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**EVALUATION OF INTEGRATED DAIRY DEVELOPMENT
PROJECT (IDDP) IN NON-OPERATION FLOOD,
HILLY AND BACKWARD AREAS:
A STUDY IN SIKKIM**

Executive Summary

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EVALUATION OF INTEGRATED DAIRY DEVELOPMENT PROJECT (IDDP) IN NON-OPERATION FLOOD, HILLY AND BACKWARD AREAS: A STUDY IN SIKKIM

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Introduction

It is hardly possible to over-emphasize the importance of the country's livestock in general, dairying in particular as the exclusive source of animal food and nutrition for the country's population and above all, as substantial source of income and employment for rural population, especially the rural poor. Indian agrarian condition is characterized by increasing number and fragmentation of holdings. The average size of the holding of the farmers are among the lowest in the world. Despite falling share of agriculture to gross domestic product, the workforce dependent upon agriculture continues to be as high as 64.8 per cent. Besides, the increasing trend of mechanization in agriculture has tended to cut-down the demand for labour. Given low absorptive capacity of the industrial sector, the only possible way to augment income and employment of the small farmers is to encourage adopting subsidiary enterprises like dairy farming which can be easily carried on these farms. Dairying acquires special significance in hill areas. Due to poor productivity of the crop sector, low availability of per capita arable land and lack of other income generating avenues there is heavy economic dependence of households on animal husbandry activities. Thus next to crop husbandry, the most likely programme for extensive support has been animal husbandry, particularly dairying, which has got the largest employment potential in India, being the source of livelihood for the landless and people living below poverty line, since time immemorial.

An important feature of India's dairy sector is the predominance of small-scale milk producers owning one or two milch animals each. Another characteristic feature of India's dairying is that milk production and crop production on most of the farms are complementary enterprises; the milch animals are fed on crop residues and milch animal dung is used as manure for crops. This complementary keeps the costs of both crop production and milk production relatively low and thereby affords a competitive edge to the Indian farmer vis-à-vis her counterparts in other countries. Moreover, in case of dairying there is greater degree of indoor activity and offers much scope for employment of family labour, especially, women and children.

In order to exploit the vast potential of dairy sector in the country, the National Dairy Development Board (NDDB) launched the Operation Flood (OF) programme on July 1, 1970 and has contributed significantly in creating and strengthening the basic infra-structure for development of India's dairy industry. In the non-OF areas there was no concerted efforts to develop dairying except some sporadic measures undertaken by the state governments. Keeping in view the importance of developing the dairy sector in non-operation flood, hilly and backward areas of the country, the Department of Animal Husbandry and Dairing, Ministry of Agriculture, Government of India had launched the Integrated Dairy Development Project (IDDP) in North-Eastern States including the state of Sikkim, for stimulating milk production, procurement and marketing with provisions of working capital and manpower development. The present study is an attempt to evaluate the performance of Integrated Dairy Development Project (IDDP) in the state of Sikkim with the following objectives:

1. To assess the impact of IDDP in generation of additional employment and income to the different categories of beneficiaries.
2. To assess the impact of IDDP in terms of genetic improvement of cattle through selective breeding/cross breeding and in making availability of feed and fodder.
3. To assess the impact of IDDP on milk production and in development of marketing and processing infrastructure in the Project area.
4. To assess whether the implementing agencies followed the guidelines in selection of beneficiaries, imparted training through dairy extension services amongst the farmers.
5. To study the problems faced by the implementing agencies in execution of the project as per guidelines laid down by the Department of Animal Husbandry.
6. To suggest policy implications.

The Government of India during the 8th Five Year Plan had sanctioned Integrated Dairy Development Project for implementation of the same in Non-Operation Flood, Hilly and Backward Areas, under the centrally sponsored plan scheme in north district of Sikkim. The East, West and South districts of the state are included in the Operation Flood Programme. With a view to have a uniform Dairy Development across the districts in the

state, IDDP Project has been introduced in the north district. This evaluation study has thus been conducted in north district of the state of Sikkim.

