

## **Common Property Resources, Peoples' Participation and Sustainable Development: A Study of Sukhomajri**

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*This paper explores the dynamics of socio-economic transformation witnessed at Sukhomajri – a small hamlet in the Shivalik Foothills, Haryana, by examining, in depth, various developments that have emerged in the village in the wake of Watershed Development Project since mid-1970s. Field survey data pertaining to the agricultural year 1992-93 is analyzed to answer, inter alia, some important questions, whose implications extend much beyond Sukhomajri. Some of these questions are: What is the mechanism through which the involvement and participation of rural communities in various development projects and programmes at the grass roots level can first be secured and then assured, and, that too, on an enduring basis? How to ensure commitment of different strata of rural communities to a common cause? How do rural institutions respond to the agents of change from outside? How does the increase in income resulting from the successful commissioning of the community level projects affect the levels and pattern of employment, earnings, production, levels of living and savings of the beneficiary households? And, can the solution offered by the Sukhomajri model to various socio-economic problems be replicated elsewhere with the same degree of success? The findings of the study indicate that the gains emanating from the process of socio-economic transformation at Sukhomajri, in terms of household level improvements in augmented production, dispersed and more remunerative employment structure, appreciable rise in the levels of living and savings, including growing tendencies toward better health care, education, etc., have been shared by all on a more or less equitable basis. The analysis in the paper further reinforces the fact that in effecting socio-economic transformation at the grassroots level, what is needed aside from the supply of capital, is a unique synchronization between the enlightened, dedicated and enterprising human endowments (both official and non-official at the local level, progressive social attitudes of the people at the grassroots level, dynamic and growth-oriented rural institutions, technology-in-use, infrastructural facilities and beneficial historical accidents. In precise terms, while focusing on the self-binding measures, particularly in the form of 'Social Fencing' and community level 'Conservation and Management of the Common Property Resources,' the paper forcefully argues for the need to ensure community level mobilization, involvement and effective participation in the decision-making process pertaining to various development projects so that gains trickling down from such resources or projects get evenly or equitable distributed. 'Sukhomajri Model' is a classic example of peoples' participation in the process of development that ushered in all round prosperity in the said village, and also that of sustainability of this process on a lasting basis, clearly demonstrating to the outside world that given the requisite official support and vision, what a poverty-ridden rural community is capable of accomplishing. Therefore, attention must be focused on the creation as well as fostering and strengthening of the grassroots institutions on the pattern similar to the one witnessed in Sukhomajri over the years. The envisioned success, of course, is critically dependent on the combination of "good vision" and "good management" on the part of our planners and policymakers as also on that of the rural communities themselves.*

## 1. INTRODUCTION

### Sukhomajri Model: Need for A Re-look

In the recent years, *Sukhomajri Watershed Development Project* has shot into international fame for the remarkable socio-economic transformation that it brought about in the village Sukhomajri, which, until the close of 1970s, was like any other slumbering and poverty-stricken village of India. The human element in this model is brought out in the most laudatory terms, and it has been described as a wonderful model of village development and management of common property resources against the most daunting odds. Extensive empirical exploration has been carried out in regard to *Sukhomajri Participatory Development Model*. Accordingly, a fairly large body of literature exists on this model. Yet to the best of our knowledge, the socio-economic gains emanating from this model have not been explored comprehensively. In view of such an important void, many questions still lie unanswered. This much-acclaimed peoples' participatory development model, in our opinion, merits a fresh look for several cogent reasons.

First, the story of *Sukhomajri Watershed Development Project* and *the Community Management of Hill Resources* is one of tremendous successes experienced anywhere during the past couple of decades. It underlines the fact that in effecting sustainable socio-economic transformation, aside from the supply of capital which in the present case was made available by the Ford Foundation in the initial stages, a unique synchronization between the enlightened, dedicated and enterprising human endowments (both official and non-official), progressively growing social attitudes of the people at the grassroots level and beneficial historical accidents, tend to play an important role.<sup>1</sup> These, in our opinion, must be brought into bold relief.

The second reason we think that Sukhomajri growth experience should be laid bare as objectively as possible is that the process of socio-economic development through the active participation of village communities is increasingly becoming a popular aphorism. Since Sukhomajri belongs to this genre and the model under reference has made it the buzzword for the researchers and policy administrators advocating sustainable development, an examination of the specialties associated with the village is bound to offer some meaningful insights to those who feel genuinely concerned with the socio-economic transformation of the Indian countryside on an enduring basis.

The third reason for undertaking a fresh look at the afore-mentioned model is that this model, in addition to ushering in an era of great economic prosperity in the village, has also thrown up some new concepts such as *Social Fencing*<sup>2</sup> and the *Joint Management of Hill Resources*<sup>3</sup>. One is, therefore, curious to know the process underlying the growth of these concepts.

