

Impact of Entry Point Activities (EPAs) on Changes of Socio-economic Conditions of Watershed community in Devipatnam Mandal of East Godavari District, Andhra Pradesh

ABSTRACT:

Introducing watershed development program to the community has always been recognized as an important activity. In Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) projects, Entry Point Activities (EPAs) were implemented to establish togetherness with the community, strengthening and sustaining it throughout the program and beyond. The present study focused on assessment of outcomes from Entry Point Activities and their impact on changes of socio-economic conditions of watershed community. The study covered two PMKSY Projects of batch-V sanctioned in Devipatanm mandal of East Godavari district in Andhra Pradesh. The stratified random sampling was adopted for this study covering 5% of households out of total households in the study area. In this mandal. In the study area, four Micro Watersheds (MWS) were included. Three types of EPAs (RO Plant, Tent houses and Solar street lights) executed in PMKSY project areas.

KEYWORDS: Entry Point Activities (EPAs), Gross household income, Migration, Watershed community, Family expenditure

1. INTRODUCTION:

India is predominantly a rural based agrarian country where agriculture alone provides employment to more than 50% of the total population. Agriculture and allied sectors such as horticulture, livestock, forestry, and fisheries together contribute 17.8% of the country's Gross Value Added for the year 2019-20 (Economic Survey, 2020-21). Therefore it is understood that for the economy of the country to thrive and remain healthy, agriculture must be duly taken care of. For sustainable agricultural production of the country irrigation through a permanent water source or rainfall needs to be available. As per the Indian Statistics 53% of the net sown area in the country is rainfed (GoI, 2018). Therefore it implies that all efforts need to be aimed to address the problems of the rain fed areas. Despite India ranking first in rainfed agriculture globally in terms of area and production, productivity is among the lowest in the world. This is due to issues like reduction of natural resources, rain water runoff, soil erosion, poor quality of soils and water. In order to address these issues an Integrated Watershed Management approaches is found to be appropriate solution worldwide. It is one of the most effective interventions used to stabilize rainfed agriculture by providing sources of water for small scale irrigations. It is one of the flagship programmes of the Government with substantial budget allocation for poverty alleviation of rain fed farmer. The Integrated Watershed Management Programme (IWMP) subsequent to approval of PMKSY (Pradhan Mantri Krishi Sinchayee Yojana) is subsumed as one of its components and IWMP is now implemented as WDC-PMKSY w.e.f. 01.07.2015. Department of Land Resources (DOLR) under the Ministry of Rural Development (MoRD) has been implementing the PMKSY-Watershed Programme since 2009.

In Andhra Pradesh, the Department of Panchayat Raj and Rural Development through the State Level Nodal Agency (SLNA) is implementing 372 watershed projects covering an extent of 15.83 lakh hectares in five batches from 2009-10 to 2013-14.

The main objective of the PMKSY-Watersheds is to improve water conservation, irrigation facility and land use pattern which would lead to improved biophysical and socio-economic environment through increased agriculture productivity in rainfed areas. The benefits due to watershed development activities include improved crop yields, employment generation and augmentation of income of the project areas inhabitants. In the project areas, there is an increased focus on sustainable use of water and other natural resources.

The main objectives of the present study are to analyze the outcome of EPAs and impact of Entry Point Activities (EPAs) of watershed projects on changes of socio-economic conditions of watershed community in Choppakonda and Pamugandi of Devipatnam mandal in West Godavari district, Andhra Pradesh. The socio-economic indicators viz. drinking water supply, gross household income, family expenditure, community participation, migration from rural to urban areas, were studied for impact assessment of watershed interventions. The main reason in selecting the watersheds of Batch-V (2013-14) in East Godavari district is the projects have completed, project period of treatment with various interventions.