Methodology and Data

The study is based on both primary and secondary data. For secondary materials the study draws upon the sources like quinquennial livestock census for the state of Sikkim and data furnished by Department of Animal Husbandry and Veterinary Services, Government of Sikkim. For collection of secondary level information, 3 sets of schedules are used viz. the state level schedule, the district level schedule, and schedules and questionnaires for collection of required information from the milk producer's Co-operatives Societies functioning under IDDP. For collection of Primary data 2 sets of schedules/ questionnaire are used, one set being used for collection of grass root level data from the beneficiary households and the other for collection of data form non-beneficiary households. Farmers' level data are collected by personal interview method.

Multi-stage stratified random sampling technique is used for selection of society and beneficiary and non-beneficiary farmers in a scientific way. From the North district of the state of Sikkim, the list of societies under IDDP is collected and is arranged them in 3 Strata in an ascending order depending upon the production/procurement of milk. From each Strata one society is selected randomly for intensive study.

In the 2nd.Stage, list of beneficiary households of the selected societies is obtained and from each list 12 (twelve) households are selected randomly to collect primary data on various aspects of IDDP including it's performance. In selecting beneficiary households due care is taken to select the small and marginal farmers, agricultural labourers, SC/ST households and women beneficiaries who are relatively disadvantaged having lower incomes and employment. Altogether 36 beneficiaries numbering 12 each from the 3 selected societies are selected at random for the purpose of interview.

For control group, the non-beneficiary households from the same cluster of villages in which the sample society is located are selected. The non-beneficiary members comprise of two groups – one, owner of milch cattle and the other, non-owner of milch cattle. A sample of 2 non-beneficiary households with milch animals and 2 non-beneficiary households from non-owner of milch animals are selected at random from each of the selected societies. Thus altogether 12 non-beneficiary households are covered in the study. In all, sample size of the

study constitutes 48 covering 36 beneficiary and 12 non-beneficiary households of North District of the state of Sikkim.

Results

Integrated Dairy Development Project in Sikkim

The Integrated Dairy Development Project has been in operation in the North District of the State of Sikkim. The other districts namely the East, West and South districts of the State are covered by the Operation Flood programme executed in the year 1980. In the year 1993-94, the Government of Sikkim received a grant of Rs. 217 lakhs from the Government of India for undertaking Integrated Dairy Development Programme in the north district. After successful implementation of the project, the second project was sanctioned by the Government of India. The second project considered as first phase of the project was implemented from 1994-95 and continued upto 1999-2000. During the first phase of the project, 25 Dairy Co-operative Societies (DCS) have been organized, out of this 20 were functional with a farmer membership of over 600 and milk procurement was about 850 liters per day. The third project considered as 2nd phase of the project started from 2000-2001 and covered the period of five years from 2000-01 to 2004-05. Since inception the Project has thus completed two phases of work known as IDDP phase I & IDDP phase II.

The project is implemented in the state by the State Animal Husbandry, Livestock, Fisheries and Veterinary Services Department, Government of Sikkim. The Joint Director (Dairy), Department of AHLF & VS has been appointed as nodal officer (Chief Executive) for the project. For implementation of IDDP in Sikkim, a Technical Management Committee (TMC) was constituted at the state level for monitoring the progress of the project. In addition to the state level TMC there is an implementing committee at district level to workout the modalities for implementation of the project in the concerned district. In fact the district level committee monitors the performance of IDDP at the district level and helps TMC in effective implementation of the project.

Physical and Financial Performance of the IDDP Project

The project envisaged the assistance for the formation of dairy co-operative societies, purchase of milk testing equipments, furniture, procurement of milk, construction of dairy and chilling plants, input supplies and training of farmers and functionaries involved in the implementation of the project. The assistance covers both recurring and non-recurring expenditure of approved components.

Since the inception of IDDP in 1993-94, it has completed two phases known as phase-I and phase-II. By the end of phase-II, IDDP has contributed in creating and strengthening the basic infrastructure for procurement, processing and marketing of milk, for cattle feed, for provision of animal health care and breeding services and for education and training of farmers and functionaries involved in the implementation of the project. As of January 31, 2005 (by the end of phase-II) 30 village-level dairy co-operative societies have been established with the total membership of 1000 village milk producers. Two milk chilling plants with the capacity of 500 LPD each and one milk processing plant with the capacity of 2000 LPD were established. The average liquid milk procurement and marketing was of the order of 1500 LPD respectively.

