Chapter 5

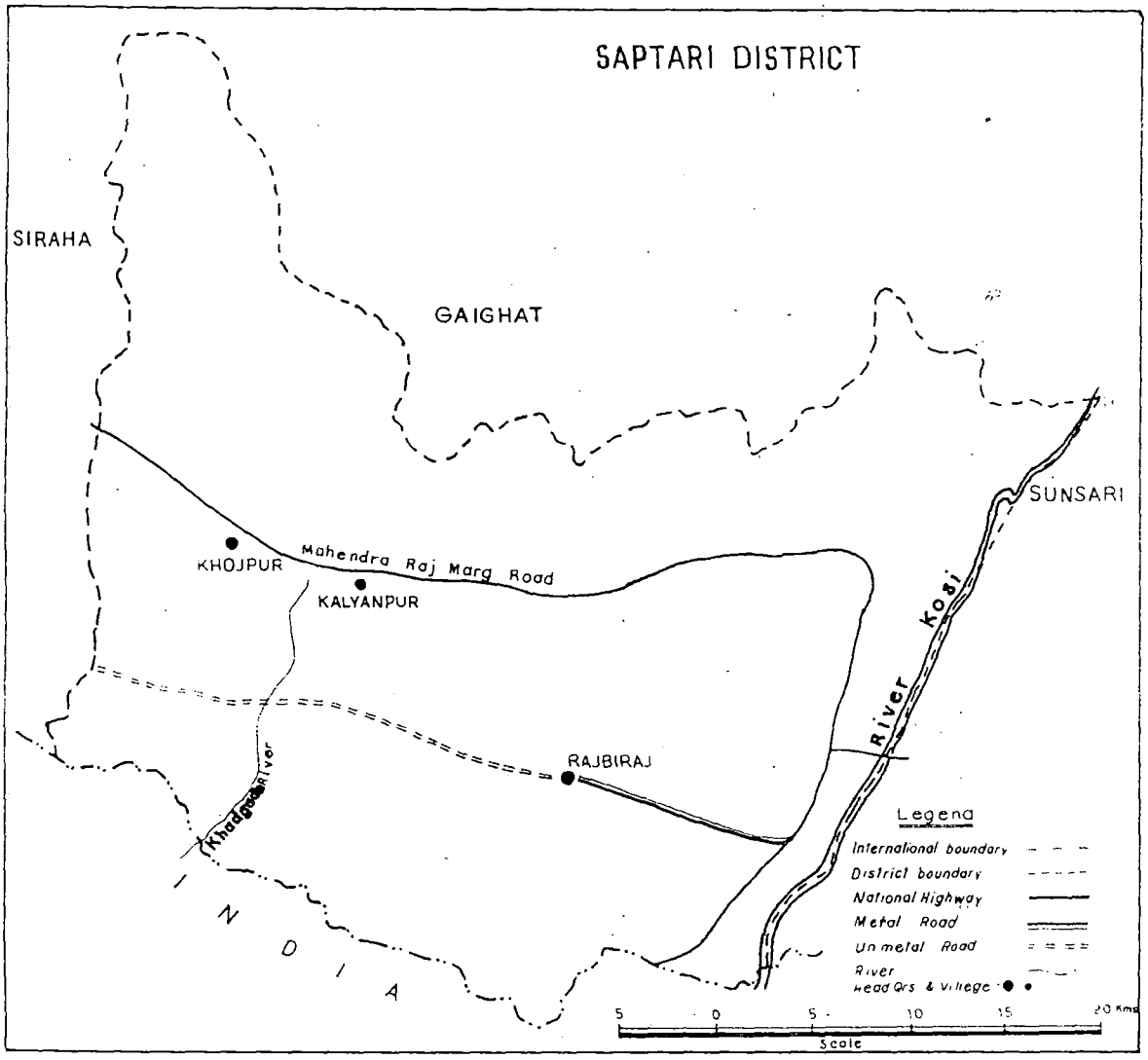
IMPACT IN SAPTARI

5.0 INTRODUCTION

5.0.0 We discuss in this chapter the impact of the Sagarmatha IRDP on the use of land and labour power in the district of Saptari. For the district of Saptari we study the case of Kalyanpur. The next chapter will deal with Sukhipur of the district of Siraha. The Sagarmatha IRDP covers three of the five districts of the Sagarmatha Zone. The project was to operate originally for five years beginning from 1978-79. From the accounts sent in September 1988 by the office of the Co-ordinator of the project we learn that the Asian Development Bank sources made available Nepali Rs. 431,811,562 to the project. We need to add that not more than half of the stipulated expenditure was made for the project. Defects in the execution of the projects and more especially inability of the Government to evolve a viable, commercially competitive and efficient system of execution accounted for this unhappy shape.

5.1 DESIGN OF SAMPLING

5.1.0 As we have adequately explained that our sample of households is taken not from the village panchayat but from the central village of the group of villages, generally three or four in number, that constitute the village panchayat. Here the


SAPTARI DISTRICT
SIRAHA
GAIGHAT
SUNSARI
KHOJPUR
Mahendra Raj Marg Road
KALYANPUR
River Kosi
RAJBIRAJ
Khadgar River
INDIA
Legend
International boundary
District boundary
National Highway
Metal Road
Un metal Road
River
Head Qrs & Village
5 0 5 10 15 20 kms
Scale

Kalyanpur village consisted, at the time of our survey, about 200 households. At the centre of this village we take a random spot and survey 50 households around this random spot. So our sample of households makes up 25 per cent of the total number of households of the village. Apart from the fact the 50 is a large number, when the proportion of the households samples is so high the sample design is nearly free from any limitation.

5.1.1 The village we sample is exposed to the test of the IRDP project benefits. Our sample is the sample of the test population or of the Centre of the project benefits. Similarly, we need for comparison a population that is on the whole not exposed to the benefits of IRDP. This is generally known as control population. Compared to the test population which is taken as the centre of benefits the control population may also be regarded as a periphery. For the purpose of this control population or periphery we select a central village named Khojpur of the Khojpur village panchayat. Here the size of our sample of households is 49. This sample is taken from a total of 150 households in the Khojpur village. This means that the sample size makes up 33 per cent of the parent population. Here also we fixed a random spot in the centre of the village and all the sample households were located uniformly round this random spot.

