

PARTICIPATORY EFFORTS IN THE REHABILITATION OF MINOR IRRIGATION TANKS IN SRI LANKA

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Introduction

At the time of regaining political independence, Sri Lanka was predominantly an agricultural economy, consisting of an export agricultural sector and a subsistence agricultural sector. Though the share of the agricultural sector in Gross Domestic Product (GDP) has declined from 38% in 1950 to 18% in 1996, it has been observed that during the period since independence, the agriculture sector as a whole has expanded at a rate of 2.6% per year. During the last 26 years, the paddy sector has grown by 2.3% per annum. About 75% of the population live in the rural sector. Nearly 40 per cent of the nation's labour force work in the agricultural sector. It has been identified that improvement in agricultural sector productivity is necessary for faster growth and to raise the living standards of the poor in the future (Central Bank 1998).

The rural economy in Sri Lanka has revolved around paddy cultivation. Rice farming is not merely a livelihood; it is considered a way of life. With the advent of the colonial rule, the domestic agricultural sector, especially farming in the dry zone areas was neglected. The extent of land under paddy is estimated as 574,000 ha. About 240,000 ha which is nearly 50% of the total, falls into the category of minor irrigation systems. The minor irrigation schemes are categorised as schemes that cater to extents less than 80ha in a particular system. About 90% of the holdings under major and minor irrigation schemes are below 0.4 ha supporting about one million small-scale subsistence farm families.

Historically the minor tanks have played a vital role in cultivation of crops in the dry zone of Sri Lanka. Due to lack of maintenance of the head-works and distribution

system, a good majority of these tanks are not in full functional capacity and require significant improvement or rehabilitation for them to again play a major role in the agricultural production for the nation. The present status of the farmers or land owners under minor irrigation systems prevents them from venturing in to the rehabilitation of such tanks due to financial limitations and as such the government interference in the interest of the nation is essential. The government of Sri Lanka and foreign assistance programmes from time to time had been extending support in this task. The approach commonly practised had been where support is extended for both rehabilitation and maintenance. The biggest drawback of this approach had been the necessity of continued government support to sustain these irrigation systems rather than developing self-reliant farming systems.

It is very clear that the government would require targeting improved maintenance and efficient use of the capacity of minor irrigation systems, to relieve the burdens on its coffers. This would require a close involvement of the beneficiaries in the planning and implementation of rehabilitation, improvement works and maintenance works of such schemes. The minor tank improvement scheme of the Department of Agrarian Services (DAS) under the UN supported World Food Programme (WFP), attempts to increase the involvement of the beneficiaries mainly in the construction works of the project thereby providing opportunities for learning and execution of rehabilitation activities. The WFP adopts an approach under which no outside labour or contractor will be used. Instead, food rations will be provided as an incentive to the farmer participants to implement the project on a self-help basis. As in many other similar projects this project involves participation of the beneficiaries in various other stages of the project.

Site inspection and interviews with the farmers in the rehabilitated schemes under WFP revealed that this programme had ensured the satisfactory completion of projects to desired quality while ensuring the time targets. The successful achievement of the broad objectives such as improving the status of the poor farmers and the sustenance of the executed rehabilitation, vastly depend on the level of participation by the beneficiaries while ensuring quality outputs. The work under this study looks at the features of farmer

participation in the rehabilitation of four minor irrigation reservoir systems under the WFP and located in the Anuradhapura district of Sri Lanka.

Study Area and Data

Locations of four rehabilitated irrigation reservoirs under the WFP, which were selected for the study are shown in the Figure 1. Appuwewa and Wattewewa Kudawewa (nee Kuda Wattewewa) are closer to the regions where the ongoing north-east ethnic war is taking place. Other two tanks are located at close proximity to the ancient city of Anuradhapura. Important information such as the command area under each tank, the total number of farmer families, number of utilised work days for rehabilitation, and the administrative division in which the tank is located etc., are shown in the Table 1. The list of cultivators of land under each tank was also available with the Department of Agrarian Services. Long term monthly rainfall records for Anuradhapura were extracted from the hydrological annuals (ID 1998).

