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Alapakkam : A Resurvey

by

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Abstract

This paper seeks to examine the changes which have occurred in the agrarian economy and society in terms of caste, class and land holding pattern in Alapakkam village. Alapakkam is one among the 14 villages served by Kaveripakkam Tank in Arakkonam taluk of Vellore district. In this village more than 90 per cent of the population is engaged in agriculture. The growth of population is considerably low (1 per cent per annum) which is mainly attributed to the gradual increase in the literacy level. The village has a diffused caste structure (Pillai, Reddy, Nayakkar and Scheduled Castes). The SCs also own a considerable amount of land. The operational holdings of the village have been increasing at the cost of proamboke and inam lands.

For the village and tank management a two-tier body operates, in which the upper castes dominate at the managerial level and the SCs at the lower level. The local organisation functioned effectively up to the 1980s even when supply from the tank was inadequate but after that period its functioning has been gradually declining. Currently, its activities are limited only to celebrating village festivals and no effective tank management (maintenance of channels and distribution of water) is undertaken. Although tank irrigation is predominant, the tank supply is inadequate and hence farmers are supplementing this with

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well water. However, well irrigation has widened the gap between the rich and poor farmers. This in turn has led to neglect of tank management. Due to this cropping intensity has declined from 91 to 60 per cent between the late 1980s and the late 1990s. Further, the cropping pattern has also changed from cereal cultivation (except paddy) to commercial crops such as sugarcane and oilseeds.

Due to decline of prosperity in agriculture one observes a gradual shift in the occupational structure among marginal farmers and agricultural labourers. Since there are no industries in the vicinity of the village, the agricultural labourers have to move to urban centers like Vellore, Ranipet and Chennai to seek employment. Fortunately, they have been absorbed in several infrastructure development activities (such as road laying, construction industry, carpentry, gardening, shopkeeping and so on) and also in small scale tanning units. Even though employment is seasonal in nature it helps the poor households to eke out a living. Regarding land ownership, Mudaliars own less than one per cent of total holdings and the Pillais and Reddys control about three-fifths of the total holdings. Although SCs are gradually acquiring lands and they rank third in the overall land holding status they are still on the lowest rungs in the social hierarchy. The changes in caste-class and land holding structure have affected the working of the local organisation. The decline in upper caste dominance has also resulted in poor control over the village organisation. With the diffusion of land ownership and the passing of land control to lower castes, the ability of the village leaders to coordinate and to enforce rules on maintenance and water distribution has weakened. The survey shows that development of village economy requires a revamping mechanism to strengthen the village organisation to make it function effectively.

Alapakkam : A Resurvey

One village can speak for many villages,
One victim can speak for many victims

Anil's Ghost.

Society is evolving and changing constantly, obvious from the shift in societal values at every level, be they the family, economy, community, relationships or the self. This change is not necessarily bad all the time; in fact, it contributes to a person or society's eventual growth.

Dr. Vijay Nagaswami

Section 1

Introduction

In the large and growing literature on economic development in rural India, an important place is occupied by micro level 'village studies'. In recent years there have been a large number of studies available focusing on various aspects of development in the village society (Athreya 1985). The present study relates, however, to a set of village studies jointly carried out by the "Kerala Research Programme on Local Level Development" (Trivandrum) and "Institute of Development Alternatives" (Chennai). Ten researchers belonging to Tamil Nadu were involved in the project. Some of these villages were studied during the 1980s and some others in the early 1990s. The study being reported here is that of the village of Alapakkam – one of the five sample villages surveyed in 1991-92 – located in Arakkonam taluk of Vellore district.

Geographical and Demographic characteristics of Alapakkam

Alappakam, one among the 14 villages served by the Kaveripakkam tank, is situated about 27 kms South-West of Arakkonam and is 5 kms from Sholinghur to

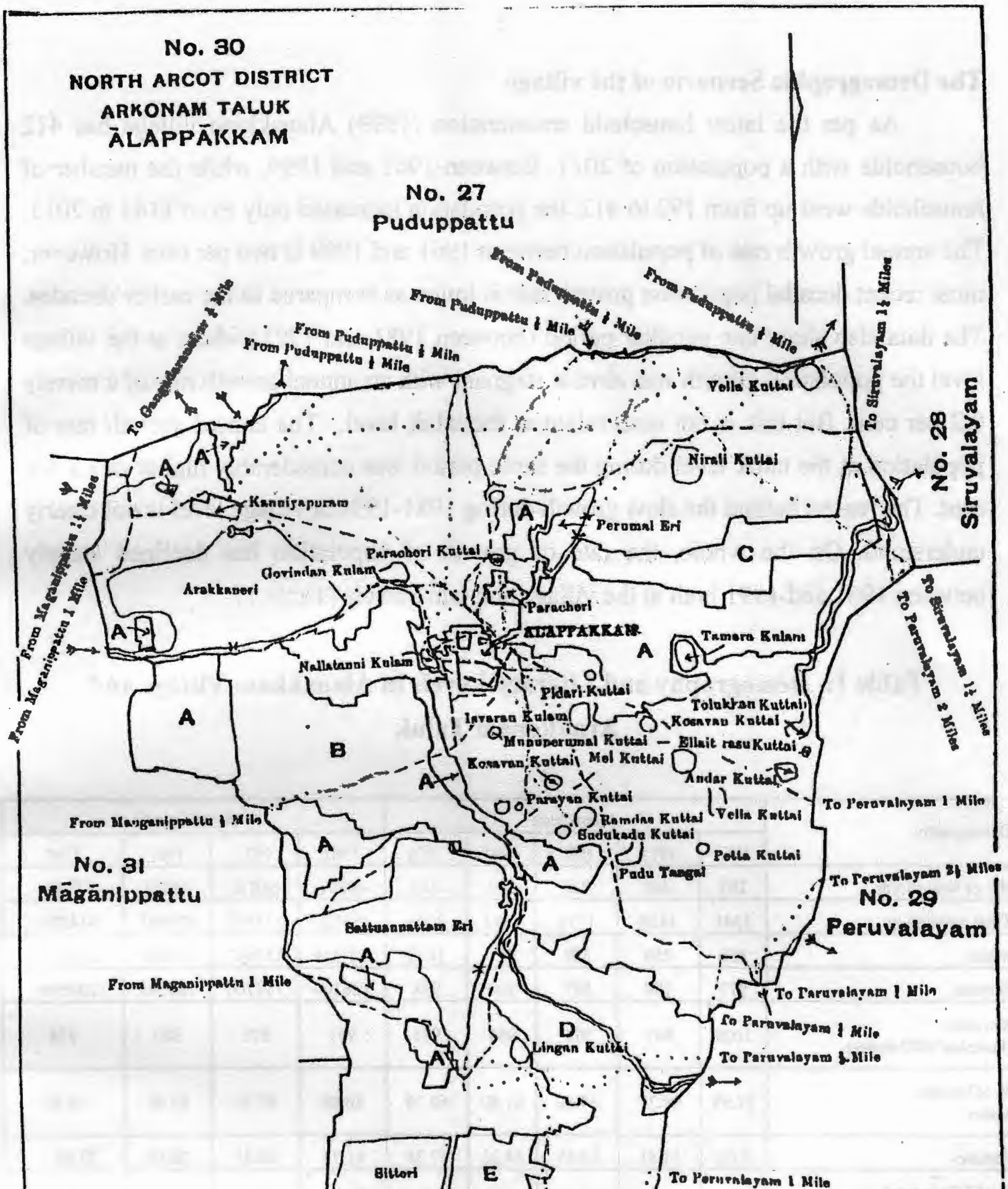
Kaverippakam. This is predominantly an agricultural village located in the Arakkonam taluk of Vellore district, Tamil Nadu. The settlement and re-settlement of this village were done in the year 1882 and 1913 respectively. The updated settlement was done only in 1983. The initial boundary of the village remains unaltered by the re-settlements. This village has two hamlets, namely, Kannikapuram and Thatchampattarai, where caste households live and the main village Alapakkam where the scheduled caste colony is located. Both the main and hamlet villages are spread over a radius of a little less than three square kms (see village map). The following methodology was adopted in order to obtain an overall picture of the village with respect to land ownership, caste structure and power relations among the castes.

Methodology and data source

The base line data for the study is the sample survey of well and non-well farmer households conducted in the village during the agricultural year 1991-92. Informal interviews were conducted with village administrative personnel, knowledgeable people, big land-holders and the prominent people of the village during the year 2000. Data from secondary sources were collected for the following aspects: latest pattadars list with total land-holdings (1999); caste composition of workforce; cropping pattern; changes in caste structure of the landed community over a period of time and the present (2000) status of irrigation organisation in Alapakkam village. No census was undertaken either in 1991-92 or in 2000. The present (2000) survey gathered information from informal interviews with the villagers so as to understand the changes in caste, class and power relations in the village. We have compared the data over these two time points.

Limitations of the Survey

This survey has been undertaken to compare three important objectives of the overall research programme, namely, changes in the caste structure, land ownership pattern and power relations among caste groups. In order to facilitate the study, and to answer the primary objectives, only qualitative information was collected. That is, apart from collecting the secondary data, village elders and knowledgeable people were interviewed. No census was conducted.