5.2 NATURE OF BENEFITS GIVEN

5.2.0 IRDP benefits to Kalyenpur were mainly directed to

farmers. The two main agencies for distribution of these benefits have been SAJHA and the Agricultural Development Bank. Even the funds of Sajha are coming from the agricultural development bank. Sajha distributes loans upto a given amount. Higher loans are issued by the local branch of the agricultural development Bank. On each of these higher loans the borrower has to furnish securities. Generally private operators buy shallow tubewells and mini-deep tubewells on the basis of loans they get from the agricultural development bank. The bank certainly verifies the purchases of these capital goods for which it gives loans. The main source of irrigation in Kalyanpur is underground water. But a good source is also a stream which flows by its side. Pumpsets are also used to get water from ponds where they are available. The Sajha issues small loans generally without securities. It also sells seeds and fertilisers to farmers at subsidised prices. There is also an agricultural extension service centre for giving training to farmers on the raising of crops. There is in addition a verterinary service centre in the village giving free service. All these facilities are the direct results of the IRDP here. In addition a good market centre for use on market days have been constructed under the IRDP.

5.3 IMPACT ON GENERAL INDICATORS

5.3.0 The average size of family of Kalyanpur is 7.08, while that of Khojpur is 6.67. Statistically the difference in family size between the two samples is not significant. The higher size

of family is often the manifestation of higher number of couples in a family. Thus the average number of couples in a Kalyanpur family is 2.02 and that in a Khojpur family is 1.76. It is not very clear if recent rejuvenation of agriculture in Kalyanpur as a result of IRDP activities have induced Kalyanpur to have more joint families for the purpose of advantage in farming.

5.3.1 We would like to compare the percentage of unmarried boys in the age-group 15-35 between Kalyanpur and Khojpur. We can see from table 5.1 that the difference in the proportion of

Table 5.1

Proportion of Unmarried Boys in the Age-group 15-35

Sample	Total no. of boys in the age-group 15-35	No.of unmarried boys in the age-group 15-35	Proportion of unmarried in the age-group
Kalyanpur	68	30	.44
Khojpur	54	23	.43

unmarried boys in the centre and in the periphery is not statistically significant. To compare the proportion of unmarried among the girls of the age-group 15-35 is not that easy. Because all the married girls of the same age-group have come in most cases to the village concerned from other villages.

5.3.2 It is, therefore, necessary to make an estimate of the number of females of the age group which would have existed if the girls of these households who have been married off outside are counted. In order to make this estimation what we do is this : We use the sex ratio in Age-group 0-15 to find the number of females in the age-group 15-35 against the number of males in the same age-group, namely, 15-35. The total number of girls thus derived for the age-group is found in the column earmarked. On the basis of results of Table 5.2 we are in a position to say that the difference in the proportion of

Table 5.2

Proportion of Unmarried Girls in the age-group 15-35

Sample	Total no. of girls in the age-group	No.of unmarried girls	Proportion of unmarried girls
Kalyanpur	61	8	.13
Khojpur	41	6	.15

unmarried girls in the centre and the periphery, namely, in Kalyanpur and Khojpur is not statistically significant.

5.3.3 We find clearly that the launching of IRDP in Kalyanpur has had no impact on the proportion of unmarried boys or girls in the age-group 15-35. If work has been available in a scale much larger than before it would have been tempting for households to get the boys and girls employed for a number of years for the purpose of capital formation for marrying them off.

5.3.4 Generally to study the behaviour of births and deaths from rather small populations might at times be hazardous. Although the respective populations are not small from the standpoint of sampling, certain occurrences like deaths may fluctuate as a result of some deaths being caused by near-epidemics. In Kalyanpur a moderate (not as much as Sukhipur's about which we wrote in the following chapter) market complex has been constructed as a part of IRD programmes. It is feared that for lack of clearance of the accumulated garbages, disease germs flourish causing diseases and relatively more deaths than in Khojpur where no market complex has been built up. As in Sukhipur we have here a case of lowering of expectation in life as a result of absence of cleaning arrangements of market places where garbages get concentrated as a result of complexes being constructed.

5.3.5 The records of births and deaths we obtained, show that 60 persons were born during the last five years in Kalyanpur. In the same period 24 died. When we compute the number of births per thousand, this comes up to 33.9 per annum, while the number of deaths per thousand is 13.6. The corresponding figures of births and deaths of Khojpur are 72 and 15 respectively. Thus the number of births per thousand per annum is 43.8. Likewise the number of deaths per thousand per annum is 9.0. Kalyanpur has low birth rate and high death rate, compared to Khojpur's.

5.3.6 We may not be wrong, when we assume that half of the number of deaths in these villages, occur in the age group upto 5 years. Then Kalyanpur should have approximately (60-12) or 48 in this age group. But the recorded tabulation shows 60 in the age group upto 5. Our conclusion then would be that Kalyanpur, has 12 persons more in this age group. Similarly Khojpur should have (72-8) or 65, in the age group upto 5 years. But it has 74 in this age group. Hence this sample shows excess of 9 persons in the same age group, over the number expected.

5.3.7 With these assumptions regarding births and deaths, the immigration in the age group upto 5 years has been 12 in Kalyanpur and 9 in Khojpur. Though Khojpur is the periphery of our study area, it is not excluded from some benefits of the IRDP. The distance between the two panchayats is about only a few kilometres. The distance of Khojpur from the project's coordinators office in Dahan is only 25 kilometres. The vehicle services running along the Mahendra highway (in between these villages) has facilitated labour mobility. Hence immigrants have also settled in Khojpur. Further Kalyanpur represents old settlement, while Khojpur is a new settlement. Therefore the latter decidedly provides cheaper place for the migrants. There is little doubt that Sagarmatha IRDP's activities have been attracting the poor immigrants, from distant hills and even mountains, who settle often around the periphery.

