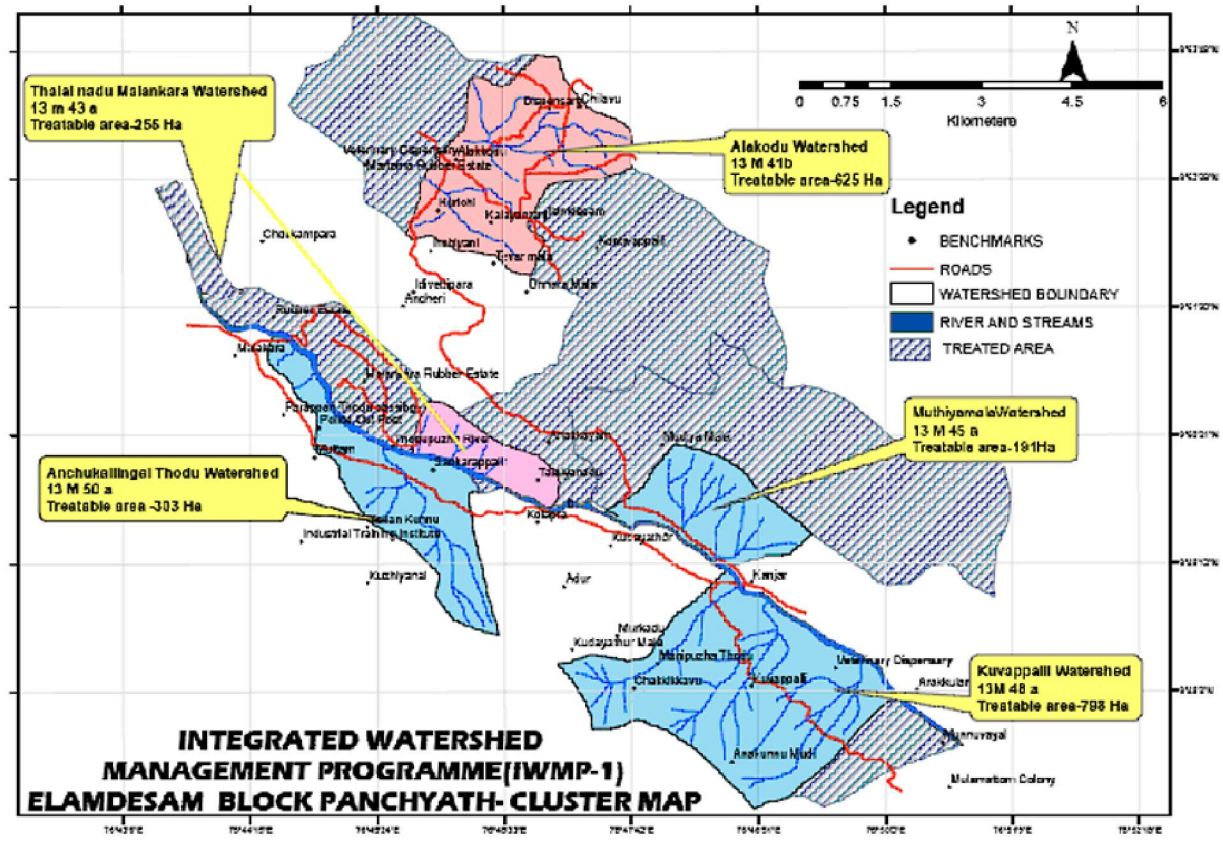

Figure 1 Watershed map of the project area

The evaluation team from CWRDM visited the project area on 23/02/2019 and initially held discussions with the project implementation officers in Elamdesom block. The Technical Expert and VEO in charge of project accompanied the investigation team during field visit. The works visited by the team were:

1. Kallidukkil farm cluster side protection

   This work is located in the Alakkode watershed of Alakkode Gram Panchayath. The farm/ paddy field comprises of nearly 2.5 Ha land and about 100 m of its side has been lined using rubble masonry. The total cost of construction was Rs. 3,60,000.

2. Silpaulin Tank + Biogas plant

   Both the works are done in a residence in the Thalayanad watershed of Kudayathur Gram Panchayath. The silpaulin tank is approximately 20,000 L in capacity and the water is drawn from nearby spring and well. The water is used for irrigation as well as pisciculture. The earthwork for the tank was done through Mahathma Gandhi National Rural Employment Guarantee Scheme (MGNREGS). A total of Rs. 15,000 was provided as financial assistance for the work.

   The biogas plant generates enough methane to burn a stove for upto 4 – 5 hours daily. The waste from the biogas plant is used as manure in the compound itself.

3. Muthiyamala L P School Rain Water Harvesting Tank

This tank is constructed in the premises of Muthiyamala L P School situated in the Muthiyamala watershed of Kudayathur Gram Panchayath. The capacity of the tank is 20,000L and the total cost of construction was Rs. 1,20,000.

4. Spring protection – Kaipa Muthiyamala pond construction

   This spring is located in the Muthiyamala watershed of Kudayathur Gram Panchayath. More than 30 families depend on this spring as their essential source of water.

5. Uppukulam Thodu side protection

   This work is situated in the Alakkode watershed of Alakkode Gram Panchayath. The sides of the stream are lined with stone revetment. The total cost of construction was Rs. 3,54,501.