The fourth reason for having a fresh look at this model is that the past course of socio-economic transformation of Sukhomajri undoubtedly has great significance for the future of the countryside economy in India. In other words, the Sukhomajri development model particularizes a process

of socio-economic transformation, which many areas, in situations similar to erstwhile Sukhomajri, would also like to emulate. In our view, an in-depth examination of this model would enable such aspiring areas to grasp some of its essential specifications. To put it straight, such areas must benefit from the successes of Sukhomajri model while guarding against its weaknesses at the same time.

The fifth reason is that this micro-level planning model, proving itself to be highly responsive to peoples' most felt needs, is considered to be a classic case of equitable growth. It represents the case of a socially and economically backward village<sup>4</sup> completely transforming itself through spectacular growth. The collateral evidence shows that the model under consideration is already a pretty well known landmark in that it succeeded in the remarkable deliverance of the masses from the appalling socio-economic deprivation. It is probably on account of this reason that this model has fascinated Indian as well as foreign observers<sup>5</sup> from diverse areas and of diverse investigative interests. It is not impertinent to observe that while most of these observers of Sukhomajri growth experience have focused on economic gains of ecology management; in most cases, however, they have not ventured to go beyond making some impressionistic statements. In other words, serious efforts have not as yet been made to estimate such gains quantitatively. And those who have made attempts in this direction have done so for periods much earlier on the village's journey to prosperity. Consequently, one does not know for certain if the gains percolating from the implementation of the model have got consolidated on an enduring basis. It is hoped that our study shall fill this gap.

The final reason is that although the success associated with the model has become widely acclaimed, yet research effort has continued to elude many important issues. For example:

Since this model typifies a situation in which the people at the grassroots level operate and the concerned government officials cooperate, what then is the mechanism through which the involvement and participation of rural communities can first be secured and then assured, and that too, on an enduring basis? Since the implementation of the model is bound to have differential impact across different strata of the village communities, what about the respective degree of commitment of such strata to a common cause? How do rural institutions respond to agents of change from outside? As is commonly claimed, if the model has succeeded in bringing about a phenomenal increase in the income of the beneficiaries, how is this increased income being utilized? In other words, how has the increased household income affected the levels of living and savings? And, is the solution offered by this model to various socio-economic problems situation-specific? Or else, can this model be replicated elsewhere with the same degree of success?

In summation, the above stated issues merit a far more serious consideration in a scientific and systematic study of any Indian village than has hitherto been accorded thus far. To put the record straight, it can be argued that the Sukhomajri growth experience has relatively been given less consideration than what it actually deserves. Consequently, incomplete views about the growth experience of Sukhomajri have tended to prevail regarding the process of growth it

has undergone during the past couple of decades or so. The present paper attempts to fill this void. Our considered view, in this regard, is that meaningful answers to these and many other related issues should be highly informative and should offer us some important clues in understanding the dynamics of socio-economic transformation that characterizes this model.

This paper will focus on the dynamics of socio-economic transformation as has been witnessed at Sukhomajri since mid-seventies. The paper is organized as follows. Section II describes the data used in the paper. Section III mirrors the changes that have taken place in Sukhomajri in the wake of the introduction of the process of socio-economic modernization in relation to Sukhomajri before that. Section IV focuses on the process of change in terms of initial hesitations on the part of the villagers toward the process of change, the turning point in it, and its gathering momentum over time. Section V illuminates the economic gains emanating from the project in terms of employment/income levels, consumption/savings standards and also presents a temporal view of the change that has occurred in the village since mid-seventies. Section VI of the paper attempts to understand the change at Sukhomajri in terms of the content of transformation, the price tag of the model, the possibility of replication of the model elsewhere, the policy implications of the model as also the issues confronting the Sukhomajri inhabitants. And finally, section VII offers some observations of conclusive nature.

## II. THE DATA

The present paper proposes to seek answers to as many of the above-mentioned questions as is possible in terms of field data gathered by us from Sukhomajri during June-December 1993, through a well-structured and pre-tested questionnaire, canvassed through a door-to-door inquiry. Practically, all the households were covered. In addition, broad impressions about the functioning of the grassroots institutions and their implications for the community as a whole were also gathered from a few senior and knowledgeable persons of the village, especially those who had been closely associated, in one way or the other, with the observed process of socio-economic change. Though the information in this paper pertains to the agricultural year 1992-93, yet the findings and the conclusions emanating from our analysis are as relevant today as they were then.

## III. SUKHOMAJRI: AN EVOLVING PROFILE

The preceding section provides information pertaining to the database of the present exercise. In this section, we now turn our attention to looking at Sukhomajri of today<sup>6</sup> in relation to Sukhomajri at the time of our survey, as also Sukhomajri of yesteryears. Obviously, while our primary concern in this section is to have a broad overview of the changes that have occurred in Sukhomajri over the period of time in the wake of the ushering-in of the process of socio-economic modernization, we also intend to get an understanding of the role played by the grassroots functionaries in this particular case.