The total investment of the 2nd phase of the project as of January, 2005 was 266 lakhs. In the allocation of funds among various activities, 112.22 lakhs i.e. about 42.19 per cent was given for building up milk processing and marketing capacity. Milk production enhancement programme got 96.74 lakhs i.e. 36.37 per cent of the allocation. A sum of Rs.46.62 lakhs i.e. 17.53 per cent was spent on milk procurement. Manpower development received 2.25 lakhs i.e. 0.85 per cent of the allocation and the remaining was spent on working capital like purchase of cattle feed, purchase of heifers etc.

Performance of Dairy Co-operative Societies

The accepted policy of the Government of India to foster and promote dairy development through a network of co-operatives is reflected in the provision contained in IDDP project for dairy development in non-operation flood areas. The guidelines of the project envisaged that beneficiary families should be organized into village-level dairy co-operatives on voluntary basis to facilitate extension and supply of inputs, animal health care services and marketing support. The Dairy Co-operative Societies organized at the village or a group of village level will be affiliated to the district-level co-operative society. The district society in turn seek affiliation to the state-level co-operative federation.

In the present study, milk producers' co-operative societies receiving benefits only under IDDP form the sample frame for judging the performance of dairy Co-operative Societies. In all, three dairy co-operative societies are covered in the study namely Nampatam MPCS, Ringhim DUSS and Chandey MCS hereafter referred to as Society No.1, 2 and 3 respectively in north district of Sikkim. For the purpose, society level information was collected through structured questionnaire.

Organizationally, DCS membership in the selected societies increased since their inception. At the time of survey, total members of the societies numbered 33, 50 and 49 in societies 1, 2 and 3 respectively while the corresponding figures at the time of inception of the societies were 19, 25 and 40 and thus recorded annual growth rate of 7.36, 10.00 and 2.25 per cent respectively. The plausible reason for the growth of membership could be the provision of various facilities contained in IDDP, like technical inputs and services and assured marketing outlets for their milk. All these encouraged the milk producers to enroll themselves as the members of the dairy co-operatives.

The composition of member households comprised of both landed and landless. Landed members are mostly from the lower category of land holdings, mainly small and marginal and the rest came from medium sized land holdings. To carry out their multifarious activities, DCSs have developed an organizational set up comprising of president, secretary, treasurer and attendant. General body meeting is organized every month with a view to monitoring and reviewing the progress of the project.

With regard to the activities performed by the selected dairy co-operative societies, apart from induction of crossbreed milch animals, the societies provided to the members a package of inputs and services necessary for enhancing milk production. The package included technical inputs and services inclusive of animal health care in the form of extending vaccination facilities. The technical inputs and services comprised of distribution of fodder kits, development of fodder plots, organizing infertility camps and providing artificial insemination facilities. The project provides for training of beneficiaries and functionaries associated with the implementation of the project. The training organized under the project included the items of cleaning milk production, veterinary first aid, management of cattle, awareness camp, farmer induction training, training of local farmers and training of MPCs staff. In order of importance, management of cattle occupy the major followed by veterinary first-aid. Persons actually involved in the training accounted for the major in farmer induction training followed by those involved in the organization of awareness camp.

Milk producers' co-operative societies worked as a source of milk disposal of the farmer member households. It can be viewed that on an average, members which were supplying milk to the society numbered 24 per day within a month in society number 1 as against the figures of 30 and 25 for the societies numbering 2 and 3 respectively. During the year 2000 – 2001, monthly average procurement of milk by the selected societies was of the order of 40 liters per day for society number 1, 66 liters for society number 2 and 45 liters for

society number 3. Notably, however milk procurement per day per society decelerated as compared to the position existed before schedule canvassing.

Implementation of IDDP Scheme at the Farmers' Level: Its Economy and Impact

The project envisaged providing assistance to the targeted beneficiaries of the region who are relatively disadvantaged having lower incomes and higher incidence of unemployment. The present study observed that beneficiary families belong to the disadvantaged group of population viz. scheduled tribe having low educational background up to primary and middle school standard. In terms of landholding status, beneficiary households in the main belonged to marginal and small (86.11 per cent) with landholdings of two hectares or less.