Figure 3 Side protection of Kallidukkil farm cluster

Figure 2 Silpaulin tank

Figure 5 Biogas plant

Figure 4 Rain water harvesting tank in Muthiyamala L P School

Summary of the Evaluation of Outcomes of PMKSY- WDC Project

District	Idukki	Date of visit	23/02/2019

1. Project Details

Project No	IWMP I/2010-11
Name of Block	**Elamdesom**
Sanctioned Area (ha)	2172
Sanctioned Cost (₹ lakh)	325.8
Actual Expenditure (₹ lakh)	120.09 (36.86%)
Name of Villages included in the project	Alakode , Muttom , Kudayathoor

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	7.85	6.5	An increase of 1 m in most of the wells
2	Average depth of water table in tube wells	m	--	--	Very less bore wells. Not monitored.
3	Number of ground water structures (dug wells + tube wells + hand pumps) rejuvenated/ created	nos.	--	212	172 RWH structures,22 Checks, 15GW recharge str. 2 Farm ponds and 1 check dam
4	Increase in Irrigation potential	ha	--	1123.5	Increase of more than 1000 ha
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	 -- -- --	 1 -- --	
7	Area Under Agriculture Crop (i) Area under Kharif crop (ii) Area under Rabi crop (iii) Area under double crop	ha	 --	 --	-

8	Cropping intensity	%	--	--	High midland area. Cropping intensity is not affected
9	Increase in Yield /ha of crops (i) Rabi crop (ii) Kharif crop	qt/ha	--	--	Paddy cultivation is very meagre.
10	Area of horticulture crop	ha	--	6	Additional 6 ha banana cultivation
11	Employment in agriculture related activities among beneficiaries	Man days	--	4181	Total of 9170 man days generated
12	Employment in non- agricultural sectors	Man days	--	4989	
13	Fodder production	qt	--	12 Ha	Additional area of 12 ha
14	Fuelwood production	qt	--	--	Not monitored
15	Number of milch cattle	nos	2235	3617	Considerable increase in cattle population
16	Milk production	Kl/yr	641	961	3,20,000 lit increase
17	Duration of flow of water in streams (upto November/December/January/February ….May)		Jan	March	Two months prolonged flow in streams in general.
18	Improvement of drinking water facility		February	April	Nearly 200 rain water harvesting structures created in the project
19	No. of persons engaged in ancillary activities like fishery, poultry, rural craftsmanship	nos	536	867	331 extra
20	Number of children enrolled in schools in the project area	nos	900	1155	All children enrolled in schools
21	Reduction in migration from rural to urban area in the project area	nos	NA	NA	More than 9000 man-days created in the project
22	Annual mean household income	Rs	50000	54,000	Rs. 4000 increase
23	Any other measureable indicator of impact assessment i) As much as 1000 ha area brought under protective irrigation ii) 28 Capacity building training programmes organized in the watershed area and 2520 people are benefitted out of it. iii) Production system & Micro-enterprise activities like Banana cultivation (6 ha), Biogas plants (15) and 264 agricultural implements/tools made available in the project. iv) Creation of 6.89 ha graded bunds in the project area helps in soil and water conservation to some extent. Similarly vegetative strengthened engineering structures like checks and plugs were also constructed in the watershed area.				

	v) Altogether 3259 families were benefitted out of this project.

Figure 6 Spring protection at Kaipa Muthiyamala

Figure 7 Uppukulam Thodu side protection

CONCLUDING REMARKS – IDUKKI DISTRICT

- Spring protection work at Kaipa muthiyamala has brought great relief among its beneficiaries, as it is their main source of water.
- Biogas plant installed in the residence of a beneficiary has helped them start their own employment by producing food products in small scale.
- In all the watersheds in this Block, it has been observed that there was positive changes in the ground water table of the area due to the implementation of recharge measures like graded bunds, vegetative strengthened engineering structures like checks and plugs, spring protection, rooftop rainwater recharge units etc.
- The area exhibits very steep slopes and places of high elevation and watershed based development and natural resource management measures only can solve the water related issues and increase availability of water for various uses.
- The watershed receives very good rainfall and much of this water is wasted as surface runoff. This has to be arrested and proper groundwater recharge measures are to be adopted in every piece of land and each household with in the watershed limits.
- The irrigation potential was also found to increase in certain watersheds due to the construction of above structures and storage by HDPE lined ponds.
- Soil erosion from stream banks during intense flows by surface runoff was brought under check by the side protection work of streams in the watersheds under the PMKSY project.
- Drinking water shortage was fixed by the installation of rainwater harvesting ferro cement 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.
- Delay in the availability of funds was a problem reported in this watershed which has seriously affected the implementation of programmes planned. The amount available under the project was not sufficient to treat the land intensively to conserve each drop of water. Per hectare cost should be reasonably enhanced, considering the terrain, topography and high rate of labour charges prevailing in the State.
- The Technical Expert and Extension Officer in charge of the project in Elamdesom Block were available for discussion and they have accompanied the Investigation Team all through the field visit.

Success Stories

Silpaulin Tank and Biogas plant

Both the works are done in a residence of Shri Benny Thomas, in the Thalayanad watershed of Kudayathur Gram Panchayath. The silpaulin tank is approximately 20,000 L in capacity and the water is drawn from nearby spring and well. The water is used for irrigation as well as for pisciculture. The earthwork for the tank was done through Mahathma Gandhi National Rural Employment Guarantee Scheme (MGNREGS). A total of Rs. 15,000 was provided as financial assistance for the work. The plastic/HDPE lined ponds/tanks provide effective solutions for water shortage, especially in the high ranges.

The biogas plant generates enough methane to burn a stove for upto 4 – 5 hours daily. The waste from the biogas plant is used as manure in the compound itself for crop cultivation. This is a useful model for others to emulate.

Spring mouth protection – Kaipa Muthiyamala

This spring is located in the Muthiyamala watershed of Kudayathur Gram Panchayath at a higher elevation. More than 30 families depend on this spring as their essential source of water for domestic requirements. Recharge measures in the catchment of this spring may enhance the discharge during lean season, as the water/discharge at present is not sufficient for all the families.