### Sukhomajri Today

Though the present paper is mainly based on our survey data generated by us for the year 1992-

93, yet luckily enough, Sukhomajri has always been in the news over the period of time for its enviable socio-economic modernization. This enables us to have a crisp and synoptic view of the village in an overall sense. In more precise terms, what needs to be underlined in particular with regard to Sukhomajri today is that it is altogether a new village where denuded hills wear a green cover with the net result that reduction of runoff and soil loss has become substantially reduced owing to the fructification of efforts made by the Hill Resource Management Committee in terms of management of distribution of water from dams constructed in the village. All this has been achieved through making check dams on slopes, planting bushes, trees and grass all over the slopes responsible for the flow of sediments into the nearby Sukhna Lake. This has contributed to the present level of development of the village in several of its manifestations. For instance, Sukhomajri has today plenty of water to irrigate its fields. Water table in the village is also said to have improved significantly to permit installation of tubewells in the village for purposes of irrigation of fields. It is not unimportant to note that the above-mentioned committee is now reported to be earning to the tune of Rs. 0.12 lakh on an yearly basis from the sub-letting of its dam water for fish culture to diversify into horticulture etc. and from the sale of forest grass. In more precise terms, the people of Sukhomajri in general today are well off in terms of indicators of economic well-being. This is indicative of the fact that a very high level of economic prosperity has dawned on this village over a period of time.

#### Sukhomajri in Our Survey in 1992-93

A simple but convenient way to capture the process of socio-economic transformation in Sukhomajri would be to look at Sukhomajri of 1992-93 in relation to Sukhomajri of yesteryears. Analytically, the whole process of change automatically unfolds itself and contrasts are succinctly mirrored if we proceed backwards, from the present to the past. Let us, therefore, see what did Sukhomajri actually look like in 1992-93.

In the meanwhile, it is not unimportant to observe that Sukhomajri has a history spanning over nearly 400 years, when 4 or 5 Gujjar families had settled here from elsewhere, while tending their herds of goats and other low-grade livestock. Viewed from this angle, it is, indeed, very interesting to observe that despite such a fairly long history together with its current socio-economic transformation, Sukhomajri continues to be bereft of a separate identify of its own. As per the available land records, it forms only a hamlet of a nearby revenue village - Dhamala.

Geographically, Sukhomajri is situated in salubrious surroundings in the lower Shivalik foothills in Kalka Tehsil of District Ambala in Haryana State, at a distance of about 4 kms from Pinjore on the Pinjore-Nalagarh metalled road, and is roughly 26-27 kms by road from the State Headquarters in Chandigarh (see map). Administratively, the village is attached with Dhamala Panchayat. With the exception of 3 Jat households and a single trader household, the village is predominantly inhabited by 93 Gujjar households who account for nearly 97 percent of the total population, numbering 624 (Table 1).

Table 1 further shows that the average household size is 6.5 and the average number of earners per family is 2.70. Second, the percentage of families having earning men and women as also

the percentage of family members recorded as earning men and women do not show any important variation across sexes. Third, the male-female ratio is found to be highly unfavourable to the fair sex.

Age and educational level of the head are believed to be considerably influencing the household activity. Young and educated heads of the household are said to be more enterprising. So far as the age of the head is concerned, Sukhomajri does not suffer any special disadvantage. However, in terms of educational status, the position does not seem to be encouraging inasmuch as about two-thirds of the family heads are deprived of even the elementary education. However, an important development, worth paying attention to, is that educational consciousness is growing in the village and people are highly desirous of sending their sons and daughters to school even though the educational facilities available in the village are just of an average standard.

Occupational distribution of the adult workforce reveals many interesting facts. Over 100 persons from this village daily commute to the adjoining areas of Surajpur, Pinjore, Kalka, Chandigarh, etc. in pursuit of various remunerative non-farm jobs. Therefore, the number of adult male workers engaged in agriculture is relatively small. Those engaged in diverse non-farm activities are also practicing part-time farming. In brief, there is an inter-mixture of economic activities being availed of by Sukhomajri people.

Land holdings in Sukhomajri are small and fragmented. Accordingly, people have made huge investments in livestock, especially in milch cattle. Investments in agricultural implements and machinery have also occurred on a significant scale. This, coupled with the timely availability of water through the community reservoirs, has helped in overcoming the disadvantages usually associated with smallholdings. If the irrigation base of the village could somehow be further strengthened, it would, in association with other complementary inputs, lead to further improvements in land productivity which, in turn, would increase volume of agricultural production, earnings and village prosperity.