Dairying, as principal occupation is reported by 22.22 per cent of beneficiary farmers, while among secondary occupations, dairying constituted the major. Thus in the selected area, dairying is undertaken as supplementary enterprise.

So far as the impact of the scheme at the beneficiary level is concerned, under the scheme, purchase of crossbred milch cows in unit of one animal was assisted to the farmer members of the society who were already having a cow. A total of 19 milch animals (cows) were provided to 19 beneficiaries out of a total of 36 who accounted for 52.78 per cent of the total sample beneficiaries. Inducted cows were in 1st lactation order. The lactation cycle of milch cattle provided under the scheme was reported to be duration of 415 days of which 230 days represented in-milk period and the dry period was duration of 185 days.

The implementing agency followed the stipulated norms in the identification of beneficiaries. Evidently, it was found that the scheme was drawn at large for the benefit of small and marginal farmers. Out of a total of 19 animals assisted under IDDP project, 15 (78.94 per cent) were provided to small and marginal farmers. Again, as noted above, among the sample beneficiary households small and marginal landholders constituted the major.

The benefits provided under the project have several components. Apart from induction of milch animals, the project contains the provision for providing technical inputs of feed and fodder kits for better milk production, providing equipments like milk cans, etc. Unit cost of investment under the scheme of IDDP thus included (a) cost of one crossbred cow (b) cost of construction of shed and (c) cost of equipments. The survey data revealed that the average actual unit cost of investment was Rs.10,755 covering cost of one milch animal (Rs.7105), cowshed (Rs.3500) and cost of equipment (Rs.150).

The same beneficiary did not receive all the components of investment. Based on farmers' level survey data, it is found that about 58.33 per cent of sample beneficiaries each from society no.1 and 2 received crossbred milch cow in unit of one animal which were partly on 50 per cent subsidy and partly on 100 per cent subsidy (table-1). The proportion of sample beneficiaries receiving milch animals accounted for 41.67 per cent for society no.3 of which 25 per cent were on 50 per cent subsidy and 16.67 per cent on 100 per cent subsidy. While in majority of cases, beneficiary received milch animals, in some other cases they received assistance for the construction of cattle-shed. The proportion of such households accounted for 16.67 per cent for society no.1, 25 per cent for society no.2 and 8.33 per cent for society no.3. However all the sample beneficiaries were provided with fodder kits free of cost for enhancing milk production.

Table –1

Milch Animals Inducted and Other Benefits provided under IDDP

Name of the society	Milch animals inducted (one cow each)						Assistance for cattle-shed		Other Benefits			
	No.of households received			Percentage of households received			No. of house holds received	Percentage of house holds received	Milk Cans		Fodder Kits	
	On 100% subsidy	On 50% subsidy	Total	On 100% subsidy	On 50% subsidy	Total			No .of house holds	Percentage of house holds	No.of house holds	Percentage of house
Nampatam MPCS	3	4	7	25.00	33.33	58.33	2	16.67	5	41.67	12	100.00
Ringhim DUSS	2	5	7	16.67	41.67	58.33	3	25.00	5	41.67	12	100.00
Chandey MCS	2	3	5	16.67	25.00	41.67	1	8.33	7	58.33	12	100.00

Data Source: Survey data

The relatively high degree of dependence on buffaloes as a source of milk, is widely documented in the literature on livestock economy. The present study however reveals a different picture in that cattle is the only source of milk in the surveyed area of Sikkim. Ownership of milch cattle is largely concentrated in small and marginal holdings. Of the total sample beneficiary farmers selected for the study, 86.11 per cent are small and marginal who owned 82.67 per cent of total milch cattle. According to breeds, majority of milch animals kept by the sample beneficiary farmers are indigenous type having low milk yield potential.

Out of 75 milch cattle possessed by the beneficiary households, only 32.00 per cent are crossbreed cows and 68.00 per cent are indigenous cows.