Table 1: General Information Pertaining to the Selected Reservoirs

Name of Scheme	Appuwewa	Kudawewa	Usgollawa	Kuda Wattewewa (Wattewewa Kudawewa)
Divisional Secretary Division	Kebithigollewa	Thirappane	Galenbindunuwewa	Kebithigollewa
Number of Farmer Families	26	21	40	81
Command Area	26 ha	18.2 ha	26.3ha	40ha
Total Utilised Work-Days	5006	5854	5607	12245

Actual workday input in each two-week session for rehabilitation work was extracted from daily work records. The extracted data included the number of male workdays and female workdays utilised for the work executed during each two-week period (Table 2). The schedules of two week time blocks also provided the types of work executed during each period.

Table: 2 Monthly Input of Person-days for Rehabilitation and the Cultivator Work Force at Each Reservoir

	Appuwewa		Kudawewa		Usgollawa		Kuda Wattedewewa	
	Male	Female	Male	Female	Male	Female	Male	Female
Cultivator Work Force	28	26	27	24	53	51	72	55
1997 July							780	1087
1997 August	278	272			365	296	492	741
1997 September	301	459	304	452	820	595	1101	1489
1997 October	534	928	437	566	184	160	1120	1142
1997 November	219	421	262	423	422	344	582	738
1997 December	64	15	286	391	1064	951	393	835
1998 January	151	159	501	718	209	197	411	527
1998 February	102	111	195	264			273	534
1998 March	484	508	217	252				
1998 April			187	399				
1998 May								
1998 June								
1998 July								
Total	2133	2873	2389	3465	3064	2543	5152	7093

Degree of Beneficiary Participation

The reservoir rehabilitation work under the WFP requires the contributory labour to be from the farmer organisations thereby ensuring the targeted beneficiary participation instead of resorting to outside or contractual labour. The direct beneficiaries in these rehabilitation systems range from farmers and their families under a particular reservoir to others who are not farmers in the scheme but who utilise reservoir water for drinking, bathing, fishing, washing or for purposes such as bathing of animals. Therefore, the degree of beneficiary participation in these schemes could be defined as the percentage of the entire beneficiary population who contributed to the activity concerned.

The lists of cultivators, their spouses and adult family members (above 18 years old) maintained by DAS provided information about the available cultivator-related adult beneficiaries. In order to account for non-cultivator beneficiaries under each scheme, a

factor of 1.1 was applied to the cultivator workforce obtained from the DAS records. Due to the lack of records, discussions were held with the relevant officials to arrive at the factor by giving due consideration to the actual situations experienced in the regions where the schemes are located. Based on the above, the degree of beneficiary participation in each reservoir during each month was computed and compared with the long-term annual rainfall values at Anuradhapura (Figure 2). Similarly the degree of male and female participation was computed. The averaged degree of beneficiary participation over the entire construction period and the degree of male and female participation corresponding to the same are shown in the Figure 4.

The degree of participation varies widely within the rehabilitation period. However it was noted that there had been a general decline in the degree of participation with the commencement of the Maha season rains in October. This may be due to the farmers taking time off to commence Chena (slash and burn) or rain fed cultivation. Other reasons for the fluctuations in the degree of participation could be funerals, religious ceremonies in the village, and shortcomings in the project's food supplies. It was noted that the fluctuations in the degree of participation at Appuwewa were significantly different from the other reservoirs. Appuwewa showed two intense participation during October 1997 and March 1998 reaching very high degrees of beneficiary participation.