**Table 1: Socio-Economic Characteristics of Sukhomajri, 1993**

Sr. No.	Item	Value
<b>A. Demographic Features:</b>		
1.	Total Households in the Village (Number)	97
	(a) Gujjars (93)	
	(b) Jats (03)	
	(c) Others (01)	
2.	Number of Households Covered in the Study	96
	(a) Gujjars (93)	
	(b) Jats (03)	

3.	2 as percentage of 1 above	98.97
4.	Total Population	624
5.	Average Household Size	6.50
6.	Number of Males	349
7.	6 as percentage of 4 above	55.93
8.	Number of Females	275
9.	8 as percentage of 4 above	44.07
10.	Females/1000 of Males	788
11.	Number of Adult Males	201
12.	11 as percentage of 6 above	57.59
13.	Number of Adult Females	173
14.	13 as percentage of 8 above	62.91
15.	Total Number of Adults (11+13)	374
16.	15 as percentage of 4 above	59.94
17.	Percentage of Families Having:	
	(a) Earning Men	93.75
	(b) Earning Women	92.71
18.	Average Number of Earners Per Household	2.70
19.	Percentage of Family Members Recorded as:	
	(a) Earning Men	78.61
	(b) Earning Women	78.03
20.	Number of Households Reporting Cultivation	89
21.	20 as percentage of 2 above	92.71
B.	<u>Age and Education of the Head :</u>	
1.	Age Group (in years)	Number of Households
	(a) 25-30	6 (6.25)
	(b) 30-35	5 (5.21)
	(c) 35-40	20 (20.83)

(d)	40-45	13 (13.54)
(e)	45-50	13 (13.54)
(f)	50-55	13 (13.54)
(g)	55-60	06 (6.25)
(h)	60 and above	20 (20.84)
<b>II. <u>Educational Status:</u></b>		
(a)	Illiterate	62 (64.58)
(b)	Literate but Below Primary	4 (4.17)
(c)	Primary but Below Middle	16 (16.67)
(d)	Middle but Below Matric	9 (9.38)
(e)	Matric and Above	5 (5.20)
Total Households for B (I) and B (II) Above (No.)		96 (100.00)

**C: Adult Workforce Occupational Distribution:**

		Number of Persons
1.	Predominantly Non-Agricultural Workforce.	
1.	Industrial workforce:	
(a)	Bhupendra Cement Factory Surajpur	45
(b)	Hindustan Machine Tools Pinjore	08
(c)	Other Industries	01
Total Industrial Workforce (a+b+c)		54



2.	Construction and Related Activities	10	
3.	Miscellaneous Activities	09	
4.	Government Employees	23	
5.	Milk Vendors	08	
6.	Others		02
	Total Non-farm	106	
II.	Predominantly Agricultural Workforce:		
	(a) Males	59	
	(b) Females	134	
D.	<u>Household Assets</u>		
I.	Land:		
(i)	Cultivated Owned Land(Total of the Operational Khyot landholdings in Acres)	143.64	
(ii)	Sum of the Shamlat Land with Cultivation Rights with Individual Households (in Acres)	129.02	
(iii)	Total Forest Land (in Acres)	241.80	
	Number of Households Owning Land	93	
	Percentage of Positive Responses	96.88	
II.	<u>Livestock:</u>		Number
	(a) Bows	42	
	(b) Draught Animals (Oxen)	63	
	(c) Goats	56	
	(d) Cows	04	
	(e) Buffaloes	231	
	(f) Young-ones of Buffaloes	144	
	Number of Households Owing Milch Cattle	92	
	Percentage of Positive Responses	95.83	
III.	<u>Agricultural Implements and Machinery (Rs.):</u>		
	(a) All Households	983600	
	(b) Per Household	10245.83	
	Number of Household Owing Agricultural Implements and Machinery	92	

Percentage of Positive Responses 95.83

E. Agricultural Development :

1.	Total Cultivated Land (Acres)	272.66
2.	Area Leased-in (Acres)	7.30
3.	Area Leased-out (Acres)	8.00
4.	Shamlat Land Given to the Forest Department for the Plantation of Trees(in Acres)	57.20
5.	Net Sown Area in Acres (1+2-3-4)	214.76
6.	Area Sown more than once (Acres)	166.00
7.	Gross Cropped Area (Acres)	380.76
8.	Cropping Intensity	1.77
9.	Net Irrigated Area (Acres)	90.38
10.	Irrigation Base (NIA/NSA x 100)	42.08
11.	Area Irrigated by Common Water Reservoirs (Acres)	71.76
12.	11 as percentage of 9 above	79.40

- Note:**
- (i) Figures in parentheses in B (I) and B (II) above represent percentages of all heads of the households.
  - (ii) In C above household members normally not residing with the respective households have not been considered.
  - (iii) In E above NIA is Net Irrigated Area and NSA is Net Sown Area (both in acres).