5.3.8 Assuming that the number of adult immigrants is half the number of children immigrants we may have the total number of immigrants in Kalyanpur as 18 and 14 in Khojpur. So the percentage of immigrants in Kalyanpur sample is 5.1 in 5 years. The annual rate of immigrants then amounts to 1.0 per cent. Similar computation gives Khojpur's percentage as 4.3 in 5 years. So the annual rate of immigration into Khojpur is 0.9 per cent. Khojpur thus has lower annual rate of immigrants. It is clear that the combined area of both Kalyanpur and Khojpur attracted work seeking immigrants.

5.3.9 The difference in figures of death and birth in Kalyanpur and Khojpur are respectively 36 and 57. So, the annual increase of population of Kalyanpur is 2.3 per annum and of Khojpur is 4.1 per annum. When we deduct the annual rate of immigration, the rates of natural increase of population comes up for Kalyanpur as 1.3 and for Khojpur 3.2.

5.4 IMPACT ON EMPLOYMENT

Good employment (more than 150 days employment) for Kalyanpur adults amounts to 50 per cent and for Khojpur 44.2 per cent. The rate of good employment for adult male and female is higher in Kalyanpur, compared to Khojpur. As for the male adults the percentage for Kalyanpur and Khojpur are 74.1 and 67.8 respectively. For female adults the rates are 21.3 and 10.0 respectively. The proportions of employed children in the age

Table 5.3

Good Employment of Adults

Sample	Percentage of adults in Good Employment
Kalyanpur	50
Khojpur	44

Table 5.4

Good Employment of Adult Males

Sample	Percentage of Male Adults in Good Employment
Kalyanpur	74
Khojpur	68

Table 5.5

Good Employment of Adult Females

Sample	Percentage of Female Adults in good Employment
Kalyanpur	21
Khojpur	10

group 10-15 in Kalyanpur and Khojpur respectively are .23 and .28. But there is marked difference in the proportion of children in the age group 5-10. Thus the proportion of employed children in Kalyanpur and Khojpur is .18 and .31 respectively. This

difference is statistically significant. So children of Kalyanpur participate in primary education. As we shall find later in the Chapter Khojpur is inhabited by relatively poorer people who need to supplement their incomes by the incomes of minor children. Paradoxically female labour participation is lower in Khojpur. Although the income status of the people of Khojpur is lower, the ethnicity status of both villages is the same. The higher female employment in Kalyanpur is due to the opening of some trades such as those of vegetables, puffed rice and beaten rice. This opportunity is strengthened by the IRDP activities being centred in Kalyanpur. Two market days a week are held here, and people from different villages come here on such days. But there is no such opportunities in Khojpur.

The percentage of good employment for female adults for Kalyanpur is 21.3 and for Khojpur it is 10.0. The difference in proportion is statistically significant. To make the significant test, we can treat the number of females with good employment as a binomial variable and the hypothesis to be tested is

$$H_o : P = .10$$

$$\text{under } H_o = np = 80 \times .10 = 8$$

$$\overline{npq} = 8 \times .9 = 7.2$$

$$\sqrt{\overline{npq}} = 2.68$$

The critical region following normal curve approximation will

consist of the two intervals,

$$X - 2 = 8 - 5.36 = 2.64$$

$$X + 2 = 8 + 5.36 = 13.36$$

So the difference in the percentage is found to be significant.

The preceeding analysis of employment is further supported by the data summarised in table 5.6

Table 5.6

Number of Days Employed in Kalyanpur and Khojpur

Description	No. of days employed	
	Kalyanpur	Khojpur
Mean of adults	171	155
Mean of adult males	218	191
Mean of adult females	116	103
S.D. of adults	91.08	83.23
S.D. of adult males	87.89	83.90
S.D. of adult females	58.51	46.93

All the three categories of adults, namely, all adults together, adult males and adult female enjoy higher number of days of employment in Kalyanpur than in Khojpur. But when we put to statistical test, the difference in the number of days employed is significant at 5% level of significance only for the adult

males. The difference in the case of two other categories is significant only at 10% level of significance.

5.5 IMPACT ON DISGUISEDLY UNEMPLOYED

5.5.0 Among the 113 adult males of Kalyanpur five have been exempted by their families from having to work. Again 12 adult males are full-time students. So adult male labour force reduces itself to 96. Of this adult male labour force all are employed. In the case of Khojpur the adult males number only 96. Of these four persons are excluded from the labour force on their being old as well sick, some of them due to excessive drinking. Again 5 persons are full time students. So 87 adult males are available for work. All of them are employed. According to our definition of employment, we have cent per cent employment both in Kalyanpur and Khojpur. Any one who is employed even for one full day is regarded by us as employed.

5.5.1 We concede that some of the members of the labour force who withdraw from the working force might have joined the working force if the economic environment and productivity status of the grass-root rural areas might have been far superior. Although in the setting of these grass-root rural economies it is not possible to locate any absolutely unemployed person, our distinction of the good and bad employment on the basis of which we compared the performance of the centre and the periphery in the preceding pages should help us to measure, the extent of

underemployment in these villages and may even help us to locate disguisedly unemployed persons, the persons who fail to employ themselves fully in the present productivity status of these village economies.

5.5.2 As for the employed adults we have in Kalyanpur 176 of them. The total number of mandays of employment enjoyed by these adults amounts to 30,096. If we take as standard that every adult employed should be employed at least for 300 days a year, then we may judge that 100 persons are fully employed and are disguisedly unemployed. Consider that perhaps we cannot afford to be so ambitious. Therefore let us take 250 days of employment as some kind of a full-employment for these village economies. Then 56 persons may be judged as disguisedly unemployed. To lower again this standard to 200 days of employment, 26 persons are considered as disguisedly unemployed.

5.5.3 In the case of Khojpur if we consider that 300 days of employment is a period of reasonable full employment, 71 adults employed in this village may be found as disguisedly unemployed. With 250 days of employment taken as the yardstick of full employment, 56 persons may be declared as disguisedly unemployed. Lowering the yardstick of full employment to 200, we find that 33 persons become disguisedly unemployed. This disguised unemployment is higher in Khojpur, the periphery than in Kalyanpur, judging the mandays of employment of the employed adults.