The average degree of participation varied between 28% and 43% in all four schemes. Fluctuations in the average degree of participation with the number of non-cultivators were investigated by repeating the computations while varying the factor for non-cultivator participation to 1.2 and 1.3. The sensitivity of the degree of participation is shown in the Figure 3. Even with the inclusion of a factor as high as 30% for non-cultivator beneficiaries, the degree of overall beneficiary participation was averaging 36%. This indicates a significantly high degree of beneficiary participation. The degree of male beneficiary participation varied between 27% and 33%, while the degree of female beneficiary participation fluctuated between 26% and 54%. Results indicate a very low male participation but considering the Sri Lankan context, the female participation can be rated very high.

Composition of Participation

The composition of population participated in the rehabilitation is defined as the composition of participation. Composition of participation for each tank at each month was separated into male and female workforce categories. The male and female workday inputs during each month (Table 2) indicate a greater contribution from the females than from the males except in the Usgollawa tank. At Usgollawa, throughout the period, male beneficiary contribution had exceeded the female beneficiary contribution. In other three tanks, except at Appuwewa during December 1997, female contribution to rehabilitation had been more than the male.

Averaged composition of beneficiary participation during rehabilitation at each tank is shown in the Figure 5. The male/female ratios thus computed show a significantly low value of approximately 0.7 indicating an inferior male beneficiary participation at Appuwewa, Kudawewa and Kudawatte wewa when compared with the female contribution. Usgollawa showed a beneficiary male/female ratio of 1.2 but this value also reflects a very high degree of female participation with a daily average of 14 females attending along with 17 males throughout the rehabilitation period.

Degree of Cultivator Participation

The participation of cultivators of land under each tank was examined in detail. The daily work records of September 1997 were examined to identify the frequency of cultivator participation under each farmer organisation. Month of September was selected as a representative month by comparing the participated person-day distribution. The WFP targeted lean months for the implementation of the program and this also prompted the selection of September as a sample month. The person-day input by cultivators at each rehabilitation scheme was compared with the listed number of

cultivators to compute the degree of cultivator participation in rehabilitation work during the month of September (Figure 6). The degree of male cultivator participation showed a very low value close to 22% where as the females averaged a degree of participation close to 34%. In all the selected rehabilitation schemes including Usgollawa which showed a high overall male beneficiary participation indicated a higher degree of female cultivator participation when compared with the male cultivator participation. The participated cultivator male/female ratio was compared with the listed cultivator male/female ratio (Figure 7). This comparison also reflected the lower male cultivator participation in the rehabilitation activities.

Summary

Though the experiences in the past raised a few concerns regarding beneficiary participation (De Silva 1995, Upasena et al 1995), the results from this study show encouraging beneficiary participation in rehabilitation work of these reservoirs under the WFP. The computed values indicate that nearly one in three beneficiary workforce members contributed to the rehabilitation activities. The female beneficiary contribution was substantial where an average of four out of ten beneficiaries contributed, while in Kuda wewa case more than five out of ten extended their contributions.

Male beneficiary contribution was low with only one out of three beneficiaries participating. The WFP in its inception had targeted on an average of 1.5 workers from one farm family (WFP 1994). Records from reservoir rehabilitation indicate that the average number of available contributors to work force in each farmer family is two. This indicates that the WFP targets a 75% beneficiary participation. It is felt that this expected degree of participation is too ambitious.

The female participation in the rehabilitation activities is quite significant showing four females have participated with three males. This female beneficiary participation is quite

high when compared with typical contractual undertakings for the execution of similar tank rehabilitation work.