2. STUDY AREA:

Devipatnam is a Town and Mandal in East Godavari District of Andhra Pradesh. According to census 2011 information, the total area of devipatnam mandal is 342 square kilometers. Devipatnam mandal has a total population of 28,178. Out of which 13,669 are males while 14,509 are females. According to 2011 Census, there were a total 8,711 families residing in Devipatnam Mandal. The average sex ratio of Devipatnam mandal is 1,061. Devipatnam mandal has a population density of 82.33 inhabitants per square kilometre. When it comes to literacy, 53.52% population of Devipatnam mandal is literate, out of which 57.94% males and 49.36% females are literate. There are about 46 villages in Devipatnam mandal.

The Choppakonda and Pamugandi mega watershed projects of PMKSY sanctioned for 2013-14 was implemented by Government of Andhra Pradesh in Devipatnam mandal of East Godavari district with sanctioned area of 4866 hectares encompassing 4 Micro Watersheds with a fund allocation of 729.90 lakhs. The projects are completed after 7 years of implementation in 3 (preparatory, work and consolidation) phases. The total geographical area of two mega watersheds are 6551 hectares. The Choppakonda mega watershed project is located between latitude 81°42'31" and longitude 17°23'21" at ridge point and between latitude 81°42'36" and longitude 17°23'18" at valley point, Pamugandi mega watershed project is located between latitude 81°43'55" and longitude 17°24'21" at ridge point and between latitude 81°43'65" and longitude 17°24'18" at valley point.

3. ENTRY POINT ACTIVITIES OF WATERSHEDS IMPLEMENTED BY PMKSY PROJECT:

Out of total budget allocated to IWMP projects, 28.71 lakhs (4%) earmarked for EPA component is allocated to 2 IWMP projects (Batch-V), covering 4 Micro Watersheds (MWS). Against this,

estimate was prepared and sanction accorded for 21 no. of EPAs with an amount of 25.14 lakhs. All 21 EPAs sanctioned are completed by incurring total expenditure of 24.96 (99.28%) lakhs

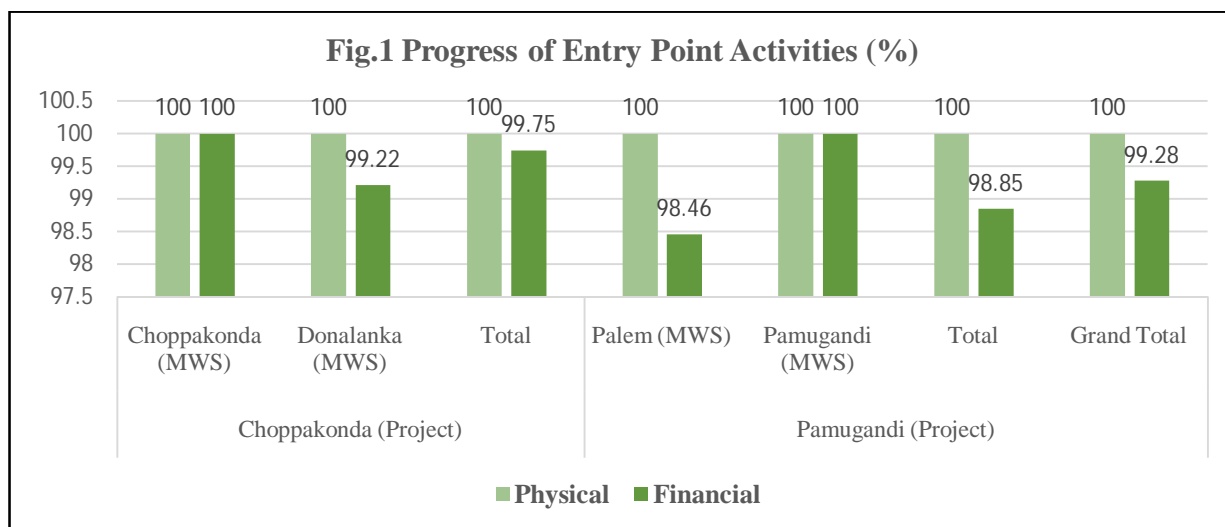
Under the component of EPAs, three types of activities namely R.O Plant, Tent Houses and Solar street lights were executed in study watershed projects. The activity wise abstract of physical and financial targets and achievements are given in Table-1 and Fig-1. In terms of expenditure, maximum amount of 24.96 (99.28%) lakhs were incurred on RO Plant, Tent houses and solar street lights in Choppakonda and Pamugandi Project areas.