No. 30
NORTH ARCOT DISTRICT
ARKONAM TALUK
ĀLAPPĀKKAM
No. 27
Puduppattu
From Puduppattu ½ Mile
From Puduppattu ½ Mile
From Puduppattu ½ Mile
From Puduppattu ½ Mile
To Sirruvalayam 1¼ Miles
Vella Kuttai
Nirali Kuttai
No. 28
Siruvalayam
Kanniyapuram
Perumal Eri
Parachori Kuttai
Govindan Kulam
Arakkaneri
Parachori
ALAPPAKKAM
Tamara Kulam
Nallatanni Kulam
Pidari Kuttai
Tolukkan Kuttai
Kosavan Kuttai
Isvaran Kulam
Munuperumal Kuttai
Ellait rasu Kuttai
Kosavan Kuttai
Mel Kuttai
Andar Kuttai
Parayan Kuttai
Ramdas Kuttai
Vella Kuttai
Sadukadu Kuttai
Potta Kuttai
Pudu Tangal
To Peruvalayam 1 Mile
To Peruvalayam 2¼ Miles
From Maganippattu ½ Mile
No. 31
Māgānippattu
No. 29
Peruvalayam
Sattaanattam Eri
From Maganippattu 1 Mile
To Paruvalayam ½ Mile
To Paruvalayam ½ Mile
To Paruvalayam ½ Mile
Lingan Kuttai
Sittori
Muttuvottan Kuttai
To Peruvalayam 1 Mile
No. 35
Toraiperumbākkam
To Uttirambattu ½ Mile
To Uttirambattu ½ Mile
No. 37
Uttirambattu
No. 36
Irālachchēri
A
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Reg. No. 128
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1918.

The Demographic Scenario of the village

As per the latest household enumeration (1999) Alapakkam village has 412 households with a population of 2011. Between 1961 and 1999, while the number of households went up from 192 to 412, the population increased only from 1141 to 2011. The annual growth rate of population between 1961 and 1999 is two per cent. However, most recent decadal population growth rate is lower as compared to the earlier decades. The data also show one peculiar period (between 1981 and 1991) where at the village level the population growth was almost stagnant with an annual growth rate of a merely 0.2 per cent. But this is not discernible at the taluk level. The annual growth rate of population at the taluk level during the same period was considerably higher at 1.2 per cent. The reason behind the slow growth during 1981-1991 at village level is not clearly understood. On the whole, the rate of growth of population has declined steeply between 1961 and 1991 both at the village and taluk levels (Table 1).

Table 1: Demography and Literacy Levels in Alapakkam Village and Arakkonam Taluk

Demography	Alapakkam					Arakkonam			
	1961	1971	1981	1991	1999	1961	1971	1981	1991
No. of households	192	249	325	364	412	40891	61876	74363	85946
Total population	1141	1459	1776	1811	2011	253524	311147	370847	414881
Males	568	750	899	911	1013	127324	157447	187304	210182
Females	573	709	877	900	998	126200	153700	183543	204699
Sex ratio (Females/1000 males)	1009	945	976	988	985	991	976	980	974
% of literates Males	27.99	28.27	39.60	61.80	69.70	36.98	47.30	55.66	63.03
Females	6.06	14.81	14.25	34.22	47.35	11.14	20.33	28.64	39.68
% of SCs to total population	15.42	15.42	14.81	13.42	17.11	23.32	22.97	23.92	25.81
% of STs to total population	0	0.34	0.45	6.24	0.00	1.19	1.07	1.70	1.43
% change of total population (Decadal)	Na	+27.87	+21.73	+1.97	+11.04	Na	+22.73	+19.19	+11.87

Source: Census of India, 1961 (Vol. IX) Madras, 1971, 1981 and 1991, Series 9, 20 and 23 Tamil Nadu, District Census Handbook, Part X-IX, Part X-A & B, Part XIII-B, and Part XII-A & B, Village & Town Directory, Village & Townwise Primary Census Abstract, North Arcot, Vol. II, 1961, 1971, 1981 and 1991.

Note: 1999 Village population and related details are taken from the village statistical register, Alapakkam, 2000. The households and population (1999) details were prepared by the village administrative official and the local Panchayat Board functionaries for getting government assistance through village development schemes.

The sex ratio in the village remains more or less constant after the 1980s, which is around 980, but prior to that, one notices wide fluctuations. But such fluctuations are not observed at the taluk level. The literacy level has increased steadily both at the village and taluk levels over the decades. Although the literacy level among both males and females has increased rapidly, literacy among males has always been higher and the male-female gap continues. The percentage of male literates at village level during 1999 is 69.70 while at the taluk level it is 63.03 during 1991. For females during the same periods they are 47.35 and 39.68 respectively.

Compared to taluk level, the percentage of Scheduled Castes (SCs) in the total population at the village level is lower (13.42 per cent in 1991) than the taluk (25.81 per cent) level. The Scheduled Tribe population is negligible both at the village and taluk levels.

The castewise and household level demographic details are presented in Table 2. There were 412 families living in the village in 1999. They can be divided into thirteen caste groups. In the caste hierarchy, while Mudaliars, Pillai, Naidus, Reddys and Nayakkars occupy the top five ranks the SCs occupy the last rank. All other caste groups come in between. Only Reddy, Pillai, Nayakkars and SCs own land. Importantly, the SCs occupy the third position in terms of land ownership in Alapakkam, next only to Pillais and Reddys, in 1999. A century ago, the present large land-holding caste groups such as Pillais and Reddys owned small extents of land in the village accounting for three to ten per cent of the total land available in the village. Whereas Brahmins and Mudaliars owned one fourth of the total holdings. But, by 1999 the pattern changed and the three caste groups (Reddy, Pillai and SCs) together owned about 83 per cent of total land available in the village. Except for the above mentioned four major land holding castes, all other caste groups are not significant both by their numerical strength and also by the extent of land ownership. Numerically, Reddys are dominant followed by Pillais. These two caste groups accounted for about three-fourths of the total population in 1999. The SCs accounted for 17 per cent.

Table 2 Caste and Demography in Alapakkam Village, 1999

Caste	No.of hhs	No.of Per-sons	Average family Size	No.of earners	No.of Dependents	Earner-depen-dent ratio	No.of agl. labourers	No.of non-agl. workers	No.of literates	No.of Literates Per hh
Reddy	164	861	5.25	415	446	0.93	232	26	468	2.85
Pillai	125	610	4.88	247	363	0.68	127	18	372	2.98
Nayakkar	21	123	5.86	60	63	0.95	47	4	57	2.71
Udaiyar	4	15	3.75	6	9	0.67	0	5	11	2.75
Mudaliar	2	9	4.50	4	5	0.80	1	3	6	3.00
Naidu	1	4	4.00	2	2	1.00	2	0	2	2.00
Nadar	1	5	5.00	2	3	0.67	0	0	3	3.00
Karuneekar	1	4	4.00	2	2	1.00	0	1	3	3.00
Asari	3	10	3.33	6	4	1.50	0	0	6	2.00
Dhobi	1	1	1.00	1	0	0.00	0	0	0	0.00
Barber	4	25	6.25	14	11	1.27	0	0	11	2.75
Scheduled Caste	56	228	4.07	118	110	1.07	172	8	156	2.79
SC Christian	29	116	4.00	66	50	1.32	71	14	84	2.90
Total	412	2011	4.88	943	1068	0.88	652	79	1179	2.86

Source: Details collected from the village administrative official and the local Panchayat Board functionaries of Alapakkam village, 2000.

The average family size in the village is 4.88. While Barbars and Nayakkars have the largest family size, Dhobi and Asari castes have the smallest. Significantly, the SCs are maintaining the below average family size (around four persons per household). The earner-dependent ratio in the village is works out to 0.88. The artisanal caste households (Asari and Barbar) and the SCs have more number of earners (earner, dependant ratio is 1: <1) than the major land owning caste groups such as Reddy, Pillai and Nayakkars. This implies that the income level of the former groups may not be viable to sustain their family and hence most of their family members need to work for their livelihood, which is not necessary for the latter caste groups due to income derived from agriculture.

It is important to note that the SCs account for a predominant proportion of the total number of both agricultural labourers and non-agricultural workers (about 28 per cent) in the village. The non-agricultural work of the SCs mainly constitute menial level employment such as peons, village assistants, drivers, (business) middle men, construction workers, brick-klin workers, rice milling employees and so on. Table 2

indicates that there is a strong correlation between the number of non-agricultural workers and the number of literates per household. This is true in the case of SCs.

Although data on occupational groups by caste are not available, the number of households engaged in various occupations in the village in 1999 is given in Table 3. Among different categories of households (classified by occupation) agricultural

Table 3 Demographic Characteristics by Occupational Categories in Alapakkam Village, 1999

Category of hhs	No.of hhs	No.of Persons	Average Family size	No.of Earners	No.of Depen-dents	Earner-dependent ratio	No.of literates	Literates per hh
Big farmers	15	63	4.20	25	38	0.66	54	3.60
Medium farmers	22	107	4.86	51	56	0.91	80	3.64
Small farmers	80	417	5.21	184	233	0.79	265	3.31
Marginal farmers	97	465	4.79	245	220	1.11	291	3.00
Pure tenants	15	66	4.40	38	28	1.36	30	2.00
Agl. labourers	143	695	4.86	317	378	0.84	351	2.45
Non-agl. Workers with regular salaried employment	3	13	4.33	6	7	0.86	10	3.33
Non-agl casual Workers	25	120	4.80	46	74	0.62	60	2.40
Artisanal and service hhs	12	65	5.42	31	34	0.91	38	3.17
Total	412	2011	4.88	943	1068	0.88	1179	2.86

Source: Details collected from the village administrative official and the local Panchayat Board functionaries of Alapakkam village, 2000.