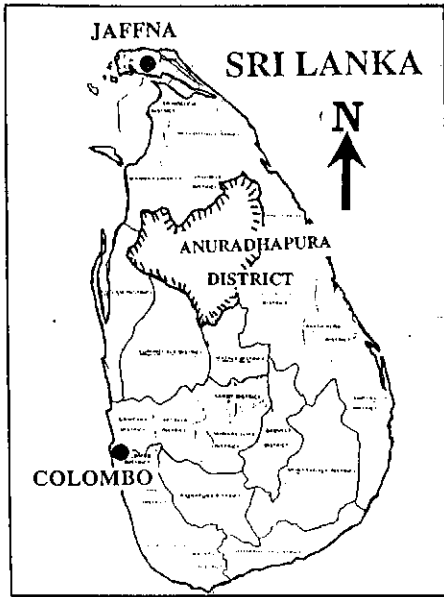
The cultivator participation reflected very poor male participation with only one out of five male cultivator beneficiary from the work force contributing to rehabilitation activities. Female cultivator beneficiaries also contributed poorly averaging an attendance of one member from each three listed members, except in the Kudawewa where the participation had risen to more than one in each two from the work force. The poor degree of male participation both overall and cultivator level at all rehabilitation schemes indicate that the males may have had resorted to other employment such as employment with the security forces.

Conclusions

- The WFP had ensured significant levels of beneficiary participation in the studied minor tank rehabilitation work.
- Overall female beneficiary participation and the female cultivator participation in the rehabilitation activities had been substantial, indicating increased contribution to household earnings.
- Beneficiary participation during each month had been fluctuating and it is felt necessary to investigate the reasons to ensure effective implementation of future rehabilitation works targeting higher beneficiary involvement.
- Low cultivator participatory levels in the rehabilitation activities, raises concern and this requires to be further investigated to ensure project sustainability.
- Degree of male participation in the studied four schemes had shown to be significantly low when compare with typical Sri Lankan situations. The reason for this decline needs to be further investigated.
- This study looks in detail at the construction level beneficiary participation, however similar efforts need to be incorporated to investigate the degree of participation in planning, design and also in the operation and maintenance activities.