Number of EPAs targeted and undertaken along with details of estimated cost and expenditure in each IWMP project are shown in Table-1. In the two projects, 100 % of the physical target is achieved. The expenditure incurred in all the projects is lower than the estimated amount. In Choppakonda project, an amount of 12.08 (99.75%) Lakhs incurred against estimated cost of 12.11 lakhs; while in Pamugandi project, an amount of 12.88 (98.85%) Lakhs incurred against estimated cost of 13.03 lakhs. In two projects, an amount of 24.96 (99.28%) Lakhs incurred against estimated cost of 25.14 lakhs.

Table 1. Micro Watershed wise physical and financial progress of Entry Point Activities

S.No	Projects	Micro Watersheds	Name of EPAs	Target		Achievement	
				Physical (Number)	Financial (Lakhs)	Physical (Number)	Financial (Lakhs)
1	Choppakonda	Choppakonda	Solar Street Light	5	2.91	5	2.91
			Tent House	2	5.34	2	5.34
			Sub-Total	7	8.25	7	8.25
		Donalanka	Solar Street Light	2	1.46	2	1.46
			Tent House	1	2.4	1	2.37
			Sub-Total	3	3.86	3	3.83
		Total	10	12.11	10	12.08	
2	Pamugandi	Palem	RO Plant	1	2.92	1	2.77
			Solar Street Light	7	6.8	7	6.8
			Sub-Total	8	9.72	8	9.57
		Pamugandi	Solar Street Light	2	0.97	2	0.97
			Tent House	1	2.34	1	2.34
			Sub-Total	3	3.31	3	3.31
		Total	11	13.03	11	12.88	
Grand-Total				21	25.14	21	24.96

Figure 1. Physical and financial progress of Entry Point Activities (%)



4. MATERIAL AND METHODS

Sample selection:

The stratified random sampling was adopted for this study. Sample households were randomly selected from watershed community including OC, BC, SC, ST, and minorities, women headed households, landless households, marginal, small and big farmers representing all hamlets/villages in each micro watershed.

Sample size:

In two mega project areas, five per cent of households were selected of total households. Out of 826 households in tow projects, a total of 41 households (5%) were selected.

Table 2. Distribution of Sample households according to Micro Watersheds

Sl. No.	Name of IWMP	Name of the MWS covered	No. of Households evaluated during pre-project period	5% of households randomly assessed during post project period
1	Choppakonda	Choppakonda	269	13
		Donalanka	154	8
		Total	423	21
2	Pamugandi	Palem	200	10
		Pamugandi	203	10
		Total	403	20
Grand Total			826	41

Data collection:

The survey based approach was adopted in the present study. Two participatory methods used in the data collection were survey and focused group discussions. Primary data was collected from five (5) percent sample households from the families in Detailed Project Report (DPR) for both pre and post project periods. Secondary information was collected from the unpublished records of WCCs, web portal of PMKSY projects of Government of Andhra Pradesh and journals. Focused group discussions (FGDs) were conducted in all the 4 micro watersheds of two watershed projects with the support provided by the staff of respective micro watersheds. The participants in the discussion were Sarpanches, Members of Gram Panchayat, Watershed Committee, User Groups, Village organizations and watershed assistants.

Analytical Techniques and Methods:

The present study used average and percentage techniques to study the impact of EPAs of watersheds on socio-economic indicators viz. drinking water supply, gross household income, family expenditure, community participation and migration from rural to urban areas were studied for impact assessment of EPAs of watersheds.

5. RESULTS AND DISCUSSIONS:

The present study is focused mainly on outcomes of EPAs and changes of socioeconomic conditions of watershed community in the study area. The impacts of EPAs was assessed and the results are presented below under different categories for discussion to arrive at valid conclusions.