5.5.4 As for the employed male adults of Kalyanpur, the total number of mandays enjoyed by a total of 96 employed male adults is 20,928. Thus taking the yardstick of full employment as 300 days, about 70 adult males find fully employed leaving 26 adult males disguisedly unemployed. With 250 days as the unit of full employment, 12 adult males have to be disguisedly unemployed. With 200 days as the measure of full employment we find that more people than 96 male adults, already employed in Kalyanpur can be employed. In fact, with this measure of full employment (that is, none being given more than 200 days of employment a year), 105 persons can be given employment. This means that with a total supply of 96 male adults in the labour market for the male adults the village economy has a shortage of nine male adults.

In Khojpur with 300 days as the measure of full employment, 32 adult males become disguisedly unemployed. Only 21 adult males will be disguisedly unemployed, if days of employment given to an employed adult male are at rate of 250 days. If 200 days are taken as the unit of full employment, then only 4 adult males are left as disguisedly unemployed.

Table 5.7

Disguisedly Unemployed Adult Males
(With unit of full employment as 250 days)

Sample	Number of adult Males employed	Number of disguisedly unemployed
Kalyanpur	96	12
Khojpur	87	21

5.5.5 We summarise in Table 5.7 the data on the disguisedly unemployed of the two villages with 250 days as the unit of full employment. We find the difference in the number of disguisedly unemployed adult males in the two villages statistically significant.

Table 5.8

Disguisedly Unemployed Adult Females
[With unit of full employment as 300 days]

Sample	Number of Adult Females employed	Number of disguisedly unemployed
Kalyanpur	80	49
Khojpur	60	39

Table 5.9

Disguisedly Unemployed of Adult Females
[With unit of full employment as 250 days]

Sample	Number of adult females employed	Number of disguisedly umployed
Kalyanpur	80	43
Khojpur	60	35

Table 5.10

Disguisedly Unemployed of Adult Females
[With unit of full employment as 200 days]

Sample	Number of adult females employed	Number of disguisedly umemployed
Kalyanpur	80	34
Khojpur	60	29

5.5.6 As for the disguisedly unemployed among the employed adult females the percentage is always apparently higher in the Khojpur, the periphery than in Kalyanpur centre. Although this difference may not be statistically significant, considering all the three categories of employed persons, namely, the adults, adult males and adult females, there is little doubt that apparently more employment opportunities are found in Kalyanpur, the centre, than in Khojpur, the periphery.

5.6 IMPACT ON THE INTENSIVE USE OF LABOUR POWER

5.6.0 The tables 5.11 to 5.16 compare the intensity of the use of labour power between the centre and the periphery.

Table 5.11

Labour use Index of adult working force in Kalyanpur

Percentage of adult Working force	Intensity of use (less than)
2.8	.15
31.2	.30
49.9	.45
60.1	.60
74.8	.76
87.8	.91
99.7	1.00

Table 5.12

Labour Use Index of Male Working force in Kalyanpur

Percentage of Male adults working force	Intensity of use (less than)
17.7	0.30
26.0	0.45
36.4	0.60
57.2	0.76
78.0	0.91
99.8	1.00

Table 5.13

Labour Use Index of Female adult working Force in Kalyanpur

Percentage of Female working force	Intensity of use (less than)
6.2	0.15
47.4	0.30
78.6	0.45
88.6	0.60
96.1	0.76
99.8	1.00

Table 5.14

Labour use Index of Adult Working Force

Khojpur

Percentage of adult working force	Intensity of use (less than)
4.0	0.15
31.8	0.30
55.6	0.45
73.9	0.60
82.7	0.76
90.8	0.91
99.6	1.00

Table 5.15

Labour Index of Employed Male Adults

Khojpur

Percentage of Male Working days	Intensity of use (less than)
3.4	0.15
14.8	0.30
32.0	0.45
59.5	0.60
72.1	0.76
84.7	0.91
99.6	1.00

We test this latter difference statistically. For the purpose of this testing we may formulate the problem by saying that in Khojpur we had 87 trials for which the probability (according to expectations of the Kalyanpur pattern) of obtaining a success; (using not more than 60 p.c. of labour power) in a single trial is 35/96. Thus the number of persons using not more than 60 p.c. of their labour power is treated as a binomial variable and the hypothesis to be tested as

H_o : P = 35/96 = .36 and q = .64. The mean is calculated at np = 87 X .36 = 31.32 npq = 31.32 X .64 = 20.0448 and S.D. = 4.48. So the critical region will consist of two tail intervals

np - 2 = 31.32 - 8.96 =22.36

np + 2 = 31.32 + 8.96 =40.28

Thus the difference in the number of employed adult males employing not more than 60 per cent of their labour power in the two samples is significant. That is to say, more persons in the periphery than in the centre are unable to use more than 60 per cent of labour power. An interesting comparison can be made of these two samples taken together with a village economy of the Indian terai surveyed in 1979. The Terai village in India did not receive any benefits of an organized project. We update the data on the basis of the following assumptions :-

(a) No new sources of productivity appeared in the village
(b) The net rate of migration from the village remained constant
(c) The rate of natural increase of population remained at the rate of 2 p.c. per annum as was noticed in 1979.

The results can be seen from the table 5.18.

Table 5.18

Comparison of Use of labour power by Employed adults between the Indian Terai and Kalyanpur

Sample	No. of persons using not more than 45 p.c. of their labour power	No. of persons using more than 45 p.c. of their labour power	Total
Kalyanpur	88	88	176
Indian Terai	162	172	334

5.6.2 Although the result is not statistically significant it shows that the benefits of IRDP showered on Kalyanpur has enabled the village to come to the same level as the village in Indian terai with some better endowments especially in respect of rainfall. We do not have, the truth to tell, all required data like the land-man ratio for the land area worked in the two places. A complication arises because of uncertainty as to whether all labour families dependent on the total lands of the households which have been included in the survey of both villages. If the land-man ratio is the same in both villages under comparison, we tend to conclude that Kalyanpur of Nepali Terai has moved ahead to be level with this village of Indian terai. This is more so, because the village of Indian Terai has decidedly greater percentage of persons employed on whole-time basis in organised sectors.