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ANURADHAPURA DISTRICT

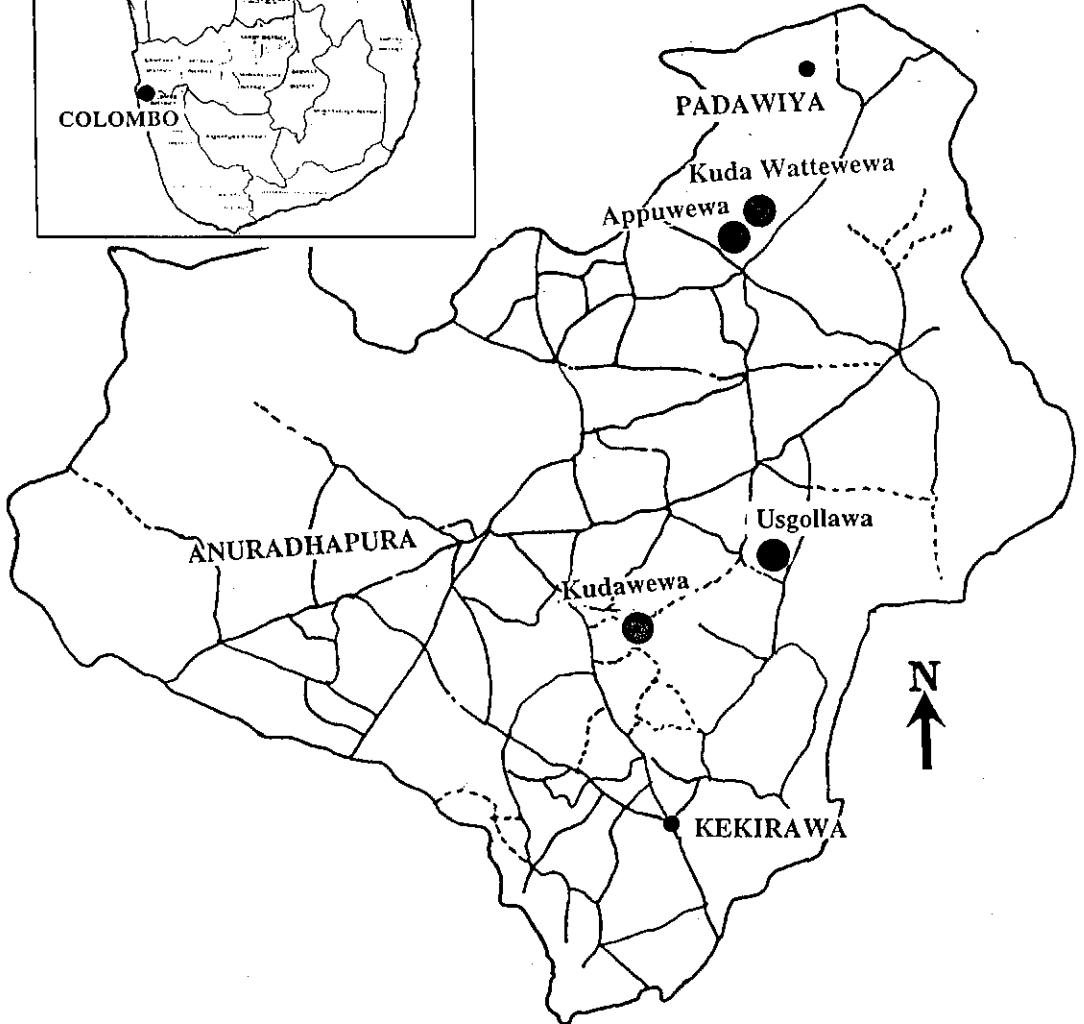


Figure 1: Locations of the Selected Rehabilitated Reservoirs

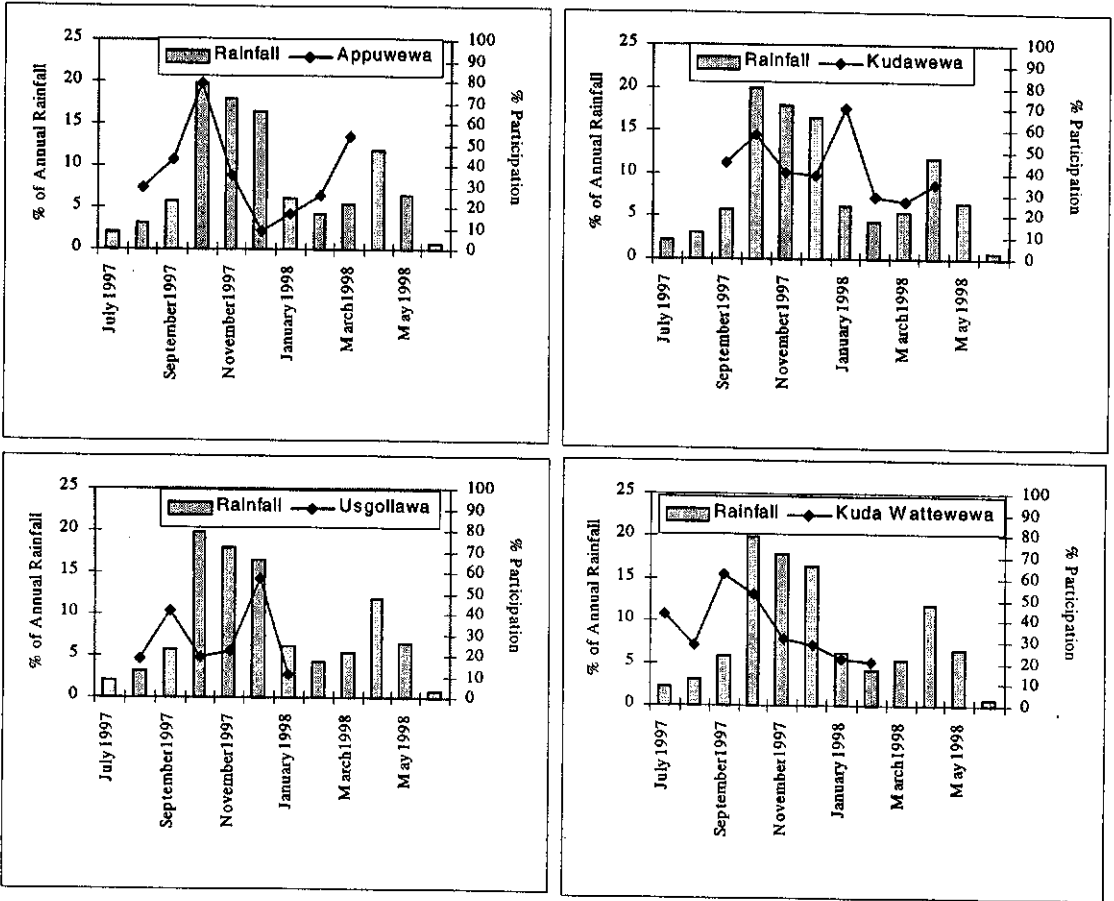