**Source:** Field Survey.

In the recent times, it has come to be increasingly believed that traditional communities have been experiencing significant changes for some generations now. Socio-economic transformations are reported from numerous areas that were completely unknown until recently. The process of socio-economic transformation hinges largely on, and as such, is also conditioned by the interaction between demographic, technological, economic, cultural, institutional factors, etc. In Sukhomajri, too, a few unmistakable signs of socio-economic transformation in relation to these factors are discernible. We go back to Table 1.

It is most striking that community ties here are strong and reflective of the underlying harmony and conduciveness. A sense of common perception prevails in regard to matters that affect the

mutually beneficial process of social and economic transformation. Increasing participation in inter-community social ceremonies and thereby sharing each other's joys and sorrows, and strengthening of the socio-economic ties are some of the distinguishing features of the social structure of Sukhomajri that has tended to fashion itself characteristically over the years. This, in turn, has culminated into a splendid assimilation of the two communities to such an extent that elderly villagers claim that in Sukhomajri "*Gujjars are Jats and Jats are Gujjars.*"<sup>7</sup> Going by this assertion, it becomes exceedingly difficult to draw the line of distinction between the two communities, and as such, the situation prevailing in Sukhomajri in this regard broadly conforms to a '*mono-caste society.*'<sup>8</sup> Though the above view may seem to have some element of exaggeration, it should, nevertheless, not be taken to mean that the two communities have lost their distinctive identities. Here, one important point needs to be borne in mind that it is the commonality of mutual economic interests that has brought the two communities together and motivated them to work together in the furtherance of various social and economic goals. What needs to be focused upon in this regard, in particular, is the sense of cordiality underlying the inter-community relationship.

It is important to note that within the broad community of Gujjars, there are as many as 7 sub-castes (Appendix-I). While inter sub-caste marriages are possible among the Gujjars, yet such marriages do not generally take place within the village itself. These sub-castewise diversities within the broad group of Gujjars notwithstanding, the unity of interest and aspirations of the social groups even today seems to be as great as it was ever before. This is obvious from the fact that even in today's world of growing materialism, many people here, in times of need, borrow money from each other free of interest. Besides, of late, educational consciousness also seems to be growing in the village (Appendix II). The people prefer to send their children to school instead of employing them on the field or letting them graze their livestock. The school going children do, nevertheless, lend considerable help in farming, especially during peak seasons. Women, in addition to performing their usual household chores, actively participate in various on-farm operations including dairying.

#### Grassroots Functionaries

It is important to note that the process of socio-economic development of the village communities is, *inter alia*, conditioned by two types of decision-making. While at the individual level, the households exercise considerable freedom in pursuing and furthering their own economic interests; in matters concerning the community as a whole, such decisions are usually taken at the community level through the active involvement of the socially respected village elders. The village level official or semi-official functionaries such as *the Nambardar, the Chowkidar, the Village Patwari*, etc. also play an important role in the social mobilization of the communities, and also in forging highly significant links between communities on the one hand, and between communities and government officials, on the other. Such functionaries are equally important from the point of view of individual households as well. It is due to his acknowledged position in the village that *the Nambardar* is described as the '*Government on the Spot.*' He is given this title because he is supposed to be a witness to all the land transactions in the village, and is also

accepted as a security in event of the fellow villagers registering police cases against each other. *The Chowkidar*, who earlier used to perform the duty of a night watchman, now acts as a messenger between government officials and the village communities; as such, he is paid partly by the government, and partly by means of meagre collections gathered once or twice a year from each household in the village. The *Village Patwari* is perhaps the most important functionary at the grassroots level. He maintains complete land records of the village and also collects information about area under each crop at the household level. He may, at best, be described as a land record clerk and draws his salary from government coffers, apart from getting an illegal tip in almost all the land transactions effected through him from time to time.

#### Sukhomajri of Yesteryears

*The above description of the present-day Sukhomajri is indeed revealing, and, as such, makes an interesting reading, compared to Sukhomajri of yesteryears. Until about mid-seventies, the socio-economic situation in the village was extremely grim. The Gujjars were a community of common worries and a common destiny. With the exception of a few, almost all the households in the village owned small and fragmented holdings on which they practiced rainfed, traditional agriculture with all its natural consequences in terms of frequent crop failures, low yield rates, depressed land and labour productivity, low farm incomes, extremely low levels of living and widespread poverty and destitution. Its sandy loam soils on the surface and loamy in lower layers which otherwise are considered to be quite important from agricultural point of view did not yield the desired level of output. All these factors made villagers reel under groaning poverty. Severe resource constraints and technological stagnation forced them to place economic security before profit maximization in agricultural planning at the household level. With the objective of supplementing their meagre household income from crop husbandry, they kept large herds of low-grade cows and goats, and daily let them loose for grazing in the adjoining hills. In brief, the backbone of the village subsistence economy consisted of rain-fed low productivity agriculture, supplemented with livestock rearing through open grazing. But then, with agriculture in a depressed state, the situation with regard to the foodstuff was exceedingly precarious.*