Table 5.16

Labour Index of Employed Female Adults

Khojpur

Percentage of Female Working force	Intensity of use (less than)
5.00	0.15
56.6	0.30
89.9	0.45
94.9	0.60
98.2	0.76
99.8	1.00

5.6.1 We see in table 5.17 that the number of adult males who use more than 60 per cent of their labour power is 61 in Kalyanpur and 35 in Khojpur. On the other hand the number of adult males who do not use more than 60 per cent is 35 in Kalyanpur and 52 in Khonpur.

Table 5.17

Comparison of Use of Labour Power by Adult Males

Sample	No. of employed adult males using not more than 60 p.c. of labour power	No. of employed adult males using more than 60 p.c. of labour power	Total
Kalyanpur	35	61	96
Khojpur	52	35	87

5.6.3 A comparison of the performance of employed adult males in Kalyanpur with that of those in Indian village of terai may be resorted to mainly because in the Indian village females do not work outside. The data relating there, to adults relates to adult males. So in table 5.19 we can see that the lower percentage of males using not more than 45 per cent of labour power in Kalyanpur is very much real in the language of statistical inference. Viewed thus the performance of Kalyanpur is better than that of village in the Indian Terai.

Table 5.19

Use of Labour power by male adults in Kalyanpur and a Village in Indian Terai

Sample	Number of persons using not more than 45 p.c. of labour power	Number of persons using more than 45 per cent of labour power	Total
Kalyanpur	25	71	96
Indian Terai	162	172	334

5.6.4 We derive, on the basis of our data, three sets of tables on the use of the percentage of labour power of three categories of employed persons, namely, employed adults, employed adult males and employed adult females.

Table 5.20

Percentage of Employed Adults using more than 60 per cent of Labour power

Sample	Percentage	Numbers
Kalyanpur	40	70/176
Khojpur	26	38/147

Table 5.21

Percentage of Employed Adults Using more than 76 per cent of Labour power.

Sample	Percentage	Numbers
Kalyanpur	25	44/176
Khojpur	17	25/147

Table 5.22

Percentage of Employed Adults using more than 91 per cent of Labour power

Sample	Percentage	Numbers
Kalyanpur	12	21/176
Khojpur	9	13/147

These tables clearly demonstrate that use of labour power is higher in Kalyanpur compared to Khojpur. However, the difference in the use of labour power narrows as more intensive use of labour power is used.

5.6.5 We can make similar comparison of employment of labour power of employed adult males. We present the data in tables 5.23 to 5.25.

Table 5.23

Percentage of Employed Adult Males using more than 60 p.c. of labour power

Samples	P.C.of adult Males	Numbers
Kalyanpur	64	61/96
Khojpur	40	35/87

Table 5.24

Percentage of Employed Adult Males using more than 76 p.c. of labour power

Samples	P.C. of adult Males	Numbers
Kalyanpur	43	41/96
Khojpur	28	24/87

Table 5.25

Percentage of Employment Adult Males using more than 91 p.c. of labour power

Samples	P.C. of adult Males	Numbers
Kalyanpur	22	21/96
Khojpur	15	13/87

5.6.6 The differences in the use of labour power between the two samples indicate the availability of more employment in Kalyanpur. Compared to Khojpur, adult males using more than 60 per cent or 76 per cent or even 91 per cent of labour power is greater for Kalyanpur adult males. These differences the number of those who use more than these percentages of use of labour power are all significant at 5% level of significance. Although Khojpur is lagging behind in respect of use of its labour power, the level of use of labour power in this village might have been lower if some of the members of the working force did not work in Lahan, the district IRDP headquarters which they reach by road during day time.

Table 5.26

Percentage of Employed Adult Females using more than 60 p.c. of Labour Power

Samples	Percentages of females	Number
Kalyanpur	12	9/80
Khojpur	5	3/60

Table 5.27

Percentage of Employed Adult Females using more than 76 p.c. of Labour Power

Samples	Percentage of females	Number
Kalyanpur	4	3/80
Khojpur	2	1/60

5.6.7 We find that the difference in the percentage of adult females using more than 60 per cent of their labour power in the two samples is significant at 5% level of significance. The apparent difference in the percentage of adult females using more than 76 per cent of labour power is not statistically significant.

5.6.8 Thus the employment opportunities in Kalyanpur, the centre of IRD activities have been beyond doubt greater than those of Khojpur, the periphery. Although Khojpur has to some extent been benefited by the exposure of its people by road to Lahan which accommodates the district office of IRDP, it is natural that the great employment opportunities in Kalyanpur have resulted from the benefits of the IRDP there.

5.7 IMPACT ON LITERACY

5.7.0 Although this survey was carried out after six years of the launching of the relevant IRDP, it will be interesting if we compare the impact of the programme on the literary of test population. We have used two definitions of literacy. The definition number 1 says that a man is literate if he has education of one full year or more. According to definition 2, a man is literate if he has education of six years or more. Tables 5.28 and 5.29 present the picture literacy in Kalyanpur and Khojpur respectively according to definition 1. Similarly tables 5.30 and 5.31 show the distribution of literates and

Table 5.28

Kalyanpur Literate (Definition No.1) by age and sex

Age Group	Male			Female			Total		
	Literate	Illiterate	Total	Literate	Illiterate	Total	Literate	Illiterate	Total
6-15	34	12	46	18	17	35	52	29	81
15-35	54	14	68	11	52	63	65	66	131
35-65	24	21	45	1	30	31	25	51	76
Above 65 yrs.	-	3	3	-	2	2	-	5	5
Total	112	50	162	30	101	131	142	151	293

Table 5.29

Khojpur Literate (Definition No.1) by age and sex

Age Group	Male			Female			Total		
	Literate	Illiterate	Total	Literate	Illiterate	Total	Literate	Illiterate	Total
6-15	29	15	44	9	26	36	38	41	79
15-35	30	24	54	2	53	55	32	77	109
35-65	16	26	42	-	23	23	16	49	65
Above 65 yrs.	1	1	2	-	2	2	1	3	4