Note: The classification of household category of different classes of farmers are as follows. Big farmers = 4 hectares and above. Medium farmers = 2 to 4 hectares. Small farmers = 1 to 2 hectares. Marginal farmers = up to 1 hectare. Pure tenants are those who earned their income mainly by cultivating leased-in land.

labourers (who derive their income solely from agriculture) constitute a major chunk, accounting for one-third of total households in the village. While small and marginal farmer households are more or less equally distributed (they constitute more than two-fifths of total households) the big and medium farmer households are fewer in number and account for less than 10 per cent of the total households. While the big farmers have a smaller family size (4.20 persons), the small farmers and artisanal and

service households have the largest, 5.21 and 5.42 persons. The average family size of the village is 4.88 persons. It should be noted that across different categories of households the average family size has not varied much, which ranges between 4.20 persons and 5.42 persons. Moreover, the average family size of the medium farmers, marginal farmers, agricultural labourers and non-agricultural casual workers are more or less the same.

The earner-dependent ratio of the village is 0.88. This indicates that lesser number of persons are earning to feed a larger number of dependents. Except marginal farmers and tenants, the number of dependents among different categories of households are more in the village. A greater number of dependents (0.62 per household) is seen in the non-agricultural casual worker category followed by the big farmer group. In all the remaining categories the earner-dependent ratio is more or less equal to the village average. Regarding literacy rates with the exception of pure tenants, agricultural labourers and non-agricultural casual workers (who account for more than two-fifths of the households in the village), all other households enjoy higher than the village average literacy level. Lower literacy levels have implications for the income they earn. This indicates that the land holding households and the regular salaried households are able to get access to education which is relatively difficult for other households. This is because the latter households have to face two problems: (a) for their livelihood most members of the family need to work to get regular income; (b) their income level does not permit them to provide education to all members of the family.

Table 4 represents the changes in the composition of workforce both at village and taluk levels over the years. One of the major trends observed is while the `total workers' in the village have been steadily increasing since 1961 up to 1999 (except between 1961 and 1971), the `total non-workers' remain constant. Another important feature is that, except in the year 1971 - where the `total workers' (599) were less than the `total non-workers' (860) -at all other points of time, the number of `total workers' was more than the `total non-workers'. This trend is markedly different from the picture observed at the taluk level where the `total non-workers' had always out numbered the `total workers'.

Table 4 Composition of Workforce in Alapakkam Village and Arakkonam Taluk

Sl. no.	Workforce	Alapakkam					Arakkonam			
		1961	1971	1981	1991	1999	1961	1971	1981	1991
1	2	3	4	5	6	7	8	9	10	11
1	Total population	1141	1459	1776	1811	2011	253524	311147	370847	414881
2	Total workers	677	599	905	1044	1126	123950	114981	156387	177640
3	Total cultivators	600	476	723	349	395	61085	38985	47247	42955
	Males	313	338	424	206	233	38521	33076	38012	32133
	Females	287	138	299	143	162	22564	5909	9235	10822
4	Total agl. labourers	34	81	144	636	652	25294	43849	53514	72218
	Males	19	47	63	290	280	10129	24358	24456	36360
	Females	15	34	81	346	372	15165	19491	29058	35858
5	Total non-agl. workers (2-(3+4)	43	42	38	59	79	37571	32147	55626	62467
6	Total non-workers	464	860	871	767	885	129574	196166	214460	237241
	Males	198	326	381	377	398	50220	71087	84750	96239
	Females	266	534	490	390	487	79354	125079	129710	141002
7	% of total workers to total population ((2/1)	59.33	41.06	50.96	57.65	55.99	48.89	36.95	42.17	42.82
8	% of cultivators to total workers ((3/2)	88.63	79.47	79.89	33.43	35.08	49.28	33.91	30.21	24.18
9	% of agl. Labourers to total workers ((4/2)	5.02	13.52	15.91	60.92	57.90	20.41	38.14	34.22	40.65
10	% of non agl.workers to total workers (5/2)	6.35	7.01	4.20	5.65	7.02	30.31	27.96	35.57	35.16
11	% of agl. Workers to total workers (100-10)	93.65	92.99	95.80	94.35	92.98	69.69	72.04	64.43	64.84
12	% of non-workers to total population ((6/1)	40.67	58.94	49.04	42.35	44.01	51.11	63.05	57.83	57.18

Source: Census of India, 1961 (Vol. IX) Madras, 1971, 1981 and 1991, Series 19, 20 and 23 Tamil Nadu, District Census Handbook, Part X-IX, Part X-A & B, Part XIII-B, and Part XII-A & B, Village & Town Directory, Village & Townwise Primary Census Abstract, North Arcot, Vol. II, 1965, 1973, 1983 and 1996.

Note: 1999 Village population and related details are taken from the village statistical register, Alapakkam, 2000. The households and population (1999) details were prepared by the village administrative official and the local Panchayat Board functionaries for getting government assistance through village development schemes.

It should be noted that although there have been small variations (within each category) in the proportion of agricultural and non-agricultural workforce in the village and taluk levels over the decades, the difference continues to be wide. For instance, in 1991, the proportion of agricultural workers to total workers was 94.35 in the village whereas it was 64.84 at the taluk level. The proportion of non-agricultural workers to total workers was 5.65 and 35.16 respectively. At the village level, between 1991 and

1999 there has been only a marginal change in both the categories of workforce.This indicates that agricultural labourers are favourably placed in this village compared to other villages (see also Naidu: 1995a; 1995b) or even at the taluk level as seen in Table 4.

In the total workforce of the village, more than 90 per cent are engaged in agricultural operations available within and outside the village and only about 10 per cent are engaged in non-agricultural operations available mostly outside the village. Since the village labour force is mostly agriculture oriented, the proportion of non-workers to total population is only a little more than two-fifths of its population in the 1990s, whereas at the taluk level the same is 57 per cent.

Between 1961 and 1991, while the proportion of cultivators to total workers both at the village and taluk levels continued to decline, the proportion of agricultural labourers to total workers was on the increase. This may, to some extent, imply that a considerable proportion of small and marginal cultivators sold their land to other medium/big farmers and became agricultural labourers. Since agriculture is the mainstay in Alapakkam, more than a third of the population are agricultural labourers. The land holding population (including pure tenants) alone constitutes about 55 per cent of the total population.

With this introduction, let us discuss in section 2 the functioning of the village organisation which is born to an understanding of the village leadership, caste structure and land ownership pattern.

Section 2

Structure and Functioning of Village Organisation in Alapakkam

The Village Organisation: An overview

One of the important functions of the village organisation is to formulate rules and regulations for smooth functioning of village activities. Further the fixing of wage rates for agricultural operations, which is the most important and primary occupation in

the village is also carried out by the organisation. The village organisation's functions also include management of temple festivals and settling of disputes arising among villagers.

The village organisation is a two-tier body consisting of upper and lower level functionaries. The upper tier or the supervisory body consists of the members of the upper castes including rich and influential persons of the village. They are generally called as *Nattanmaikars* (a group of persons, almost representing the entire village) and *Kavaimaniyam* (generally one person) who specialises in canal management. Both these are honorary appointments. These posts used to be hereditary till four to five decades ago, but at present it is not. The upper tier is assisted by a group of village level workers called *Thotties* and *Kammukutties*. While the *Thotties* are the main village level workers who undertake all kinds of village level menial works the *Kammukutties* mostly help farmers in irrigation management (for more details on the functioning of various village organisations see Janakarajan 1993 and Sivasubramaniyan 1995).

In Alapakkam, the village organisation is dominated by four caste groups such as Pillais, Reddys, Nayakkars and SCs. Although the upper level functionaries are drawn from the upper castes, the lower level workers, including irrigation workers, are mostly drawn from the SCs (see Table 5). During the year 2000, the agricultural operations in Alapakkam were not effectively carried out due to poor rainfall and drying of the Kaveripakkam tank. Hence the *Kammukutties* were not appointed for irrigation but the *Thotties* were undertaken the usual jobs in that year. The discussion with the village elders shows that the difference between the *Kammukutti* and *Thotti* is that the former group gets a little more remuneration during the irrigation season than the latter group. Whenever the Kaveripakkam tank gets full storage then the *Kammukutties* are routinely appointed.

Table 5 Village Level Organisation in Alapakkam

Functionaries	Castewise representation in the year											
	1988				1992				2000			
	RY	PI	NR	SC	RY	PI	NR	SC	RY	PI	NR	SC
Upper Level:												
Nattanmai	-	1	1	-	-	1	1	-	1	1	1	-
Kavaimaniyam	1	-	-	-	1	-	-	-	1	-	-	-
Delegate to Irri. Board	1	-	-	-	1	-	-	-	-	-	-	-
Lower Level:												
Thotti	-	-	-	1	-	-	-	1	-	-	-	3
Kammukutti	-	-	-	3	-	-	-	3	-	-	-	-
Activeness of village orgn.	Active				Less active				Less Active			

Note: RY = Reddy. PI = Pillai. NR = Nayakkar. SC = Scheduled Caste; - indicates nil.
Source: Interviews held with village functionaries, 1992 and 2000.