Not to speak of giving their agricultural production a commercial orientation, most of the households could not raise enough foodgrains even for their own annual consumption, and as such, were usually deficient households in this respect. This was despite the fact that men, women and children were grossly engaged in farming. The incapability of the backward and stagnant agriculture in the face of swelling demand for foodgrains, owing to a persistent demographic pressure, generated acute economic deprivation and insecurity among the villagers. The people of Sukhomajri in general were struggling very hard to make a living. However, unable to make a living from farming alone and with the prime objective of lowering pressure on agriculture and poor quality livestock, some of the villagers also started eking out a living through wage-paid employment in the nearby Surajpur cement factory and various other non-farm pursuits in such areas as Pinjore, Kalka, Nalagarh, etc. This did provide some respite for

some households, but a majority of them continued to remain devoid of such avenues, and their economic position seemed to be going from bad to worse. Since the average household did not get enough to meet its consumption requirements under the given state of affairs, the growing land hunger on the part of a majority of households in the village was, therefore, the natural consequence. This forced many households to seek unproductive loans, often from outside the village, not only for marriage and other social ceremonies but also for meeting their growing consumption requirements.

Driven by their acute economic distress, the villagers resorted to clearing the hill slopes to bring them under plough. They also resorted to the illicit practice of felling trees in the adjoining forests. In fine, excessive exploitation and denudation of the adjacent hills through uncontrolled grazing, illicit felling of trees and clearing of hill slopes for cultivation were causing soil erosion on a massive scale, culminating simultaneously into the siltation of the '*Sukhna Lake*' and, perhaps, more importantly, in the operation of the *Nurksian* '*Vicious Circle of Poverty*'<sup>9</sup> for the villagers in general. As is generally true of all traditional societies, the drudgery of poverty, ignorance, superstition, sub-human living conditions including acute health-care deficiencies, etc. were some of the characteristic features of those days which are still fresh in the memory of the village elders.

#### IV. THE PROCESS OF CHANGE

The preceding section provides a detailed overview of the change that has occurred in Sukhomajri over a period of time. Such an exercise, in our opinion, assumes significance and as such was required on two important counts. In the first instance, we intended to have a fair and objective assessment of the change. And second, on the basis of insightful analysis of the change we could later explore the possibility of its replication elsewhere. We feel that the issues that need to be examined at this juncture are: How did the people of Sukhomajri respond to the process of change? In other words, was the process of change in Sukhomajri smooth or characterized by hesitations usually witnessed on the part of the people in the Indian countryside? In the latter case, what proved to be the turning point with regard to villagers' relationship with the outside agents of change? It is widely perceived that people normally get enticed to a process of change if it is characterized by ample economic sheen. Did it happen in case of Sukhomajri as well? Moreover, was their association with the project under reference only a one-time affair or did they continue to involve themselves with it on a long-term basis? Needless to say, all these closely interrelated questions are of utmost importance, as they have far reaching implications in several of their manifestations. This section endeavours to locate plausible explanations for some of these questions.

##### Initial Hesitations

The story of the process of change that dawned on Sukhomajri can be narrated as under. However, before an attempt is made to analyze the process of change, it might be useful to note, in passing, that way back in 1974, with the prime objective of saving Chandigarh's famous '*Sukhna Lake*' from massive siltation flowing through sedimentation of the nearby '*Shivalik*

*Hills'* due to excessive rains, the Central Soil and Water Conservation Research and Training Institute (CSWCRTI), Chandigarh was assigned the task of investigating the problem and recommending appropriate remedial measures for reducing the siltation rate in Chandigarh lake. Under the leadership of Mr. P R Mishra, the then officer-in-charge of CSWCRTI, a joint team of CSWCRTI officers and those of Haryana Forest Department, under whose jurisdiction much of the lake's catchment area falls, surveyed the entire catchment area of the lake. By a sheer accident, the investigating team discovered that the hills in the neighbourhood of Sukhomajri were the most denuded and degraded in the whole catchment area of the '*Sukhna Lake,*' and, as such, the silt coming from these hills through massive sedimentation of the nearby hills posed a serious threat to the very existence of the lake.