Table 5.30

Kalyanpur Literate (Definition No.2) by age and sex

Age Group	Male			Female			Total		
	Literate	Illiterate	Total	Literate	Illiterate	Total	Literate	Illiterate	Total
11-15	9	10	19	3	13	16	12	23	35
15-35	43	25	68	3	60	63	46	85	131
35-65	9	36	45	1	30	31	10	66	76
Above 65	-	3	3	-	2	2	-	5	5
Total	61	64	125	7	105	112	68	179	247

Table 5.31

Khojpur Literate (Definition No.2) by age and Sex

Age Group	Male			Female			Total		
	Literate	Illiterate	Total	Literate	Illiterate	Total	Literate	Illiterate	Total
11-15	7	8	14	3	7	10	10	15	25
15-25	17	37	54	-	55	55	17	92	109
35-65	5	37	42	-	23	23	5	60	65
Above 65 yrs.	-	2	2	-	2	2	-	4	4
Total	29	84	113	3	87	90	32	172	203

illiterates the sample populations of Kalyanpur and Khojpur respectively by age and sex. The definition number 2 is used here to define a literate.

5.7.1 We derive tables 5.32 and 5.33 from these four tables. The percentage of literacy in the age-group 11-15 is the same both in the test population as well as in the control population.

Table 5.32

Literates with Six Years or More of Education in the Age Group 11-15

Sample	Number of persons	Number of literates with six years or more of education
Kalyanpur	35	12
Khojpur	25	10

Table 5.33

Literates with one Year or More of Education in the Age-Group 6-15

Sample	Number of persons	Number of literates with one year or more of education
Kalyanpur	81	52
Khojpur	79	38

Obviously the null hypothesis is not rejected statistically. But the table 5.33 shows that the percentage of literacy in the age-group 6-15 is higher (64 per cent) in Kalyanpur than in Khojpur (48 per cent).

This difference is significant at 5% level of significance. Six years of activity and resultant increase of income cannot occasion the increase of percentage of literates with six years or more of education, as is reflected from our statistical analysis of Table 5.32. But a significantly higher percentage of literates with one or more year of education in the age-group 6-15 in Kalyanpur suggest, that by the time of the survey increased income has caused more students there to take the benefit of the local school. This impact on literacy in the centre is a dependable external evidence that even in so short a span as six years there has been some decisive increase in income and employment in Kalyanpur.

5.8 IMPACT ON AGRICULTURAL OUTPUT

5.8.0 We compare now the impact of the IRD programme on the nature of agricultural output (in Nepali Rs.) in the test population with that in the control population. The relevant data are summarised in table 5.34. Our definition here of the mean agricultural output per Nepali bigha has been somewhat different

Table 5.34

Agricultural Output per Nepali Bigha in Kalyanpur and Khojpur

Samples	Agricultural output (in Nepali Rs.)		Size of sample
	Mean	Standard deviation	
Kalyanpur	8232	3957	48
Khojpur	5436	2480	47

from agricultural output per Nepali bigha as found in tables 5.35 and 5.36. Our definition here has been different according to the needs of statistical testing. On the basis of the data of table 5.34 it is found that the difference in agricultural output is highly significant. This expansion of agricultural output has resulted as a result of concentrated activities in the Kalyanpur area.

5.9 INPUTS ON THE FARMS

5.9.0 The use of reproducible capital used on the farms in the test area and in the control area is reflected in tables 5.35 and 5.36. We see that except in respect of family mandays used all kinds of inputs including total annual cost on fixed capital, value of seeds used, value of irrigation water, value of inorganic capital, value of organic manure, value of insecticides and value of hired mandays used per Nepali bigha are consistently higher in Kalyanpur than in Khojpur. If we combine family mandays and hired mandays per Nepali Bigha into mandays used per Nepali bigha, then this input used is also on average higher in Kalyanpur than in Khojpur. All this explains the relatively higher agricultural output per Nepali Bigha in Kalyanpur, as we have concluded in the preceding section.

5.9.1 One important reason of increase of agricultural output in Kalyanpur is that the IRDP help has enabled life irrigation from river water and various means of ground water irrigation being used. River lift irrigation and underground water irrigation have advantage over the canal water irrigation based on big dams

Table 5.35

Cost and Agricultural Output of Kalyanpur

Farm size in Nepali Bigha	Number of Farms	Amount of Land (Bighas)	Output per Bigha (Nepalese Rs.)	Cost per Bigha on (in Nepalese Rs.)								Mandays	
				Depreciation	Hired plough	Fixed capital	Seeds	Irrigation	Organic manures	Chemical fertilizers	Insecticides	Home	Hired
Upto .50	4	1.24	10101	390	480	870	430	246	726	6	1	1992	161
0.50 - 1.00	105	4.31	13193	429	174	603	394	95	557	184	2	1647	172
1.00 - 1.50	10	13.30	6759	285	53	338	387	159	398	117	3	1276	66
1.50 - 3.50	15	38.97	8224	281	50	331	470	75	486	86	7	838	393
3.50 - 7.50	11	61.61	9071	332	105	437	305	129	609	171	1	436	736
7.50 & above	3	64.37	8681	130	6	136	146	50	326	140	16	118	826
Total	48	183.80	8691	250	58	308	293	92	488	137	8	509	636

Table 5.36

Cost and Agricultural Output of Khojpur

Farm size in Nepali Bigha	Number of Farms	Amount of Land (Bighas)	Output per Bigha (Nepalese Rs.)	Cost per Bigha on (in Nepalese Rupees)								Mandays	
				Depreciation	Hired plough	Fixed capital	Seeds	Irrigation	Organic manures	Chemical fertilizers	Insecticides	Home	Hired
Upto .50	6	2.75	5513	97	100	197	101	-	4	22	-	1110	49
0.50 - 1.00	4	3.00	5142	109	17	126	83	-	31	-	10	739	67
1.00 - 1.50	7	9.92	7248	117	25	142	113	93	93	188	-	1153	171
1.50 - 3.50	20	48.30	4559	88	51	139	95	24	53	86	4	787	206
3.50 - 7.50	7	35.48	5723	105	76	181	85	58	93	79	1	484	344
7.50+	3	30.75	5206	120	117	237	90	33	65	83	2	242	312
Total	47	130.20	5280	103	72	175	92	40	68	88	3	609	259