In Alapakkam the *Nattanmaikar* and *Kavaimaniyam* usually call a meeting of *ayacutdars* as soon as the Kaveripakkam tank starts receiving supply, with the *Thotties* announcing the information through tom-toming. The meeting decides when to start the maintenance work of main channels and the distributaries and the share of contribution of labour by each *ayacutdar* in the village. Usually one person per acre is required. However, at the initial maintenance work, the allotment per acre goes upto 3 to 4 persons because of the intensity of maintenance which requires more labour. If anyone of the *ayacutdars* fails to contribute his labour, he should substitute it with hired labour. If a farmer fails to do both, he is fined. The *Kavaimaniyam* maintains records of the extent of labour involved in the maintenance work. The *Kavaimaniyam* and the *Nattanmaikars* also have to allot the duration of supply of water to each *ayacutdar* in times of scarcity. The *Kavaimaniyam* supervises the observance of rotation for rationing water and arbitrates over disputes, if any, arising out of sharing water.

The *Kammukutties* and *Thotties* are expected to organize the *ayacutdars* for channel maintenance. They also have to supervise the channels for illegal tapping and preventing misuse of water by the upstream farmers both during normal and lean periods.

Since the *Thotties* are village level workers they have to perform traditional tasks such as beating drums on important occasions, removing carcasses, and carrying messages to the relatives of dead persons. They also have to assist the farmers to build *Kondam* (a temporary earthen embankment in the bed of the channel to divert water to the upland fields) across the channel during lean supply periods.

The village organisation's functions relate mostly to agriculture especially irrigation management. Alapakkam has five irrigation tanks including the main tank of Kaveripakkam. The village organisation takes care of maintenance of all the five tank channels and distribution of water to the *ayacut* with the help of lower level irrigation workers. Since this village is a part of the larger Kaveripakkam tank irrigation network (which serves 14 villages including Alapakkam), it has one representation on the Kaveripakkam tank Irrigation Board (see Table 6). However, this Board has been inactive for the past two decades.

The effectiveness of village organisation is assessed on the basis of whether maintenance of inlet/main/field channels was done by the villagers in the latest and the previous supply year when water was available; whether *murai* system is in vogue; and whether irrigation functionaries such as *Nattanmaikar, Kavaimaniyam, Kammukutti* and *Thotti* are active. The village organisation was active in Alapakkam in 1988-89 but less active in 1991-92 (when the Kaveripakkam tank was at full tank capacity). During the year 2000 Kaveripakkam tank was dry (Table 7) no water was available for irrigation, hence farmers were not active to keep the local organisation functioning effectively.

Table 6 Composition of Kaveripakkam Tank Irrigation Board, 1969-1990

Sl. no.	Name of village	Ayacut (hectares) in 1983	Delegates by caste, 1969								Delegates in 1990
			Brahmin	Nayakkar	Mudaliar	Naidu	Reddi	Pillai	SC	Total	
1	Alapakkam	85.6	-	-	-	-	1	-	-	1	1
2	Athipattu	113.7	1	-	1	-	-	-	-	2	1
3	Cheri	298.0	-	1	-	-	-	1	-	2	1
4	Eralacheri	180.1	-	-	1	-	-	-	1	2	-
5	Kadaperi	27.1	-	1	-	-	-	-	-	1	-
6	Kattalai	129.9	-	1	-	-	-	-	-	1	1
7	Kaveripakkam	590.6	1	2	1	1	-	-	-	5	3
8	Kilveeranam	37.2	-	-	1	-	-	-	-	1	-
9	Kondapuram	213.7	-	-	2	-	-	-	-	2	2
10	Maganipattu	204.0	-	-	-	1	-	-	-	1	-
11	Panniyur	29.2	-	-	-	-	1	-	-	1	-
12	Puthupattu	96.1	-	1	-	-	-	1	-	2	2
13	Sirukarumbur	173.5	-	-	1	-	-	-	-	1	1
14	Thuraiperumpakkam	190.6	-	-	2	-	-	-	-	2	2
	Total	2369.6	2	6	9	2	2	2	1	24	14
	Percentage		8.3	25.0	37.5	8.3	8.3	8.3	4.2	100	

Note: Dash indicates nil; Source: Sivasubramaniyan, 1995, p.103A.

Table 7 Functioning of Village Organisation in Alapakkam

Year	Functioning of VO				Number of Functionaries				Activeness of IIs
	Maintenance of Inlet Channels	Main	Field	Prevalence of murai	Kavai-maniyam	Natan-maikars	Kammu-kutties	Tho-tties	
1988-89	N	Y	Y	Y	1	2	3	1	A
1991-92	N	Y	Y	N	1	2	3	1	LA
1999-00	N	N	N	N	1	3	0	3	LA

Note: N indicates that no maintenance was done by the villagers and no murai system was followed; A = Active (3/4). Y indicates maintenance work was done by the villagers and the functioning of murai was effective. In 1991-92 Kaveripakkam tank reached its full capacity but in 1999-2000 it was empty (dry) due to poor rainfall, hence no maintenance was undertaken.

Source: Interview held with irrigation workers in Alapakkam, May 1990 and November 2000.

The reason behind the less active functioning of organisation in 1999-2000 is as follows: Whenever the tank gets inadequate/no supply, farmers are usually not interested (and also there is no need) to maintain the tank supply channels. The year 2000 happened to be a drought year, hence the tank was empty and the farmers did not undertake maintenance. However, this year was important to Kaveripakkam tank *ayacut* villagers. The World Bank team visited the area and held discussions with the PWD officials during November 1999 to improve tank infrastructure including lining of tank outlet channels. If this work was done, the tail-end villagers would get enough tank supply even during lean periods. In order to discuss the modalities of the work with the World Bank team the local PWD official had organised a meeting with the representatives of all the village ayacutdars of Kaveripakkam tank. Importantly, although many *ayacut* villagers took part in this important meeting, the Alapakkam villagers, including the *Kavaimaniyam*, did not turn-up. When I explained to the villagers the purpose of the World Bank team's visit and enquired about their absence from the meeting, they replied that they were unaware of the meeting. However, the PWD official told that the information regarding the meeting was passed on to all the Village Administrative Officers, but some villagers did not respond positively. This was mainly due to communication gap between the officials and the farmers. However, even after explaining the importance and necessity to attend the PWD meetings the farmers did not react positively. The local organisation is obviously not active, especially in tank water management.

According to the villagers some four to five decades ago the village organisation functioned actively and in an organised manner but its functioning has gradually weakened and at present its working is not satisfactory. In the past, land control was in the hands of a relatively small, and homogeneous upper caste group whose economic power reinforced their superior status in the hierarchy. The leadership and centre of power in the villages were with *Nattanmaikars* and *Kavaimaniyams*. They commanded authority and the power to ensure that the rules regarding management of tank water were effectively enforced. Since then there have been far reaching changes in the land ownership and leadership pattern in the village. These include increase in the number of *ayacutdars*, changes in land ownership pattern, diminishing storage capacity of tanks due to silting, encroachment in the channels, deficient supply from the source for a long time, growing value of water due to changes

in agricultural technology, and increasing private ownership of wells in the *ayacut*. Let us discuss each one of these changes.

Land Distribution and Ownership Pattern

The type of land, whether it is dry or wet, available in a village is an important and primary determinant to measure the prosperity of the village. If the agricultural land in a village is irrigated by a perennial source - either by canal or tank supply or through rich groundwater source - the village can be categorised as a prosperous village. On the contrary, if the land is mostly rainfed and the groundwater source is very poor then the village could be called poor. On this criterion, one can categorise Alapakkam as an `intermediate' village. It is neither prosperous nor poor.

In Alapakkam, area under each description of land according to various settlement accounts are detailed in Table 8 which shows, from the first Settlement (1882) to the latest year (1999), the total extent of land declined only marginally. Major decline (3.76 hectares) occurred only between the first two settlement periods. After that there has not been any change in the total extent of area of the village.

Table 8 Utilisation of Land in Alapakkam Village

(Area in Hectares)

Settlement year	No.of survey fields	Occupied			Unoccupied			Inam*	Un assessed	Poramboke	Total
		Wet	Dry	Total	Wet	Dry	Total				
1882	659	179.9	124.4	304.3	39.6	207.4	247.0	19.9	0	112.9	684.2
1913	659	175.0	121.2	296.2	26.9	89.7	116.6	19.9	0	247.8	680.4
1999	659	199.8	283.3	483.1	8.8	4.9	13.7	4.2	0	179.1	680.1

Note: * indicates both wet and dry land.

Source: Resettlement register (for data 1882 and 1913) of Alapakkam village.
Village Account No.2, Adangal register (1999) of Alapakkam village.

One can assess from the Table that between 1882 and 1913 and even after that a large variation is found in the poramboke lands. This was mainly due to the actual survey and reshuffle of the village land held with the people and the government. There had been a lot of changes (in the land holding pattern) occurred during the settlement periods. This is the main reason, why the extent of poramboke land had changed considerably from settlement to settlement. From the settlement (1882) to resettlement (1913) one can notice that in each category (occupied and unoccupied) and in both groups (wet and dry) the extent of land held with the pattadars declined marginally and in the dry group under unoccupied category the decline being very high which is 57 per cent (117.7 hectares). Moreover, all these lands were included in the poramboke category. As a result, this category of land had increased to 248 hectares (an increase of 120 per cent).