5. a OUTCOMES EPAs:

R. O. Plant: It was installed at Palem Micro Watershed in the Pamugandi project to provided safe drinking water to the watershed community.



Image 1: RO Plant at Palem Micro Watershed



Image 2: Tent House at Choppakonda

Tent House: It is noted as a viable and sustainable activity for rendering service to the watershed community and earning net income by the group beneficiary, more particularly the vulnerable groups for their livelihoods as well. The tent house services covered many local events like wedding functions, folk festivals, family functions and other local community based events.

These events had direct and indirect impacts on communities. They provided opportunities for participation, volunteering, social, and cultural developments. Benefits from all these community activities are extensive. They contributed to the quality of life by strengthening communities, helped in building awareness of diverse cultures and identities, and acted as a source of community pride.

Solar Street Lights: The solar street lights were taken up as an EPA in two watershed villages in Devipatnam mandal. Solar lighting is one of the core EPA activity in watershed villages. Solar street lighting provided number of important benefits to the community by way of increasing the quality of life by artificially extending the hours in which it is light so that activity can take place. Street lighting also improved safety for tractor drivers, two wheel riders, and pedestrians, since power cuts from conventional source of energy is a general phenomenon till recently. Improved street lighting helped the community, as it is a deterrent for any possible theft or crime. Solar street lights are environment- friendly, and are safer to community children and animals than conventional street lights.

5. b SOCIO-ECONOMIC IMPACT:

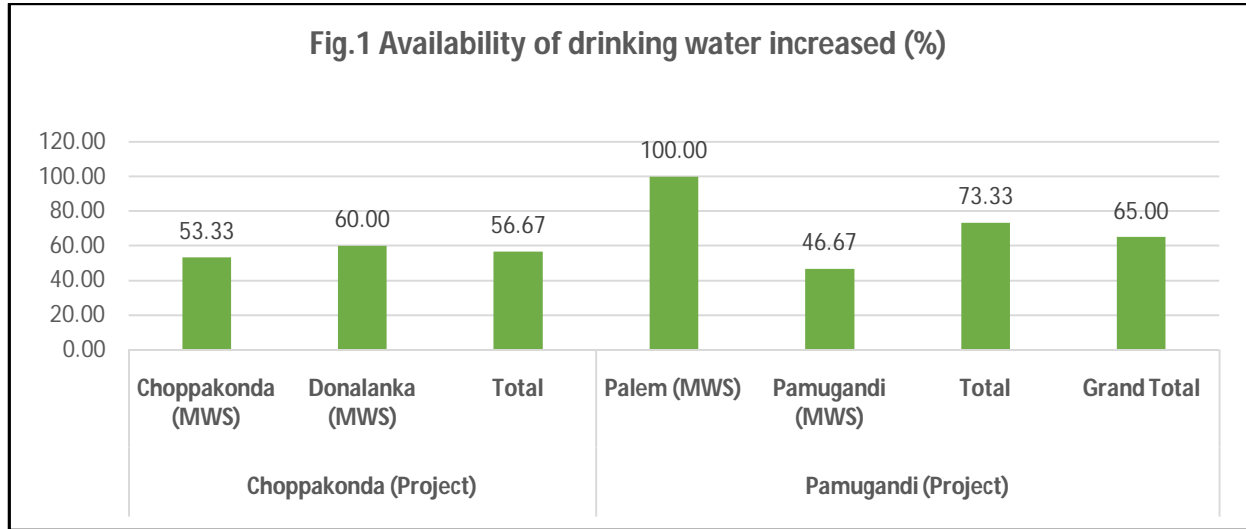
Drinking water:

Table.3 shows the availability of drinking water by sample households of the project areas after the project period. Availability of safe and clean drinking water is necessary for the healthy life. The attempt was made to study the availability of clean drinking water to the beneficiaries. The drinking water supplies improved with 56.67% in post project period from 315 to 491 ltr/day in Choppakonda project and improved with 73.33% in post project period from 300 to 520 ltr/day in Pamugandi project respectively. In all, the drinking water supplies improved by 65.00% in post project period from 615 to 1011 ltr/day due to watershed interventions which is adequate to meet the requirement of the population. Especially, increased (100%) of drinking water availability in Palem Micro Watershed due to new R.O Plant installation. Community in watershed areas perceived that increased access to safe and purified drinking water, reduced risks of water-borne infectious diseases and improved general health.