Table 5.37

Receipt of Aid from Sajha

	Kalyanpur		Khojpur	
	No. of house-holds	Amount in Nepali rupees	No. of house-holds	Amount in Nepali rupees
Loand	4	1,561	8	12,400
Subsidised purchases of inorganic fertilizers	29	24,844	27	10,688
Subsidised purchases of seeds	7	5,061	5	894
Subsidised purchases of insecticides	3	1,250	3	126

Table 5.38

Receipt of Aid from Agricultural Development Bank

Village	Total Amount in Nepali Rs.	No. of households	Purpose of credit
Kalyanpur	112,900	8	Mini deep tube well, fertilizers and bullocks
Khojpur	11,300	5	Bullocks and fertilizers

Table 5.39

Total of Loans and Subsidised Purchases

Village	Total amount of loans in Nepali Rs.	Total amount of subsidised purchases of inputs
Kalyanpur	114,461	31,155
Khojpur	23,700	11,708

water irrigation based on big dams in many respects. In the first place, canals based on big dams fail to provide steady water because of occasional bursting of dams and loss of water is storage. Secondly, if there is inadequate storage in the base reservoirs the availability water becomes small. Finally the network of canals are in most cases operated by government sector staff. The failure of thés staff in a democratic or semi-feudal set up causes irregular supply of irrigation water to the farms. The underground irrigation water where such water is available is not accompanied by these defects. The only difficulty in the latter case is the timely supply of diesel oil or electricity. In the case of Kalyanpur there is no electricity. But there was hardly any bottleneck in the supply of diesel upto the time of the survey. Thus so far ground water irrigation and river lift irrigation gave a big boost to farming in Kalyanpur.

5.9.2 Another aspect of efficient farming in Kalyanpur was the relatively higher ratio of organic manure to the inorganic fertilisers on average. The efficiency of the use of inputs must take into account the question of right proportion of inputs. The basic requirement, propagated by some specialists, that organic manure must be at least four or five times the inorganic fertilizers is often lost sight of because of pitiful inadequacy of supply of organic manures in most regions of south Asia.

5.9.3 A cause of the use of more reproducible capital on

the farms of Kalyanpur can be known from tables 5.37, 5.38 and 5.39. We find that Kalyanpur received loans 4.8 times that received by Khojpur. A part of these loans only was used for buying subsidised inputs from Sajha. A bulk of the loans were used to buy inputs from the markets including at times markets from India.

5.10 INTENSITY OF USE OF LAND

5.10.0 We can see from table 5.40 that there has also been increase in the intensity of use of land in Kalyanpur compared to Khojpur.

Table 5.40

Measurement of Intensity of Use of Land

Type of intensity of use of land	Kalyanpur	Khojpur
Intensity of Use of land according to definition no.1	1.90	1.67
Intensity of use of land according to definition no.2	0.54	0.48

The measure of intensity of use of land according to definition number 1 is the ratio of gross cultivated land to the net cultivable land. On the basis of this measure the intensity of use of land in Kalyanpur is 23 points higher. The measure according to definition number 2 is non-conventional. If a land is put to use for the whole year we assume that the total gross cultivable land

becomes 3.5 times the net cultivable land. The measure is then the ratio of total gross cultivated land to the gross cultivable land. These definitions are specific to the crops now being raised in the centre and periphery. According to the second measure also Kalyanpur has higher intensity. There is difference in the range of the values of the two measures. The range in the values of the second measure is much lower than that of the first measure. A reasonable conclusion emerges that availability of more inputs in the Centre has brought more seasonally unused lands to cultivation.

5.10.1 A moot question often arises if the rejuvenated agriculture makes a better use of education (measured in years). The table 5.41 suggests that the yield (the rate of return) might increase with years of education. We must hasten to add

Table 5.41

Influence of Education on Yield

Education in years	Rate of Return	
	Kalyanpur	Khojpur
Upto 5	2.86	3.86
Above 5	3.48	3.86

that with our definition of the rate of return, we cannot be absolutely sure that the farms whose operators have more years of education are more efficient in Kalyanpur than the farms whose operators have less years of education. Here rate of return

means what the value of output is per one rupee spent on both fixed and current inputs.

5.10.2 It would be interesting, therefore to compare this rate of return along with output per Nepali bigha. Table 5.42 and

Table 5.42

Influence of Education on Output

Education in years	Ourput per Nepali Bigha in Nepali Rupees	
	Kalyanpur	Khojpur
Upto 5	7960	4860
Above 5	8483	6651

table 5.41 gives us some insight about the influence of edcuation on farming in the two samples. In Khojpur the periphery, while the rate of return per Nepali Rupee spent on total costs is the same in both categories of farms, the farms with lower education have lower output, as seen in table 5.42. This means both inputs and outputs are lower in farms with lower education, while both inputs and outputs must be higher in farms with higher education. The result relating to Kalyanpur, the centre, rouses a support for a hypothesis that perhaps extension network strengthened by IRDP has given an advantage to educated farmers in respect of more efficient farm management. Because not only output per Bigha but also rate of return is higher in farms with higher education in Kalyanpur. Thus an economy through the effecting of right

proportion of inputs is apparently at work in Kalyanpur, the centre. We see from table 5.43 quite clearly that more educated group of farmers also happen to be relatively richer in respect of land assets. This means that their higher education is a function of higher assets. But certainly the kind of efficiency we notice in respect of farm management in Kalyanpur cannot be caused by assets alone without education. At the same time, the fact remains that with better assets and better education farmers

Table 5.43

Average Farm Size of Education Groups of Farmers

Education in years	Average Farm Size (in Nepali Bighas)	
	Kalyanpur	Khojpur
Upto 5	2.67	2.45
Above 5	7.30	4.34

were relatively more benefited by IRDP than farmers with smaller assets and lower education. Education gave them some command over management, while assets gave them relatively more command over inputs or reproducible capital needed.