However, across different categories of land major changes had occurred only between 1913 and 1999. Over this period, one can notice, the total extent of `unoccupied' land, both dry and wet, had decreased considerably from 116.55 hectares to a mere 13.69 hectares. Likewise, the `poramboke' land had also decreased considerably. All these lands were clasified as `occupied'. Hence, it is clear that a large extent of `unoccupied' as well as poramboke land area had been given `pattas' between 1913 and 1999. And between wet and dry groups in the occupied category the increase of area under the former group (25 hectares) was much less compared to the latter (162 hectares) group lands.

The changes in distribution of lands over the settlements suggest two important conclusions: (i) between settlement and resettlement a major portion of lands in the wet and dry groups were included in the poramboke category; and (ii) between resettlement and 1999 both the wet and dry groups under the occupied category of lands increased considerably. This increase was at the cost of all categories (unoccupied, inam and poramboke) of lands. In the poramboke category the decline was 69 hectares (28 per cent).

Land Control and its Transformation

The population of the village has increased by 2.75 times between the two settlement periods (1911 and 1981). The available land being more or less fixed, there has been a progressive subdivision of holdings, and a steady increase in the number of *pattadars*. While the total number of subdivisions in the village has increased by 82 per cent between 1913 and 1983 (and nearly doubled after that period), the total number of *Pattadars* (both wet and dry lands) has increased more than two fold over the same period (Table 9). With increasing number of plots and farmers to be served by tank water, the potential for conflicts and the difficulties of mobilising people for maintenance, and enforcing allocation rules also increase, often more than proportionately.

Table 9 Population, Ayacut Subdivisions and Pattadars in Alapakkam in 1911, 1981 and 1999

Population			Ayacut Subdivisions*1			Total Pattadars*2		
1911	1981	1999	1913	1983	1999	1913	1983	1999
645	1776	2011	257	468	534 3	313	742	745

Note: *1 - This ayacut subdivisions include only the ayacut area served by the Kaveripakkam tank. No other `local tank' ayacut land is taken into account.

*2 - Total Pattadars include all Pattadars, i.e., both wet and dry land of the entire village. During 1999, the total Pattadars accounted are 795, in which 50 Pattas are `empty' Pattas, i.e., those empty Patta lands are transferred to some other Pattas, which are excluded from this total.

Source: Census registers 1911, and 1981; Re-settlement (1913), and Updated settlement (1983) registers, and "Chitta" register (1999) of Alapakkam village.

As Tang has observed it is easier to organize collective action in irrigation systems of smaller sizes and with fewer users:

> Even if individual irrigators are willing to contribute to collective endeavours, they have to expend resources to organize among themselves to assign responsibilities and undertake water allocation and maintenance jobs. Both the size of irrigation system and the number of users of the system may affect farmers' actions... all other things being equal, information gathering, communication, decision making and monitoring costs increase as the size of a resource increases. By the

same token, various kinds of transaction costs increase as the number of irrigators increases (1992: 23).

The social composition of land owning groups has changed dramatically: Thus in Alapakkam, in 1913, Brahmins were the dominant land owners controlling about one fifth of the total land available in the village. While Mudaliars and Reddys had a little more than 6 per cent each of the total land holdings, the Pillais had only 3 per cent during the same period (Table 10).

Table 10 Caste Distribution of Land Holdings (Hectares) by Pattadars in Alapakkam village, 1913 and 1999.

Caste	Total Pattadars		Land Type	1913		1999		Land Type	1913		1999		1913		1999		Change over 1913 & 1999
	1913	1999		Extent	% to total	Extent	% to total		Extent	% to total	Extent	% to total	Dry+ Wet	% to total	Dry+ Wet	% to total	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18 (17-15)
Brahmin	55	0	Dry	26.99	12.0	0	0.0	Wet	63.42	29.9	0	0.0	90.41	20.7	0.00	0.0	-20.7
Mudaliar	25	4	Dry	12.69	5.7	0.85	0.3	Wet	15.78	7.4	4.09	1.6	28.47	6.5	4.94	0.9	-5.6
Pillai	15	238	Dry	4.23	1.9	100.63	35.0	Wet	8.86	4.2	85.99	34.1	13.09	3.0	186.62	34.6	31.6
Reddy	24	216	Dry	21.21	9.5	91.75	31.9	Wet	8.15	3.8	50.58	20.1	29.36	6.7	142.33	26.4	19.7
Nayakkar	13	36	Dry	12.36	5.5	5.82	2.0	Wet	10.29	4.9	58.98	23.4	22.65	5.2	64.80	12.0	6.8
SC	62	215	Dry	20.91	9.3	74.54	25.9	Wet	21.49	10.1	43.04	17.1	42.40	9.7	117.58	21.8	12.1
Others	39	36	Dry	14.24	6.3	13.72	4.8	Wet	24.95	11.8	9.23	3.7	39.19	9.0	22.95	4.3	-4.7
Unassessed	80	0	Dry	111.68	49.8	0.00	0.0	Wet	59.06	27.9	0.00	0.0	170.74	39.1	0.00	0.0	-39.1
Total	313	745		224.30	100	287.31	100.0		212.01	100.0	251.91	100.0	436.32	100	539.22	100.0	

Note: Total extent of poramboke land during the year 1913 was 247.75 hectares and the same during 1999 was 179.12 hectares.
Inam land during the year 1913 was 19.92 hectares and the same during 1999 was 13.69 hectares.
Others include Carpenter, Blacksmith, Temple land, Edayar, Barber, Talaiyari, Muslim, Konar, Irular, Fisherman, Chettiar, Pandithar and Udaiyar.

Source: 1. Descriptive Memoir of Alapakkam village No.30 of the Arokkonam taluk of North Arcot district, 1913.
2."Chitta" register of Alapakkam village No. 30 of the Arokkonam taluk of Vellore district, 1999.

In 1999, this pattern was drastically different. Brahmins do not own any land at all and Mudaliars own a marginal extent of 0.9 per cent of total holdings. The land control of other upper castes, namely, Pillais and Reddys, improved from about 3 per cent and 6.7 per cent respectively in 1913 to 34.6 per cent and 26.4 per cent in 1999. It is interesting to note that the Pillais are now numerically dominant in the village and their status in terms of land-holdings has also increased many fold compared to the earlier period. Over the years Nayakkars, who were mostly tenants of the upper-castes, have acquired a considerable extent of land and now own 12 per cent of the total land

holdings. Significantly, the Scheduled Castes have also acquired a sizeable proportion of land - their share in total land holdings rising from 9.7 per cent in 1913 to over 21 per cent in 1999. Actually, they now rank third in the overall possession of land holdings among the different castes.

If we compare Table 10 with Table 8, a slight variations in the wet and dry land holdings will be found between 1913 and 1999. This variation is mainly because of categorisation of total land available in the village. That is, in Table 8 four categories of (occupied, unoccupied, inam and poramboke) lands are reported whereas in Table 10 only two categories (wet and dry) of land are reported. Actually these two categories might be derived from different categories of land as reported in Table 8. Hence the variations as found in Table 10 do not pose any problem for our analysis.

It is also noteworthy that, while the Nayakkars and Reddys have bought lands closer to the tanks which have abundant and assured water supply, the Scheduled Caste members have acquired lands mainly in the tail end which have less assured tank water supply. This shows the power-relations among caste groups in the village.

The changes in caste-class and land holding structure have affected the working of the local village organisation. Though the upper caste land holders are present even now in the village, their position as land owners as well as their authority in the community has declined. With the diffusion of land ownership, and the passing of land control to lower castes, the ability of the village leaders to coordinate, and to enforce rules on maintenance and water distribution has weakened. One could expect a strong irrigation organisation in villages where a single caste dominates compared to those where ownership is diffused among several castes (for a more detailed discussion on this aspect for several other villages served by Kaveripakkam and Dusi-Mamandur tanks see Sivasubramaniyan, 2001).

With regard to other activities of the village such as conducting village festivals, the caste *Nattanmaikars* jointly organise a meeting along with the villagers to discuss the modalities of fund collection, date for the festival and selection of organisers to lead various activities related to the festivals. All these are supervised by the caste *Nattanmaikars* and the festival takes place on the fixed date as per the procedure

already decided. In the same manner, smaller disputes arising among individuals or among caste groups are also settled by the village organisation. In some bigger and unidentified (theft) cases the matter could be brought to the notice of the police authorities through the village organisation and it is settled amicably.

Growth of Wells in Alapakkam Village

According to the farmers of Alapakkam village, the narrowing and silting of the main outlet channels and the siltation of all the five tank beds have reduced the total quantum of supply. Although tank supply is reduced, the *ayacut* has not decreased. If anything, the widespread use of High Yielding Varieties of seeds, increased application of fertilizers and the cultivation of water intensive annual crops like sugarcane, all of which are more demanding in terms of quantum and quality of irrigation, have increased. The spread of conjunctive use of groundwater has facilitated this possibility.

The rapid growth of supplemental irrigation (from wells) came in the wake of the introduction of diesel pumps and, more importantly, after large scale rural electrification. These innovations substantially reduced the cost of lifting water even as the rise in agricultural prices and the easy availability of liberal institutional finance increased the pump-technology of wells and induced their development.