Figure 2: Degree of Beneficiary Participation(%) during Rehabilitation and the % of Long Term Averaged Monthly Rainfall

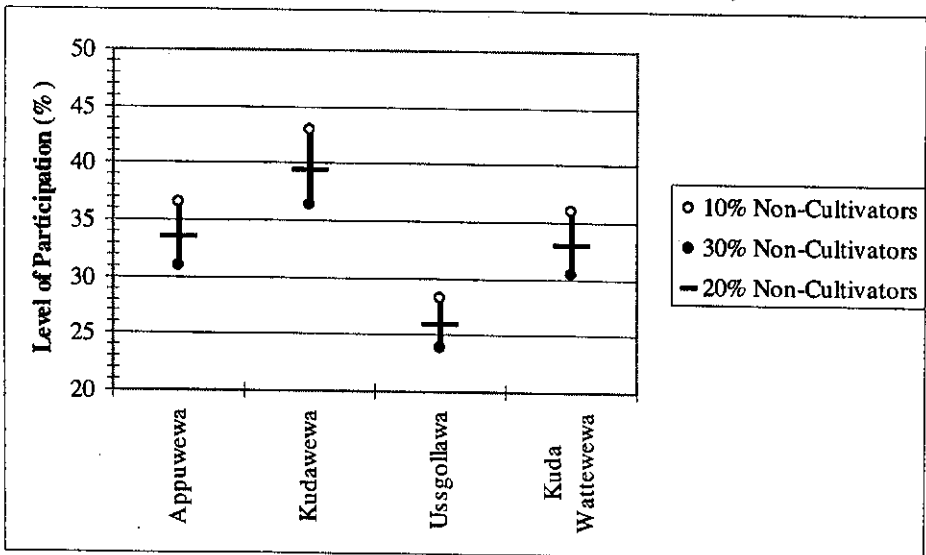


Figure 3: Sensitivity of the Degree of Beneficiary Participation with Fluctuations of Non-Cultivator Beneficiaries