Table. 3 Distribution of availability of drinking water (Ltr/day) by sample households

Sl. No.	Name of Project	Name of MWS	Pre-Project	Post Project	Increased
			l/day	l/day	l/day
1	Choppakonda	Choppakonda	195	299	104
		Donalanka	120	192	72
		Sub-Total	315	491	176
2	Pamugandi	Palem	150	300	150
		Pamugandi	150	220	70
		Sub-Total	300	520	220
		Total	615	1011	396

Figure.2 Availability of drinking water (ltr/day)



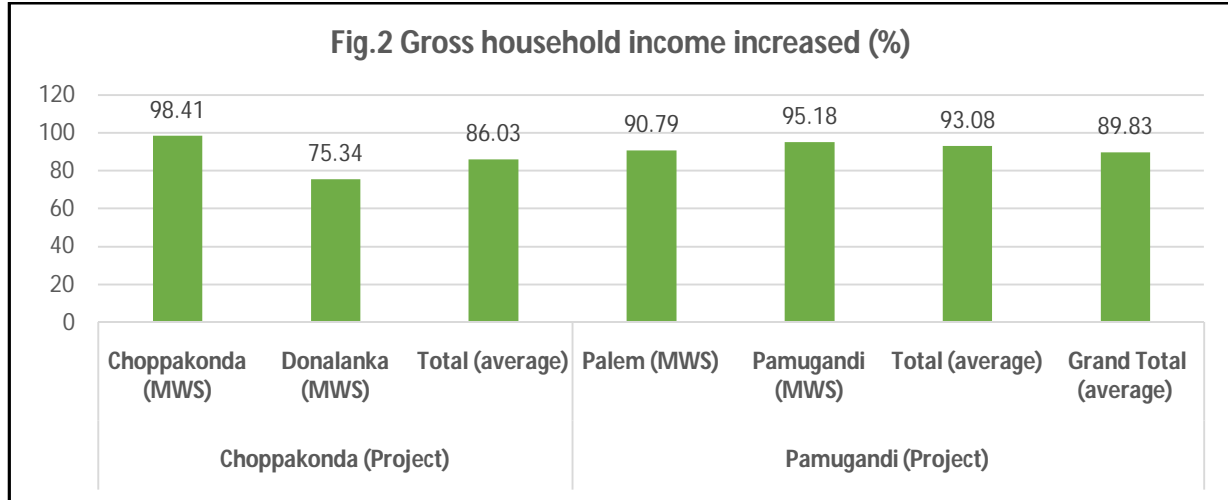
Gross Income of Households:

Table.4 indicates that the mean gross income of households of the project areas after project period. The gross income of households were increased constituting Rs.0.59 lakhs (86.03%) in Choppakonda project area. In Pamugandi project area, the gross household income were increased constituting Rs.0.74 lakhs (93.08%). The annual gross income of the Watershed Committees were also increased through RO Plant and Tent houses. The committees are collecting nominal money from the community by utilizing water and material of Tent houses for committee’s sustainability and maintenance.

Table.4 Micro watershed wise gross household income per anum (Rs.in Lakhs)

Sl. No.	Name of Project	Name of MWS	Pre-Project (Rs.in Lakhs)	Post Project (Rs.in Lakhs)	Increased (Rs.in Lakhs)
1	Choppakonda (Project)	Choppakonda	0.63	1.25	0.62
		Donalanka	0.73	1.28	0.55
		Total	0.68	1.27	0.59
2	Pamugandi (Project)	Palem	0.76	1.45	0.69
		Pamugandi	0.83	1.62	0.79
		Total	0.80	1.54	0.74
		Grand Total	0.74	1.40	0.66