That the wells in the *ayacut* of Alapakkam have grown rapidly is clear from Table 11. The number of wells has trebled between 1913 and 1999; On an average the village wet land has 38 wells per 100 hectares of *ayacut* and 25 wells per 100 hectares of dry land. The overall well density is not sufficient to assess the importance of groundwater inasmuch as yield per well varies. But little is known about this. Also there is great variation within the *ayacut*. These variations in part reflect the extent and reliability of tank supplies and in part the groundwater supply conditions.

Table 11 Density of Wells in Alapakkam during 1913 and 1999

Year	Wet land		Dry land		Total		Wells/100 hectares		
	Area (Hec.)	No. of wells	Area (Hec.)	No. of wells	Area (Hec.)	No. of wells	Wet	Dry	Total
1913	212.4	28	210.9	23	423.3	51	13	11	12
1999	209.5	79	287.8	71	497.3	150	38	25	30

Source: Resettlement (1913) and Adangal (1999) registers of Alapakkam village.

Although Alapakkam village is situated mostly at the tail end of the Kaveripakkam tank, the overall (wet and dry land) well density is low (30 per 100 hectares) due to very limited availability of sub-surface water.

The Growing Demand for Water

The growing demand for water in agriculture is mainly due to three factors: (i) increased use of HYV seeds and chemical fertilizers; (ii) changes in cropping pattern and (iii) introduction of multiple cropping. Before the 1960s farmers mainly raised crops by using local varieties of seeds which did not require much water. Water intensive crops like paddy were grown mainly in the rainy season (except in well irrigated areas). In other seasons dry crops were grown. Well irrigation was not developed much before the 1960s.

This situation has changed drastically in the last 2-3 decades, with the substitution of local varieties by HYVs, switch from seasonal crops to annual crops and increased use of fertilizers, and introduction of multiple cropping. These changes have led to higher demand for water and made control over timing and volume of irrigation crucial. As available supply from the common sources such as tanks and canals has not increased - if anything the neglect of tank maintenance has reduced supplies - there is greater potential for conflicts over water allocation. Controlled irrigation is difficult, more wells have been dug and the existing ones have been deepened.

To some degree this has been taken care of by expansion of wells in the village. But this process has weakened the working of institutions for tank management. Those

who own wells, depend less on tanks and if they get adequate supplies from their wells their interest in tank management weakens. If the well farmers happen to be large in number and they possess more pumpsets in the village, this further weakens the institutions.

This latter problem is reported by the villagers now. A considerable number of big farmers who have lands in the head reach of the tank *ayacut* did not have interest to cooperate in maintenance of channels and for distribution of water. As a result, the resource poor and non-well owning farmers have to contribute more labour to compensate for the big farmers' share during maintenance. The more pathetic situation as reported by farmers is that even after contribution of labour and resources, the big farmers - who are at the head reach location - always take their share first without contributing their due share of labour even during the scarcity period and letting out only poor quantity of supply to the tail-end farmers.

This illustrates that upper caste (Pillais and Reddys) dominance and their resource rich position help them to exploit the resource poor lower caste (SCs) farmers in the village. This has gradually resulted in the negligence of maintenance of channels and other distribution structures by all the farmers in recent years.

With this overview of the functioning of village organisation let us discuss the performance and changes in the agrarian economy in Alapakkam over a period of time.

Section 3

Agrarian Economy of the Village

Nature of Irrigation in Alapakkam

In any village agriculture can be successfully carried out only if enough water resources are available. This may either be surface sources such as canals and tanks or sub-surface source like wells. In Alapakkam both are present. But the quantum of supply available from both the sources is limited. In Alapakkam about two-fifths of available land is classified as wet which is served by tanks. The remaining area is dry land, in which both garden (sole well irrigated) and rainfed lands are included. The

well water supply in this dry land agriculture is precarious, and in most months, especially in the poor rainfall years only a limited quantity of supply is available.

In the case of wet land, tank water is the main source. The supplementation of well water for successful agriculture in the wet land has increased only in recent decades. Available data on wells between the resettlement (1913) and the survey year 1999 do provide a clear picture of the increase of wells in the wet land. But, it should be pointed out that the mere increase of wells alone is not an indicator of better performance of agriculture. The most important factor is the quantum of supply available from the wells. This aspect will be discussed below.

Tank Irrigation

In Alapakkam, there are five tanks supplying water for the wet land. Kaveripakkam tank is the main source which also serves 13 other revenue villages. The second important tank is Arakkaneri. Its main source of supply is the Kaveripakkam tank surpluses. Ayacutwise, next to Kaveripakkam tank, the Sattuvamnatham eri is larger than Arakkaneri. But the former eri gets its supply only from the latter. The remaining two tanks are small in size and they are also fed by the Kaveripakkam tank surpluses and also the drainage available from the Kaveripakkam and Arakkaneri *ayacut* lands (see Table 12).

Table 12 Sources of Irrigation in Alapakkam 1913, 1983 and 1999

Source	Class		No.of wells		Ayacut (hectares)			Assessment (Rs)			Share of assessment			Domi-nant caste
	(1913)	(1983)	(1913)	(1999)	(1913)	(1983)	(1999)	(1913)	(1983)	(1999)				
Kaveripakkam tank	I	I	14	42	84.41	82.51	81.49	1267.30	1251.79	1215.27	39.8	38.3	37.3	RY, PI
Arakkaneri	II	II	7	22	39.51	38.45	40.25	572.66	549.93	579.06	18.0	16.8	17.8	RY, PI
Sathuvanatham eri	II	II	3	10	51.02	48.15	48.33	570.24	540.89	532.58	17.9	16.5	16.3	RY, PI
Perumal eri	II	II	3	3	17.97	16.59	16.59	184.12	170.42	172.57	5.8	5.2	5.3	SC
Sitteri	III	III	1	2	19.47	14.06	14.06	215.96	159.07	159.07	6.8	4.9	4.9	PI
Nanjai anatheenam			0	0	0.00	8.74	8.74	0.00	92.80	106.35	0	2.9	3.2	
Total (wet land)			28	79	212.38	208.50	209.46	2810.28	2764.90	2764.90	88.3	84.6	84.8	
Total dry land			23	71	210.87	292.49	287.79	372.79	503.49	496.32	11.7	15.4	15.2	
Village Total			51	150	423.25	500.99	497.25	3183.07	3268.39	3261.22	100.0	100.0	100.0	

Note: Details of wells during 1983 are not available. RY = Reddy. PI = Pillai. SC = Scheduled Caste.

Source: Re-settlement (1913), Updated Settlement (1983) and Adangal (1999) Registers of Alapakkam Village.

While the Kaveripakkam tank *ayacut* (which is about 40 per cent of total wet land) in the village is classified as Class I *ayacut*, receiving water for two crop periods (about 8 months at full tank level), the Citheri *ayacut* comes under Class III category getting supply for only 3 to 4 months. The remaining three tanks are classified as Class II category supplying water for 4 to 6 months.

Although the village has five irrigation tanks, the major source of supply is the Kaveripakkam tank. Almost all these tank beds (including the Kaveripakkam tank) are silted heavily which has reduced the capacity to half of the original. As a result, the duration of supply is also reduced considerably. In the smaller size tanks, available full tank capacity does not serve even one crop season. This situation has induced the farmers to construct wells to supplement tank water for their cultivation. Since availability of well water basically depends upon the sub-soil conditions, the ability to use well water is denied to many farmers mainly due to prevalence of rocky sub-surface in the tank *ayacut*. Even so, in the wet lands of the village well density is comparatively more than that in dry lands.

There has been a direct relationship between number of wells and the size of *ayacut* (except in Sathuvanatham eri where the sub-surface is fully rocky in nature, hence farmers do not go in for wells). The castewise analysis of wet land holdings shows that while Reddi and Pillai are dominant in the *ayacut* under Kaveripakkam tank, Arakkaneri and Sathuvanatham eri, the SCs and Pillai exclusively own land in Perumal eri and Citheri respectively. Except for a marginal decrease, the extent of *ayacut* among tanks remains constant for over a century. But for dry land, between the re-settlement and updated settlement a large increase (about 40 per cent) is noticed. The contribution of wet land to the village revenue account shows that Kaveripakkam tank *ayacut* ranks first (37 per cent of total land revenue) followed by Arakkaneri (18 per cent) and Sathuvanatham eri (16 per cent). Wet land contributes more than four-fifths of the total land revenue.

Cropping Intensity and Cropping Pattern

The outcome of irrigation may be seen through the intensity and type of crops grown and the yield in a particular year. Though yield details cannot be obtained without a specific survey, the details of cropping intensity and cropping pattern are

available from the village records. These details help us to understand how effectively the available land is utilised by the farmers and whether any change has occurred over time in the cropping intensity and cropping pattern.

Cropping Intensity

Cropping intensity (CI) is the ratio of the gross cropped area (GCA) to the net sown area (NSA). The factors which affect the CI are: (i) the extent and frequency of seasonal rainfall; (ii) availability of tank water supply and (iii) extent of well water use as a supplement to tank water. If all these factors are favourable, the extent of land cultivated will increase. Poor seasonal rainfall and/or uncertain tank supply leads to low cropping intensity.