The overall investment in dairy enterprise comprised of cattle-shed of milch animals, stores, equipments for feeding watering and miscellaneous other items of expenditure. It is evident that the initial investment in dairy farms of 36 sample beneficiaries was of the order of Rs.543605 of which 17.29 per cent was in cattle-shed and stores, 77.56 per cent in milch animals, 1.82 per cent in equipments for feeding, watering and 3.33 per cent on miscellaneous items. The overall average investment per household in dairy enterprise worked out at Rs.15100. Noticeably, investment per household increased with the increase in the size of milch animal from Rs. 14251 with less than 5 numbers of milch animal to Rs. 29525 when the size of milch animal herd increased up to 10 numbers. Average investment per unit of cattle population stood at Rs. 4150 being declined consistently with the increase in the size of milch animal.

So far as the impact of IDDP in terms of growth of milch animals is concerned, after the introduction of IDDP, altogether the 36 sample beneficiary households have newly introduced 26 milch cattle. Of the total addition of milch cattle 46.15 per cent constituted crossbreed animals and 53.85 per cent are indigenous cows.

As noted earlier, milch animals are entirely cattle population in the study area. Of the total number of milch cattle possessed by beneficiary farmers, 74.67 per cent are in milk. Milk yield from an milch animal varied according to breeds. For indigenous cows, per cow per day production of milk is worked out at 2.92 liters while the corresponding figure in the case of crossbred cows stood at 9.65 liters.

The pattern of disposal of milk production for beneficiary farmers revealed that a major portion of the milk production was supplied to the society for sale which accounted for 69.27 per cent. A portion of the milk (19.53 per cent) was used for home consumption commensurate with the requirement in the family and the remaining 11.20 per cent were sold to private sources. The programme of IDDP with its co-operative network seems to have been successful in increasing the rate of commercialization of milk production by providing an assured market outlet for milk to targeted beneficiaries.

IDDP programme has provided a dependable alternative channel for disposal of marketable surplus of milk at prices, which are considered fair for the producers. Considering both Fat and solids-not-fat (SNF) contents of milk, producer prices are set at levels, which

covered the estimated actual cost of production of a liter of milk. Although producer prices paid by the societies have remained lower than market prices, member milk producers have recovered losses by obtaining milk enhancing inputs and technical services free of costs or at subsidised rates, from the programme of IDDP. Besides, at the end of year, member producers are paid bonus on a pro-rata basis in proportion to the quantity of milk sold by the milk producers to the societies.

In studying the economics of dairy enterprise, attempt has been made to work out the benefits accruing to the selected beneficiaries. The benefits comprised of two components of income viz annual milk production and the estimated value of youngstock. Value of cow dung is not considered as there is no demand for cow dung in the study area. As a measure of profitability of investment in dairy units, benefit cost ratios by breeds of milch animals are estimated. The overall BCR worked out at 1.14 with the estimated figure of 0.94 for local cows and 1.41 for crossbreed cows. Thus investment in dairy activity is found to be economically viable in the study area. The financial soundness of dairy units is examined by working out the Financial Rate of Return (FRR). The financial rate of return on investment in the acquisition of a crossbred cow works out to 19.62 per cent. The figure stood at 12.96 per cent while reckoned on total investment. This substantiates the financial viability of investment in dairy units.

As regards generation of income by the dairy farms of the beneficiary farmers, the proportion of income from dairying to total income from all sources worked out to 51.47 per cent (table-2). Dairying, thus contributed the major as a source of income for the beneficiary farmers. Noticeably, the share of income from dairy increased with the increase in the size of holding of milch animals. Of the total income from dairying, about 93.94 per cent is derived from production of milk.

The dairy sector provided employment opportunities to the beneficiary farmers ranging from 55.98 percent to 71.84 per cent of the total working man days depending on the size of milch animals with an overall average of 58 per cent for all the dairy farms together.

Non-Beneficiary households displayed the similar features as those of beneficiaries in terms of educational background and landholding status. As a whole, the characteristic feature of dairy farming in the study area is thus the pre-dominance of small-scale milk producers characterized by the dominance of small and marginal landholders. In case of non-beneficiaries, milk yield from an milch animal was markedly lower as compared to the same

Table –2**Income of the Sample Households by Size Groups of Milch Animals**

(Income in Rs.)