5.11 IMPACT ON INCOME

5.11.0 We see from table 5.44 that the per capita annual income in the household is higher in Kalyanpur than in Khojpur.

So also is the spread of this income. The difference in the income in the two samples is significant at 5 per cent level of significance.

Table 5.44

Per Capita Annual Income in the Household

Sample	No. of households	Per capita annual income in the household	
		Arithmetic mean	Standard deviation
Kalyanpur	50	4220	4984
Khojpur	49	2479	2393

5.11.1 As we have already indicated, as a result of the IRDP activities being centred in Kalyanpur for a number of years upto the time of the survey, some good infrastructural facilities have been created. Apart from irrigation facilities they include Sajha (Rural Co-oerative), Agricultural Development Bank, Veterinary Hospital, Agricultural Extension Service and a Market Complex, with provisions for agricultural marketing. But they excluse electricity. The facilities were all created with funds from the foreign-aided IRDP. Although electricity has not come to the village, the facilities undoubtedly contributed to the rise of income in Kalyanpur.

5.11.2 The greater inequality seen in the income distribution as expressed by standard deviation, of Kalyanpur might tempt

radical economists to conclude that development of this kind contributes to the aggravation of the question of equity in incomes. In fact, some radical economists and environmental economists already took the stand that the green revolution caused in India greater inequality of incomes and hence has aggravated the poverty question.

5.11.3 In table 5.45, however, we notice that despite greatest inequality in the income distribution of Kalyanpur there is relatively smaller number of people whth less than rs.3000/- (Nepali Rupees) only as per capita income in the household. Thus we have the evidence that increase in inequality

Table 5.45

Absolute Poverty in Kalyanpur and Khojpur

Per capita annual income in the household (Rs.)	Households			
	Kalyanpur		Khojpur	
	Number	P.C.	Number	P.C.
Below 1,000	1	2	5	10
1000-3000	31	62	34	69

in income distribution does not mean an increase in the number of people living in absolute poverty. On the contrary, the data presented in table 5.45 clearly show that inspite of increase in inequality as a result df increase in income there has been unmistakable reduction in Kalyanpur in the number of people who

live in absolute poverty. Any theory, therefore, that an increase in the level of income caused by a high pay-off model causes the poor to be absolutely poorer has no empirical validity whatsoever.

5.11.4 The position changes if we want to compare the rate of growth of the ppor with that of the rich. A simple tool for this purpose is the ratio of income of the poor to the income of the rich. The ratio of income of the poorest man to the income of the richest man is lower in Kalyanpur than in Khojpur. The figure is .026 for Kalyanpur and .04 for Khojpur. Thus, as we saw in the preceding paragraph, though absolute povery declined, the rate of growth of the poor has not exactly matched the rate of growth of the rich. That is to say, with increase in the level of income in Kalyanpur the relative poverty of its poor has increased.

5.11.5 The picture of income we presented in table 5.44 related to per capita annual income in the household. Incomes we deal with in table 5.46, 5.47 and 5.18 are different. They are income of individual earners. In case of family enterprises

Table 5.46

Distribution of Income Among Occupations

Occupations	Percentage of Village income earned			
	Kalyanpur		Khojpur	
Farming	83.9	86.86	77.6	83.6
Agricultural labour	2.7		6.00	
Non-agricultural labour	0.6		3.8	
Salary earners	6.8		4.2	
Business	6.0		8.4	

like farming individual incomes have been apportioned in proportion to mandays put in on the enterprise. The earners here include also such members of the working force as are non-adults or above 65 along with adults.

5.11.6 The percentage of village income earned in different occupations in the two samples may give the impression that the importance of agriculture decreased slightly in Khojpur the periphery compared with Kalyanpur, the Centre. Some may be disposed to think that a little diversification of occupations may have increased the productivity of agriculture in Khojpur. At this low level of development, however, it is more often than not true that lack of productivity in agriculture induce people to look for means of livelihood outside agriculture whenever that is possible. In the case of Khojpur, Lahan the district headquarter of Sagarmatha provided some work to people of Khojpur during the day hours.

5.11.7 On the other hand, as new facilities detailed earlier has been released by the Sagarmatha IRDP authorities for agriculture in Kalyanpur, more people naturally concentrated to exploit the new productive power of agriculture. This is supported by the data presented in table 5.47. As we saw in table 5.44 in the case of annual income per capita in the household, we see in table 15.48 the annual income earned per earner is much higher in Kalyanpur compared with that in Khojpur. Whatever surging up

of income has taken place in Kalyanpur has been as a result of some surging up of this sector. It is but natural, therefore, that more income has been earned and more people worked in Kalyanpur in this sector of agriculture.

5.11.8 The apparent difference in business income per earner in the two samples may also be explained by difference in productivity of agriculture. The rather lower business income per earner in Kalyanpur may be reasonably due to the possibility that investment activity in farming is more profitable than investment in petty trade.

Table 5.47

Distribution of Working Force Among Occupations

Occupations	Percentage of Village Working Force	
	Kalyanpur	Khojpur
Farming	76.53	69.95
Agricultural labour	8.92	18.13
Non-agricultural labour	2.35	4.66
Salary earners	7.04	3.63
Business	5.16	3.63
Total	100.00	100.00

Table 5.48

Annual Income Per Earner in the Two Samples

Occupations	Annual income per earner	
	Kalyanpur	Khojpur
Farming	6880	3852
Agricultural labour	1921	1157
Non-agricultural labour	1500	2833
Salary earners	6100	4071
Business	7273	8000
Total	6277	3474

CONCLUSION ON KALYANPUR

We have both direct and indirect evidence that perceptible increase in income took place in the Kalyanpur village as a result of some facilities being made available for agricultural productive processes by the Sagarmatha IRDP authorities, working in collaboration with the Nepali authorities. This additional income took place in agriculture. That the investment activity was also boosted on the farms is demonstrated by the change in occupational pattern. This caused not only more intensive use of labour power but also more use of seasonally unused land.