In Alapakkam the settlement year (1882) was a severe drought year. Consequently, CI was very low - barely 42 per cent (Table 13). The two important factors which lowered the CI are the very low well density and the deficient rainfall. The resettlement period (1913) was a "normal" year which induced a higher cropping intensity (82%).

Recent decades have witnessed the use of advanced technology for crop production as well as the extraction of well water resulting in changes in cropping pattern. Further, the period 1985-90 was a "normal" period, in which three years received above average rainfall (>1000 mm) and for two years the Kaveripakkam tank had adequate supply. As a result the CI increased. It should be mentioned that the CI during the years 1985-90 was comparatively higher than during the settlement and resettlement periods. This increase is mainly due to technological changes i.e., the use of short duration crop varieties/annual crops and the development of well irrigation. Since three out of five years were good rainfall years, which induced the farmers to supplement more of well water for cropping, the CI was higher than the earlier period.

Table 13 Cropping Intensity and Cropping Pattern in Alapakkam Village

Main Group	Name of Crops	Area in Hectares			
		1882	1913	1985-90	1996-2000
Cereals	Paddy, irrigated	109.31	210.21	236.84	130.69
	Paddy, unirrigated	0.00	0	12.96	9.82
	Cholam	1.21	1.06	1.21	0.06
	Cumbu	0.81	1.76	0.81	0.00
	Ragi	14.17	32.49	14.17	0.54
	Varagu	21.46	48.16	8.10	0.00
	Others	1.62	0.93	1.21	1.00
Pulses	Horsegram	9.31	21.55	4.05	0.25
	Blackgram	2.02	0.41	2.83	0.25
	Redgram	1.62	1.08	12.15	10.27
	Sugarcane	0.00	0	81.78	199.82
	Indigo	2.00	4.02	1.21	0.00
Industrial crops	Gingelly	4.48	5.80	14.98	3.22
	Groundnut	12.15	22.79	55.06	79.37
	Other oil seeds	0.40	1.40	2.02	2.90
	Chillies	0.81	0	2.02	0.70
Vegetables	Other vegetables	0.40	0.40	1.21	0.30
	Fruit trees	0.00	0.04	0.00	0.00
Topes	Other trees	0.40	0.66	0.61	0.30
All other crops		0.40	0.57	1.01	1.40
	Gross cropped area (GCA)	182.59	353.36	454.25	440.88
•	Cultivable area (NSA)	432.67	432.67	500.99	497.25
	Cropping intensity	42.20	81.67	90.67	88.66
	Total wells (wet+dry)	22	51	140	150
	Well density: (Wells/100 hectares)	5	12	28	30

Note: Data for the year 1997 are not available (average excludes 1997). Total wells (wet+dry) in 1989 = 140 and in 1999 = 150.

- Occupied+unoccupied+inam lands (Total village land excluding poramboke).

Source: Settlement (1882), Resettlement registers (1913) and the G-returns (1985-90) of Alapakkam Village number 30 of the Arakkonam Taluk of N.A.Dt. Village Statistical Registers (1996:normal year) and Adangal (No.1 Account) Registers (1998: normal year and 1999: drought year) of Alapakkam village.

Compared to the late 1980s, the latest period 1996-2000 has witnessed no change in the CI. This may be due to two factors: (i) inadequate supply of tank water and (ii) very low level of recharging capacity of wells. As indicated earlier, the increase of wells alone does not indicate increasing prosperity. If the available supply from wells is limited, then the well water cannot be used for augmenting production.

Further, if the water level is continuously going down many wells may go dry. As a result, wells may exist without necessarily yielding adequate amounts of water. Exactly, these two factors are currently operating in this village which resulted in no change in CI.

Cropping Pattern

Since the CI is influenced by the duration of crops on a given land it is again important to know what type of crops are grown in a particular period of time. Cropping pattern is the sequence of different crops grown in a year on a particular field. In Alapakkam, paddy is the principal crop. There are three main cropping seasons in the village: *Sornavari* from May to August, *Samba* from September to January, and *Navarai* from February to May. The important crop is *Samba.* Nursery preparation is done by using well water. However the required water supply for transplanting paddy and its subsequent growing period depends mostly on the north-east monsoon and the supplies available from the Kaveripakkam tank as well as the four local tanks, namely, Arakkaneri, Perumal eri, Sattuvamnattam eri and Citteri. The quantum of water storage is determined during the months of November/December. In this season if the rainfall or the tank supply fails the yield of the crop would be reduced considerably.

Sowing of *Navarai* crop is mostly conditioned by the availability of tank water. If the supply is not adequate, the area irrigated by well water would also be reduced drastically. The *Sornavari* crop is raised by using well water alone. Generally the available well water in the tank *ayacut* is a function of the available tank supply. Hence if there is no tank supply there is practically no paddy cultivation in the *Sornavari* season.

The predominance of paddy is mainly due to the soil conditions in the *ayacut* and the seasonal, variable nature of water supply for irrigation. Where the soil is not fertile and even seasonal supply from the tank is inadequate, dry irrigated crops like millets, pulses, and groundnut are raised. Where abundant and assured supplies of irrigation are available (mostly by using wells) **water intensive** annual crops such as sugarcane are grown. But their extent seems small.

Available data on cropping pattern and cropping intensity relating to the settlement (1882), resettlement (1913), in the years 1985-90 and during 1996-2000 in Alapakkam village provide an interesting picture. In the first two settlement periods about two-thirds of the gross cropped area were under paddy. This changed considerably in the late 1980s and 1990s. During this period, the extent of paddy decreased to half and one third respectively of the GCA. This decrease has happened at the cost of annual crops such as sugarcane. The share of sugarcane in the GCA was about 20 per cent during the late 1980s and it has further increased to 45 per cent during the 1990s (Table 13). Oilseeds constitute an important crop (about 10 per cent of GCA during 1882 and 1913) around 16 per cent during the late 1980s and 20 per cent in the late 1990s. Since oilseeds cultivation is not water- intensive, farmers were inclined to increase its cultivation. Further, this also implies that available water supply (both from the tank and wells) was also inadequate or less compared to the earlier decades, hence farmers must have opted for dry irrigated crops. All the remaining crops especially cereals and pulses have declined considerably from about 30 per cent of GCA during 1882 and 1913 to around 10 per cent in the later years. Table 13 shows that the cultivation of cereals (except paddy) has been drastically reduced in the latter half of the 1980s and the 1990s.

This decrease also raises doubts about the actual cropping pattern practised in the village. That is, whether the cultivation data as provided by the village authorities are genuine or not? Even if the data are correct, then one could ask why the area under principal crops such as paddy and other cereals were reduced especially in the late 1990s? This will require futher inquires on the cropping pattern in the village or at least comparable data for other such villages are necessary to find out the existing situation of cultivation.

The type of crop to be raised land depends on the soil conditions and the availability of water. In Alapakkam the major crop cultivated is paddy. Next important crops are sugarcane, and oilseeds. However the relative importance of these crops varies across reaches, when the *ayacut* is divided into two reaches as head and tail. The poor accessibility of tank water supply in the tail reach of the village forced farmers to cultivate less water intensive/shorter duration crops. If these tail reach farmers have access to supplemental sources other than the tank supply, then one could expect the

cultivation of annual crops such as sugarcane. The head reach farmers tend to raise water intensive/long duration crops due to locational advantage. During both the settlement and resettlement periods no major change in crop cultivation (i.e., from paddy to sugarcane) took place in the village. Changes have occurred only in recent decades. Hence, it is important to analyse the variations in cropping pattern in the village in the 1980s and in the 1990s.

The supplemental source of well irrigation (due to locational advantage, good availability of ground water) induced a few head reach farmers to raise annual crop such as sugarcane. This option is not available to the tail end farmers. This is due to two factors: (i) poor resource availability of the tail reach farmers (as they are mostly SCs) which does not enable them to invest in well irrigation and (ii) marginal land holdings coupled with tail end location induced the farmers not to dig wells and even if they ventured to do so the available yield could be low.

By and large, changes in cropping pattern especially in the last few decades are apparent in the village. The important point is that the available tank water supply supplemented by wells is an inducing factor for the changes in cropping pattern as well as CI. Where the supply of water is abundant, the water intensive crops and the annual crops dominate. In the less abundant water supply regions only dry/garden crops are grown. More importantly, when both the surface and groundwater sources are limited the area under crops grown are reduced considerably and the type of crop raised could also be changed.

Area Irrigated by Source

The latest figures (1996-2000) on cropped area in Alapakkam show that about four-fifths of total cropped area get irrigation from wells and tanks. Between the two sources, area under wells constitute about three-fourths of total irrigated area. Area irrigated by tanks is about one-fourth of total irrigated area (Table 14). This is mainly due to two factors: (i) available supply from the tanks is inadequate to feed the entire *ayacut* and also this source is sometimes unreliable due to failure of monsoon, and (ii) even if the tank supply is available it is mostly useful to sustain only

one crop season. Even though well water supply depends mostly on the quantum and duration of supply available from the tanks as well as the rainfall pattern, this source is more reliable than the tank supply because, during the monsoon period well irrigation helps grow at least one crop to most of the farmers compared to non-well/solely tank dependent farmers.

Among crops irrigated by wells, sugarcane comes first (44 %) followed by paddy (26 %). Other crops irrigated by wells are negligible. Contrary to this, paddy (11 %) and sugarcane (10%) occupy an equal rank under tank irrigation but their extent seems to be very small.