Thus the problem was identified and in view of its growing seriousness, it called for immediate solution. However, before anything worthwhile could be done, the officials involved had to face the wrath of the illiterate and ignorant villagers. The villagers were wary of the strangers i.e. the city people or the officials for two main reasons. First, the villagers feared molestation of their women folk at the hands of the city-dwellers, and second, they were apprehensive that in this process, the government might deprive them of their land. Thus, much before any project could be consummated, such serious human problems surfaced. However, thanks to all-out, relentless efforts made by Dr. D. R. Bhumbra, himself a Gujjar by caste and a senior official of the Indian Council of Agricultural Research (ICAR), Mr. P.R. Mishra of CSWCRTI and Mr. Daulat Ram, an elderly villager, that most of the apprehensions of villagers were put to immediate rest. It is pertinent to point out here that barring a few initial inhibitions on the part of the villagers, the part played by the two sides i.e. the officials associated with the project and the villagers has been mutually supportive. Still it is important to note that initially the solution was sought to be achieved by means of introducing a number of technical measures in the form of construction of check dams, revetments, palisades, silt detention dams, planting trees, installing a 4-strand barbed wire fence, and so on.

These measures did not work for want of desired response from the villagers, whose economic survival was certainly at stake. And, as is often said, no development succeeds unless it takes place in the minds of the people,<sup>10</sup> it is not surprising that the strategy underlying these technical measures proved to be self-defeating. Consequently, there was growing realization that rehabilitation of the hills was possible only if the grazing was discontinued and, that too, not through the employment of technical measures alone as had been done earlier. It was suggested that this could be accomplished only if the economic interests of the villagers were protected and incorporated into any future village development strategy. Plainly speaking, it was imperative to assure the villagers that conservation of forest resources was in their own interest. With this background in mind, an alternative '*Catch-ball Game*'<sup>11</sup> strategy, with a number of salient features, was formulated and translated into practice.

#### The Turning Point

It has come to be widely believed that in rural economies, social development encompasses,

*inter alia*, economic development, which, in turn, given the asset base of these economies, is largely conditioned by the agricultural development. What happens to agriculture is, therefore, of critical importance. For agricultural development, water resource management holds the centre-stage. In fact, the overall growth of the cultivated area, expansion of the acreage of secondary sowings through multiple cropping and the degree of success of the new seed-fertilizer technology characterizing the green revolution, all depend on the development of assured irrigation. Indisputably, irrigation is the sheet-anchor<sup>12</sup> of agricultural development under the new technology. Owing to this reason perhaps, social and economic factors now-a-days occupy paramount place in any discussion of water resource management. To put it pithily, in the present case, it was rightly felt that the villagers' cooperation could be sought on an enduring basis only if they were given water for irrigation. This, in fact, marked the first step in the right direction.

Keeping the aforesaid objective expressly in mind, an earthen dam to monitor the impact of social conservation measures was constructed at Shivalik foothills in 1976-77. Some rainwater was stored in it. This water was harnessed for irrigating a few fields in the vicinity of the dam and the concerned households were supplied improved varieties of seeds and chemical fertilizers free of cost. As a result, the households whose land was situated in the vicinity of the dam were able to take advantage of the possibilities of irrigation and thus increased their earning capacities considerably, as their crop yields registered a dramatic increase through the use of dam water. This proved to be a turning point in the process of agricultural and hence socio-economic development of the village, as also in the relationship between the villagers and the officials involved in this process. The suspicion and hostility toward officials on the part of villagers, as had been observed earlier, melted away and gradually changed into cordiality. Enthused over the success of this maiden experiment, together with the move to involve people in the process of growth led to greater response in terms of sense of identification with the project. Now, the villagers came forward on their own to show and suggest a new site to the officials for the construction of a bigger dam for storing more rainwater, which could bring more area under irrigation. Interestingly, the proposed site did not fall in the Sukhna catchment area.

#### No Looking Back

The second dam was built in compliance with the villagers' request on the proposed site in 1978. The pipelines were laid to irrigate land below the dam on the condition that water will be supplied only if the villagers protected the catchment of their own little dam. It was pointed out that if they did not do that, their dam would get filled-up with silt and they would again have no water for irrigation. The villagers readily accepted this condition and they themselves volunteered to stall-feed their cattle to gain access to a more valuable hill resource i.e. dam water for irrigation. Consequently, the concept of '*Social Fencing*' was born. This highlights that economic self-interest is the prime mover and the principal driving force behind all human activities including '*Social Fencing*.'

Later, the monitoring and evaluation of the project revealed that while those families who were

getting water had stopped grazing altogether, other continued to do so. In terms of commitment, it displayed extremely contrasting situations of the perfect commitment on the part of one group and its complete absence on part of another. The pipeline initially laid could irrigate only half of the village land. Inadvertently, it had divided the community into those receiving water and those not getting it. Again, the villagers themselves suggested, through the good offices of elderly people such as Mr. Daulat Ram, that if everyone got an equal share of the dam water, then everyone would stop grazing. With this was born yet another important concept of 'equitable distribution' of water irrespective of land ownership status. Accordingly, besides constructing 2 new dams in 1979 and 1984 respectively, the pipeline of the existing dams was extended to deliver water to the fields of most of the households (Appendix- III).