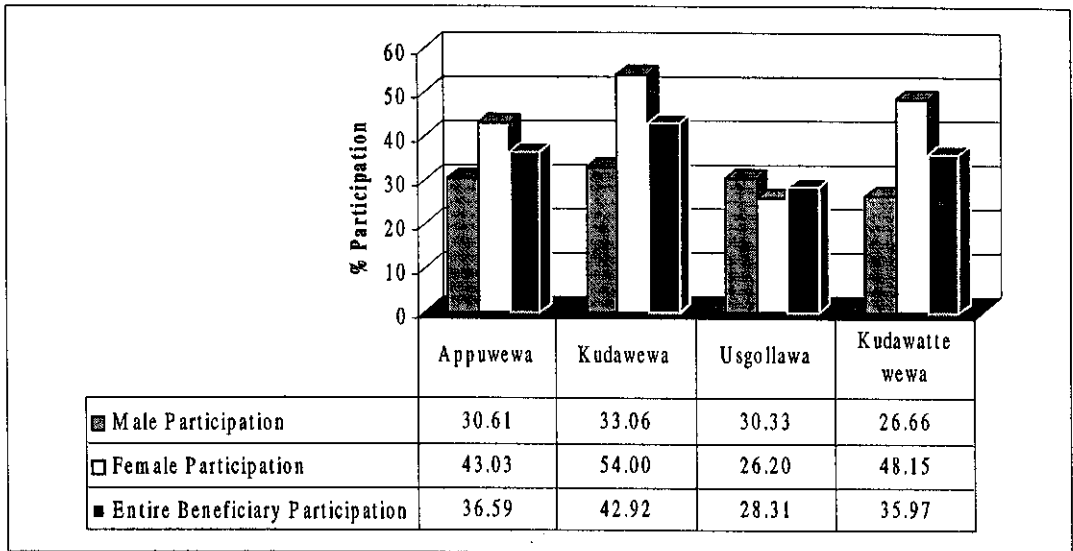


Figure 4: Averaged Degree of Beneficiary Participation(%) during Rehabilitation

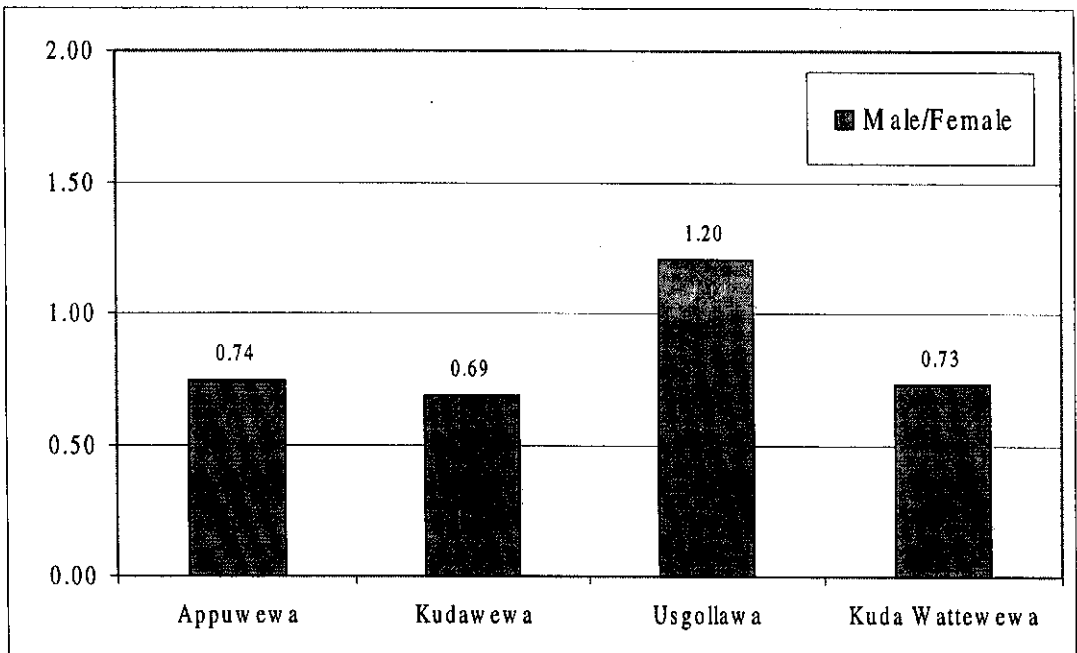


Figure 5: Male/Female Ratio of the Beneficiary Participation During Rehabilitation