Figure.3 Micro watershed wise gross household income increased per annum (%)



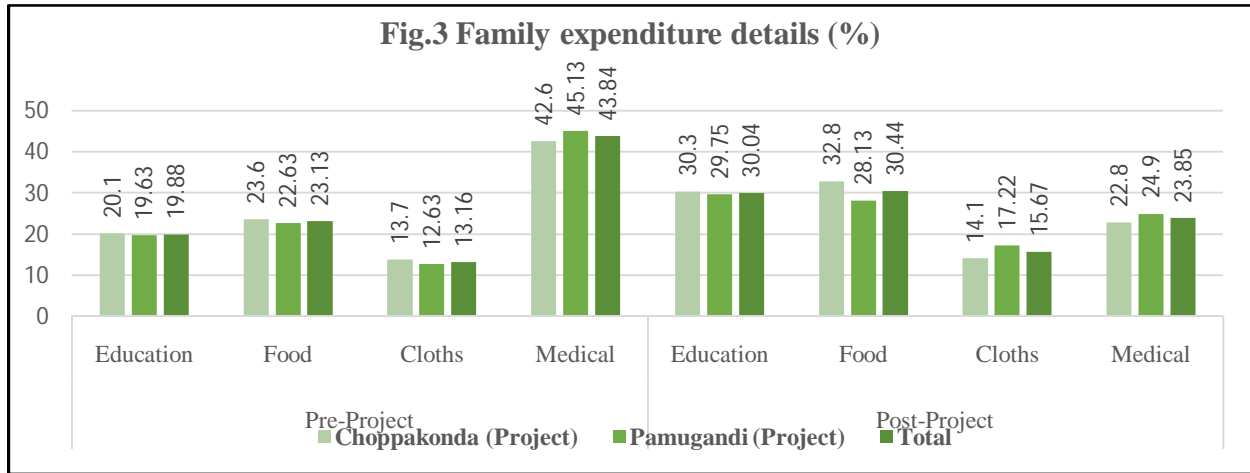
Family Expenditure:

Table.5 shows the family expenditure details of sample households in the project areas after project period. Family consumption expenditure is also another important parameter which indicates the standard of living of an individual. Before project period, respondents had given priority expenditure on medical (43.84%), food (23.13%), education (19.88%) and cloths (13.16%) respectively. After project period, the percentage of expenditure on education (30.04%), food (30.44%) and clothes (15.67%) were raised because of the increase in income and availability of safe drinking water which indicates the enhancement on standard of living and improved the health conditions due to safe drinking water and quality nutrition.

Table.5 Family expenditure details (%)

Sl. No.	Name of Project	Name of MWS	Pre-Project				Post-Project			
			Educati on	Food	Cloth s	Medic al	Educat ion	Food	Cloth s	Medic al
1	Choppakonda	Choppakonda	21.0	23.0	13.0	43.0	31.4	31.3	15.3	22.1
		Donalanka	19.3	24.3	14.4	42.1	29.3	34.3	13.0	23.5
		Total	20.1	23.6	13.7	42.6	30.3	32.8	14.1	22.8
2	Pamugandi	Palem	18.3	21.3	12.3	48.3	30.3	28.0	16.7	25.0
		Pamugandi	21.0	24.0	13.0	42.0	29.3	28.3	17.7	24.8
		Total	19.63	22.63	12.63	45.13	29.75	28.13	17.22	24.90
		Grand Total	19.88	23.13	13.16	43.84	30.04	30.44	15.67	23.85

Figure.4 Family expenditure details (%)