Table 14 Area Irrigated by Sources in Alapakkam, 1996-2000

(Area in Hectares)

Name of Crops	Area irrigated by			Total Cropped Area
	Wells	Tanks	Total	
Paddy	93.61	46.90	140.51	140.51
Cholam	0	0	0	0.06
Ragi	0.46	0.08	0.54	0.83
Others	0.50	0.00	0.50	1.00
Redgram	0.00	0.00	0.00	10.27
Blackgram	0.00	0.00	0.00	0.65
Others	0.25	0.00	0.25	0.25
Sugarcane	156.34	42.68	199.02	199.02
Groundnut	5.75	6.27	12.03	79.37
Other oil seeds	2.30	1.50	3.80	6.12
Chillies	0.70	0.00	0.70	0.70
Other vegetables	0.30	0.00	0.30	0.40
Tree crops	0.90	0.00	0.90	1.70
Total (GCA)	261.11	97.44	358.54	440.88

Note: Data for the year 1997 are not available.

Source: Village Statistical Registers (1996:normal year) and Adangal (No.1 Account) Registers (1998: normal year and 1999: drought year) of Alapakkam village.

Labour Absorption in Agriculture

Interviews held with the villagers revealed that the agricultural workers have wider options of job opportunities apart from the local/surrounding village level agricultural work. They are not only engaged in agricultural work, but also in several

other activities such as the work related to construction industry, brick-making, small scale agro-based industrial work like rope making etc. Most of these works are seasonal in nature, hence the labourers return to the village during the main agricultural season. Whenever the monsoon/tank supply fails and the prime agricultural season in the nearby villages does not provide adequate employment they are mostly unemployed and their income level comes to low. One of the respondents (agricultural worker) stated that during the lean agricultural year, most of the workers live with a bare-minimum level of resources, say on an average of about Rs. 300 to Rs. 500 per month per family. During that period their livelihood requirements are mostly met by the Public Distribution System and borrowings from the big land owners or the villagers.

Changes in the Ownership of Agricultural Assets

The changes in the ownership of different type of animals, agricultural implements and agriculturally oriented mills in the village between 1990 and 1999 are presented in Table 15.

Table 15 Changes in Livestock Ownership and Agricultural Implements and Machinery in Alapakkam Between 1990 and 1999

Type of Animals/Agricultural implements	1990	1999	% change over 1990
Bulls and Bullocks	240	180	-25
No.of milch animals	70	83	+19
He-buffaloes	26	10	-62
No.of calves	33	51	+55
No.of sheep and goats*	1500	1700	+13
Total	1869	2024	+ 8
Carts(2) and Tire carts	12	12	0
Ploughs	105	85	- 19
Power tiller	0	1	+100
Tractors	2	5	+150
Total	119	103	- 13
Jaggery mill	2	2	0
Rice mill	2	2	0
Handlooms	1	2	+100
Total	5	6	+ 20

Note: * refers no goat has been reared in this village.
Source: Village statistical registers of Alapakkam village, 1990 and 1999 and Interviews held with the villagers, 2000.

The total number of animals owned in the village has gone up from 1869 to 2024, an increase of about eight per cent. Across animal population, while the increase is considerable in the case of calves (mainly because of rearing cows and buffaloes for milk production), the bulls and bullocks and he-buffaloes decreased considerably over this period. This decrease is mainly due to the increased level of mechanisation of farming. It is clear from the table that during 1990 the number of power tillers and tractors was only two, but it increased to six during 1999. This has been an important phenomenon for further reduction in the bullocks and the he-buffalo population as well as reduction in the use of number of ploughs in the village. While no family is engaged in rearing goats, sheep rearing is a major occupation in a considerable number of families. About 100 families, mostly small and marginal farmers and tenant households are rearing sheep. The consumption and sale of milk to the local milk society by the upper caste households has led to an increase in the number of milch animals.

Non-Agrarian Economy

The number of non-agricultural workers increased marginally from 59 to 79 between 1991 and 1999. The castewise composition of non-agricultural workers (as seen in Table 2) shows that out of 79 only 22 belonged to the SCs and the remaining 57 belonged to the upper castes. Thus the non-agricultural occupations available outside the village were mostly taken by the upper caste landed households. Most of the non-agricultural workers are placed under `casual workers' category and they were engaged mainly in industries located in the semi-urban and urban centres.

Some of the sources of non-agricultural incomes to the households within the village are from rearing livestock, petty trade like running the tea-shop and grocery shops, rice milling and fabric manufacturing through handlooms. As far as the non-agricultural occupations available outside the village are concerned, the employment in the construction industry (mostly available in the urban areas like Chennai and Vellore), brick-kiln work, road works, chittal and mastry works are important.

With this brief discussion on the agrarian economy and the non-farm activities in Alapakkam let us conclude with the main observations of the study which is presented in section 4.

Section 4

Concluding Observations

During the last decade (1991-2000) the village has witnessed some crucial changes both in the agricultural and non-agricultural sectors. Demographically, the growth rate of population has declined considerably compared to the taluk level between 1981 and 1991 and also during the later period. This reduction in growth rate of population may be attributed to the gradual increase in the level of literacy. Incidentally, more than a half of the village population is literate. Of the thirteen caste groups, Pillais and Reddys constitute a major chunk (more than 70 per cent) of the total population. While a large number of cultivators and non-agricultural workers belong to the land owning upper castes a major portion of agricultural labourers belong to the SCs. More than 90 per cent of the total workforce is primarily engaged in agricultural operations.

With regard to village leadership, although there are four upper level village functionaries none could represent the village on the Irrigation Board of Kaveripakkam tank. This is mainly due to inefficiency in the functioning of local organisation to gather different caste leaders to elect a member to the Irrigation Board from the village. This inefficiency led to less active functioning of the village organisation during 2000.

Over a period between 1913 and 1999 there has been a tremendous change in the land ownership pattern. Brahmins and Mudaliars dominance has been replaced by Pillai and Reddy communities. The SCs also own a considerable amount of land. They now rank third in the overall ownership of land holdings among different castes. Both the dry and wet area have been increasing at the cost of poramboke and inam lands. This increase was more prominent in the case of dry land than in wet.

Although the total number of wells available for irrigation has increased considerably between 1983 and 1999 the quantum of supply tapped from these wells is not sufficient for improved irrigation. This is because the sub-soil strata are mostly. Regarding surface irrigation sources, out of five irrigation tanks, Kaveripakkam tank still serves as the major source of supply. However, recent years have witnessed poor

availability of water from this source resulting in less cropping intensity compared to the earlier period of 1985-90. The cropping intensity has declined considerably from 91 to 60 per cent between 1985-90 and 1996-2000. Further, there has been a considerable change in the crops grown in the village. This change has been from cereal cultivation to crops such as sugarcane and oil-seeds. Except paddy, all other cereal cultivation has been given up in recent years. Changes in food habits (as indicated by the village elders that a gradual shift from consumption of coarse cereals such as Cholam, Cumbu, Thinai etc. to fine variety cereals like Paddy has increased due to the government's public distribution system) have also led to changes in cropping pattern.

About 70 per cent of labour force is engaged in this agriculture in Alapakkam and this labour force has remained constant over a period of time. In recent years the agricultural workers have multiple work opportunities outside the village, as a result, their mobility to serve in different kinds of small scale industrial works has been rising. These small scale works are available in both types of industries such as agro-based and metal based. Although job opportunities are widespread, most of these jobs are seasonal in nature. Hence the seasonal income fluctuates depending upon the availability of work. As a result, the annual income is very low (around Rs. 4000 p/a) and some agricultural families live with bare-minimum needs.

The overall livestock population has increased marginally over the last one decade. Rearing of milch animals and sheep is fairly common. Progress in mechanisation of agriculture has led to reduction in the number of ploughs and bullocks in the village. A marginal increase of handlooms is noticeable. On the whole the survey captures the point that this village is predominantly agriculture oriented, hence most of the changes are in relation to agriculture rather than other industrial activities.

The changes in caste structure shows that Pillais and Reddys are dominating the village replacing the earlier upper castes like Brahmins and Mudaliars. Although SCs are gradually acquiring lands and they rank third in the overall land holding status in the village they are still in the lowest rungs in the social hierarchy. Since the upper castes such as Pillais, Reddys and Nayakkars are dominating the village, the power to select

the village leadership and enforce the rules and regulations of the village society still vests with them.

The resurvey shows that there have been considerable changes in the village society during the past one decade in the three important aspects namely, caste structure, land ownership, and power relations among castes. The caste structure remained unaltered except in Brahmin category, where there is no member is present now. The social composition of land owning groups has changed drastically in 1999. While Mudaliars own less than one per cent of total holdings the other upper castes, namely, Pillais and Reddys control about three-fifths of the total holdings The changes in caste-class and land holding structure have definitely affected the working of the local village organisation. The decline in upper caste dominance has resulted to poor control over the village organisation. With the diffusion of land ownership and the passing of land control to lower castes, the ability of the village leaders to coordinate and to enforce rules on maintenance and water distribution has weakened. This later aspect is clearly brought out from the survey. It shows that the local organisation was not active to represent members in the development activities such as tank improvement programmes as implemented by the PWD. This survey amply shows that the development of village economy requires a revamping mechanism to strengthen the village organisation to function effectively.

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