Size Group of Milch Animals (Nos.)	No. of H.H.	Sources of Income				
		Agriculture	Dairy	Income from Other Sources	Total	% of dairy sector to total
Below 5.00	34	438200 [12888.23]	739430 [21747.94]	264000 [33000.00]	1441630 [42400.88]	51.29
5 -10	2	40000 [20000.00]	130400 [65200.00]	78000 [39000.00]	248400 [124200.00]	52.50
10 - 20	0	0	0	0	0	0
20 - 30	0	0	0	0	0	0
30 & above	0	0	0	0	0	0
Total	36	478200 [13283.33]	869830 [24161.94]	342000 [9500.00]	1690030 [46945.27]	51.47

Note : Figures in brackets indicate per household income from various sources

Data Source: Survey Data.

accrued by the beneficiaries. Non-beneficiaries in the absence of their access to dairy co-operative societies for their market outlet of milk, are found to have consumed a sizeable proportion of milk production in their family. Moreover, marketed proportion of milk output was entirely handed over to the private sources. Notably, the proportion of milk output marketed was markedly less than the beneficiary farmers. The comparative experiences of beneficiary and non-beneficiary farmers have thus manifested the role of dairy co-operatives created under IDDP in increasing the rate of commercialization of milk production by providing an assured market for milk to the milk producers.

As a source of income, the dairy farming contributed the least for the non-beneficiary farmers. As evidenced by the overall estimate of benefit cost ratio, dairying did not turn out to be a sound economic alternative for non-beneficiary farmers. The observed common feature for both the beneficiary and non-beneficiary farmers however, is that dairying with crossbred cows is a profitable proposition. Given the fact that indigenous cows have very low genetic production potential, there exists hardly any scope for making traditional dairy farming based on indigenous cows economically viable. The diffusion of crossbreeding technology through Artificial Insemination (AI) would be the effective instrument in transforming dairy units into viable economic units. The implementation of the provisions

contained in IDDP like induction of crossbreed milch animals and crossbreeding through Artificial Inseminations (AI) services have offered the most promising means of increasing milk production and thus making the dairy units viable ones.

Conclusions and Policy Implications

The findings of the study have some implications for the policy making in the dairy sector. The following are the policy implications emerging from the study.

First, the favorable bovine resource base indicates a lot of scope for dairy improvement in the north district. However, female crossbreed population is one of the lowest (8.52 per cent of state total) in the district. Although with introduction of IDDP, crossbreed population increased, the region is still lagging behind other three regions where the percentage share of crossbreed female population in the state ranged from 21.38 percent to 42.37 percent. As evidenced by survey data, at the farmers' level, of the total number of milch cattle possessed by beneficiary farmers, 68 per cent are indigenous cows and the rest 32 per cent are crossbred cows. The population of indigenous cows is so large that selective breeding will take enough time to raise milk production. There is no alternative therefore to crossbreeding for genetic improvement of cows. This indicates a lot of scope of dairy improvement through adoption of crossbreeding programme with larger coverage in the district. The IDDP programme envisaged the provision for extending artificial insemination facilities to the farmer members apart from induction of crossbreed milch animals. However the diffusion of crossbreeding technology through A.I. under the programme has been extremely limited. What is needed therefore is that apart from the coverage of A.I Centres it is necessary to extend A.I. facilities to the farmers' doorstep. This would lead to gaining further momentum in the diffusion and adoption of crossbreeding technology. Accordingly, under the scheme more emphasis should be placed on building reproduction infrastructure. Alongside, crossbreeding through providing more artificial insemination services under the programme of IDDP needs greater emphasis (**Attn: Joint Director, Department of Animal Husbandry, Livestock, Fisheries and Veterinary Services, Government of Sikkim**)