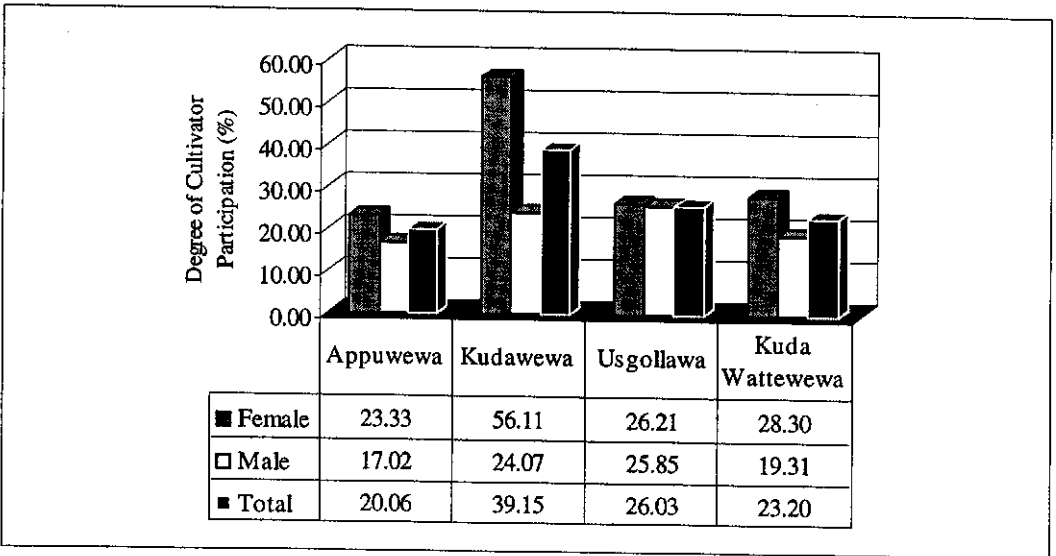


Figure 6: Degree of Cultivator Participation During Rehabilitation

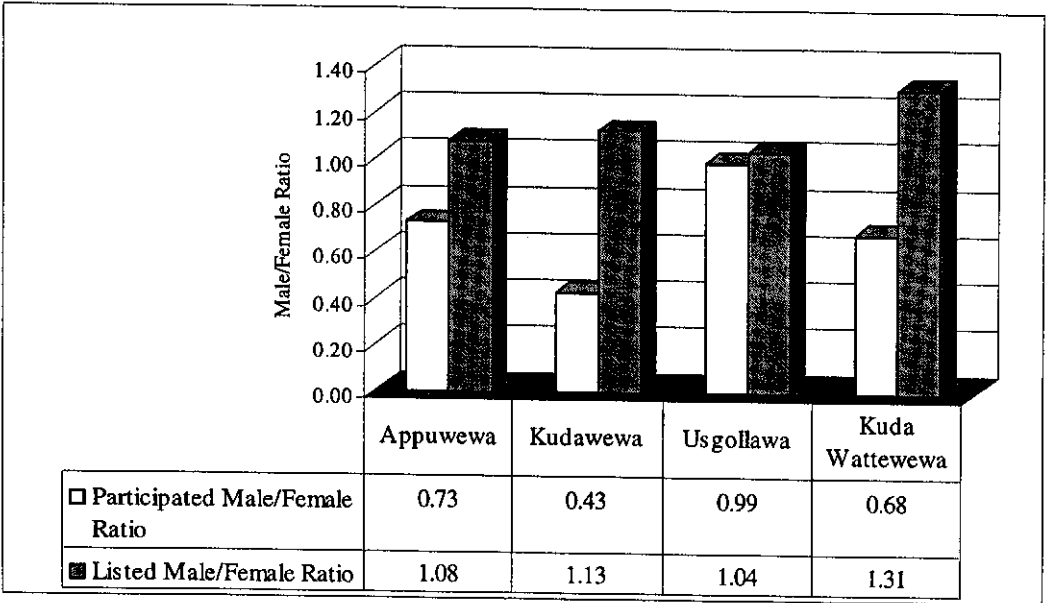


Figure 7: Male/Female Ratio Comparison of Cultivator Participation in the Rehabilitation Work