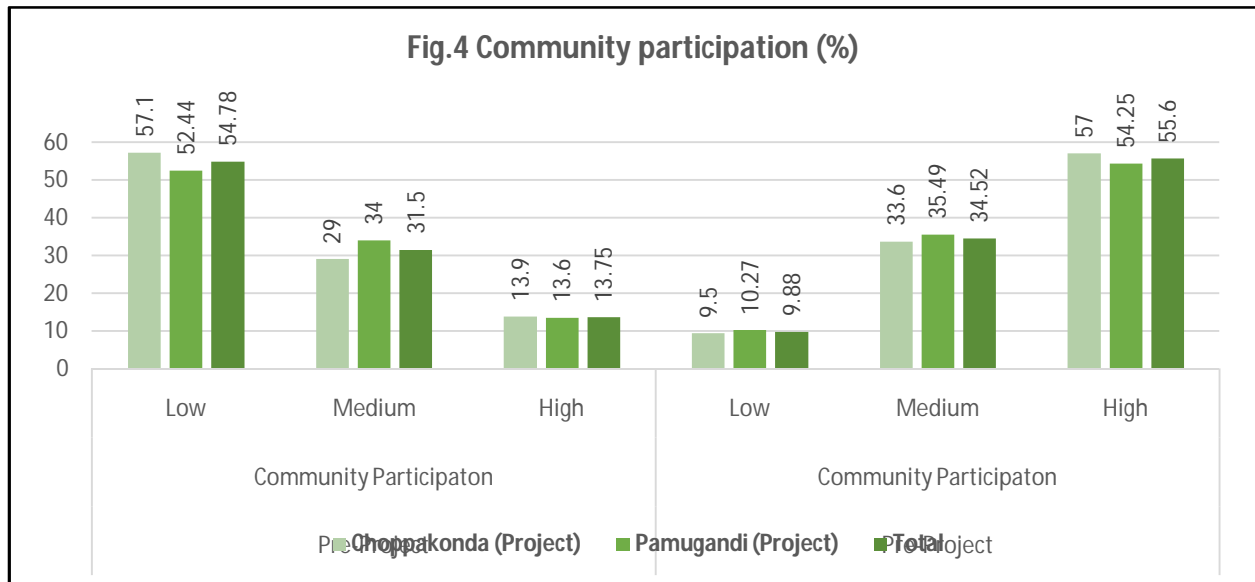
Community participation:

Table.6 shows the level of community participation in operation and maintenance of the common properties. Like all other development programmes, watershed development also banks heavily on the participatory approach. Though, watershed development programme envisages an integrated and comprehensive plan of action for the rural areas, peoples’ participation at all levels of its implementation is very important. As the issue of sustainable natural resource management becomes more and more crucial, it has also become clear that sustainability closely linked to the participation of the communities who are living in close association with these natural resources. Community participation can be judged in terms of giving time to the project and contribution in cash/or kind towards works, both on development and management of private and common property resources. Before project period, community had given low priority 54.78 per cent, medium priority 31.50 and high priority 13.75 per cent to operation and maintenance of the common property resources. After project period, community contributed low priority 9.20 per cent, medium priority 34.52 and high priority 55.60 per cent to operation and maintenance of the common properties like RO Plant, Tent houses and Solar street lights due to awareness and strengthening the community by PMKSY project.

Table.6 Community participation in Watershed management

Sl. No.	Name of Project	Name of MWS	Pre-Project			Post-Project		
			O&M			O&M		
			Low	Medium	High	Low	Medium	High
1	Choppakonda (Project)	Choppakonda	59.0	29.0	12.0	10.0	31.0	59.0
		Donalanka	55.2	29.0	15.8	9.0	36.1	54.9
		Total	57.1	29.0	13.9	9.5	33.6	57.0
2	Pamugandi (Project)	Palem	49.6	37.3	14.2	11.3	39.2	49.5
		Pamugandi	56.0	31.0	13.0	9.2	31.8	59.0
		Total	52.44	34.00	13.60	10.27	35.49	54.25
		Grand Total	54.78	31.50	13.75	9.88	34.52	55.60