Second, given the fact that indigenous cows have low genetic production potentials, the crossbreeding with high yielding exotic breeds has been very popular as a means of increasing milk production. This is what has been done under the programme of IDDP through extending artificial insemination services. Notably, however upgrading of local cows through natural services did not receive attention. In fact, the shortage of breeding bulls is one of the principal handicaps in implementing any dairy development programme. To

overcome this difficulty the use of Artificial Insemination (AI) is extended. In the state of Sikkim, the state Bull Rearing Farm (BRF) is capable of providing bulls, which is a fraction of the numbers actually needed. Thus the IDDP scheme should provide for setting up of bull-rearing farms or the scheme should have the provision for subsidising the rearing of bull calves. The hill areas like Sikkim offer the scope for crossbreeding with exotic breeds. The IDDP scheme should therefore contain the provision for establishing exotic breeding farm for supplying bulls for the development of hill cattle. So far the shortage of bulls is being met up by bringing in high-yielding animals from other areas, which are in many cases found not suitable in the selected region. **(Attn: Department of Animal Husbandry, Livestock, Fisheries and Veterinary Services, Government of Sikkim)**

Third, the organizational set-up under IDDP combines production, procurement, processing and marketing all within one structure. However as far as the impact of the project is concerned, relatively low prices are paid to the milk producers than the prices received by the society from the milk union and the market price. Obviously due to lower sale price of milk, the producers did not have incentives to increase milk production by better breeding, feeding and management of animals. The programme implementation thus involves a sort of imbalance in putting emphasis on processing and marketing vis-à-vis production technology. Dairy processing and marketing have to be given higher priority over dairy production technology for sustained development of dairy activity. In other words, milk prices should be treated as an instrument for promoting dairy activity while providing subsidized inputs and services as incentives for enhancing milk production. The dairy co-operatives should play pro-active role in setting producer prices of milk at levels competitive in the market. **(Attn: Joint Director, Department of Animal Husbandry, Livestock, Fisheries and Veterinary Services, Government of Sikkim)**

Fourth, the pattern of organization of dairy co-operative Societies at the village level would need modification. It is observed that the size of the societies is small and on account of paucity of funds, the society is unable to undertake investment in equipment for chilling. The milk collection centers organized under IDDP, collect milk in the morning, while extra milk available during other part of the day produced by the milk producers is not procured in the absence of chilling equipments available with the society. Therefore societies need to be equipped with adequate fund for making investment in purchasing chilling equipment. **(Attn: Joint Director, Department of Animal Husbandry, Livestock, Fisheries and Veterinary Services, Government of Sikkim).**

Fifth, the IDDP model of dairy development is based on crossbred milch animals, fed with grains, oilcake, balanced cattle feed with some amount of supplementary feeding of green fodder. In the selected area of the state of Sikkim, feed requirements of milch animals are partly met through collecting grass from the forest supplemented with some amount of green fodder cultivated in the field. Given the poor agricultural land base, the scope for growing green fodder in the field is limited. Moreover production of milk with the by-products from the agriculture sector is also limited. In the area, so long as maintenance of dairy activity competed minimally with the resources used for human food production, it would be able to maintain a balance with the carrying capacity of the available natural resources. Otherwise, it could lead to ecological degradation. This should be kept in mind while formulating dairy development plans in the study area. In the direction of minimizing the natural resource use for dairying, efforts should be undertaken to bring down the surplus or un-productive cattle population in the selected area to the level as low as possible. **(Attn:1. Department of Animal Husbandry and Dairying, Ministry of Agriculture, Government of India, New Delhi, 2. Department of Animal Husbandry, Livestock, Fisheries and Veterinary Services, Government of Sikkim).**

Finally, the focus of dairy development should be shifted from its role as a source of supplementary income to a more contributing one. For this, the state government should make larger allocation of resources in the state budget towards the development of dairy farming in the region. **(Attn: Department of Animal Husbandry, Livestock, Fisheries and Veterinary Services, Government of Sikkim).**

To conclude, one could say that despite having certain limitations in the programme of IDDP, the programme by and large has had a positive impact on milk production, ensuring the year-round dependable market for produced milk, generation of income and employment resulting in socio-economic development of the people in the study area. The calculated accrued benefits from the programme exceeded the total cost creating a strong foundation for future growth and development of dairy activity in the region. The infrastructure so painstakingly created under the programme in the field of procurement, processing and marketing together with providing assured prices to the producer have all contributed to the changing dairy scenario to give momentum to dairy development in the selected region of the state of Sikkim.