Figure.5 Community participation in Watershed management



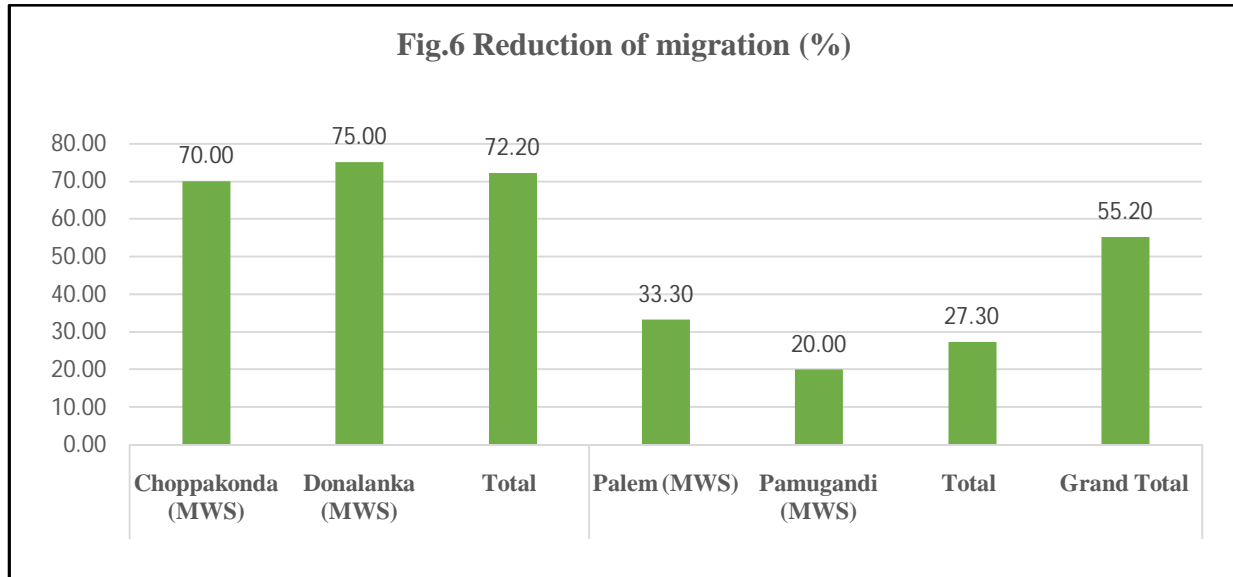
Impact on out-migration:

Table.7 indicates the reduction migration details from rural to urban area. The status of migration is one of the indicators of assessment of a rural development project. The decrease in migration indicates the success of the project in the project area. After project period, reduced the migration from 18 to 5 persons with (72.20%) from rural to urban areas in Chppakonda project area and 11 to 8 persons with (27.30%) in Pamugandi project area. In all, reduced the migration from 29 to 13 with (55.20%) from rural to urban areas. Earlier, the villagers used to go either to Hyderabad or Visakhapatnam in search of work and at present due to creation of on-farm and off-farm employment in the project area people have slowly stopped migrating to other places.

Table.7 Reduction in migration from Rural to Urban area

Sl. No.	Name of Project	Name of MWS	Pre-Project	Post-Project	Reduction
1	Choppakonda	Choppakonda	10	3	7
		Donalanka	8	2	6
		Total	18	5	13
2	Pamugandi	Palem	6	4	2
		Pamugandi	5	4	1
		Total	11	8	3
		Grand Total	29	13	16

Figure.6 Reduction in migration from Rural to Urban area



6. CONCLUSION

Entry Point Activities (EPA) are part of community mobilization process taken up as short term initiatives that benefited a larger target group at village /watershed level in order to build rapport with the community as well as to ensure their willingness to involve themselves in the project implementation. The project team identified in consultation with the villagers, the most felt need or problems of the community to fulfil or resolve the same by identifying appropriate activities or creation of common assets for the benefit of community at large. In general, the community participation to project implementation has been a great success. The EPAs were executed 100% against the target. The communities have been participating actively in operation and maintenance of the common properties of RO plant, Tent houses and Solar street lights. The communities revealed that they are very much appreciative of this component of the project.

COMPETING INTERESTS DISCLAIMER:

Authors have declared that they have no known competing financial interests OR non-financial interests OR personal relationships that could have appeared to influence the work reported in this paper.

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