Thereafter, on the initiative of the concerned officials, the villagers also agreed to form a '*Water Users' Association*' to manage the equitable distribution of water and also for the protection and maintenance of the dams. Most of the families slowly sold off their goats and poor quality cows and replaced them with high milk yielding buffaloes. This resulted into a phenomenal increase in income from production and sale of milk. They also made considerable investment in the levelling of their land to use water more efficiently. With increased crop production, even availability of fodder from their fields increased, thereby considerably reducing their dependence on forest areas for grazing and also on market purchases. Seeing the improved vegetative cover through natural regeneration, it was decided that the villagers should get a share of the increased output of even the other forest produce as the increase was really due to the villagers' self-imposed discipline of '*Social Fencing*.'

The concerned officials realized that such a measure could trigger sufficient motivation among the village community to assume responsibility for the protection and management of the forest resources on a sustainable basis. This, in turn, was seen to be beneficial for the village community as a whole. Following inducement from the officials in a series of meetings, the villagers converted their '*Water Users' Association*' into a broader "*Hill Resource Management Society*"(HRMS) and accepted responsibility, both in principle and practice, for the general protection of the forest area. In exchange, their HRMS started getting both the grass and bhabbar leases at the previous 3 years average price through open auction. The HRMS reduced the per-sickle rate for fodder grass cutting to Rs. 100 and Rs. 150 from Rs. 400 to Rs. 500 charged earlier by the private forest contractors from the villagers.

#### V. ECONOMIC GAINS

It is widely contended that in the ultimate analysis, what matters most is how a development similar to the one under reference affects the economic lives of people? To put the record straight, what type of gains have the people of Sukhomajri experienced after going through the process of socio-economic modernization? The intent of this section is to focus on this central aspect of the Sukhomajri model. In more precise terms, besides capturing a temporal view of change, we look at the employment/earning structures, as well as consumption/ saving standards of the villagers of Sukhomajri in terms of household level data generated by us during our field survey. First about their employment/earning structures.



**Employment/Earning Structure**

The gains emanating from the Sukhomajri Model can be classified into two categories: the community level gains and the household level gains. At the community level, the use of common property resources such as forest, water reservoirs, drinking water supply, school (though inadequate), common land (shamlat) have been quite important. The '*Hill Resource Management Society*' of the village made a significant financial contribution in the construction of school building as well as in the laying of pucca streets in the village.

What is, however, more important is the amount of gains from the households' point of view. A look at Table 2 shows that the households of Sukhomajri are enjoying a very dispersed structure of total yearly employment and earnings. It is adequately reflected by the fact that roughly 40 per cent of the total yearly employment and about 60 per cent of household earnings are accruing through non-farm sources. The level of earnings per day of employment from non-farm employment is roughly 3 times as high as that from on-farm employment.

An analysis of the two broad components of the total yearly employment/earnings viz. the on-farm component and the non-farm component, throws up some interesting results. First, a word about the on-farm component.

The structure of on-farm employment and earnings on per household basis (Table 3) is, indeed, revealing in that roughly 64 per cent of total yearly on-farm employment and about 50 per cent of on-farm earnings are coming through dairying. This shows that the enterprising households of Sukhomajri tended to overcome the disadvantage of their small land holdings by means of supplementing their household employment and income through dairying, indeed, in a remarkable manner.

**Table 2: Total Yearly Employment and Earnings, 1992-93****(Mean Value Per Households)**

<b>Sr.No.</b>	<b>Source</b>	<b>Emp. (Mandays)</b>	<b>Ern. (Rs.)</b>	<b>Epd. (Rs.)</b>
<b>1.</b>	<b>On-Farm Employment</b>	500.34 (60.55)	17126.94 (35.79)	34.23
<b>2.</b>	<b>Non-Farm Employment</b>	326.01 (39.45)	30721.43 (59.60)	94.23
<b>3.</b>	<b>Total Yearly Employment (1+2)</b>	826.35 (100.00)	47848.37 (100.00)	62.37

**Note:** Emp represents mandays of employment, Ern the level of earnings and  
Epd the level of earnings per day of employment.

**Source:** Field Survey.

**Table 3: Structure of On-Farm Employment and Earnings, 1992-93**

Sr.No.Source	(Mean Value Per Household)			
	Emp (Mandays)	Ern (Rs.)	Epd (Rs.)	PPR
<b>On-Farm Employment (Non-wage):</b>				
(i) Rabi	103.01 (20.59)	5526.29 (32.27)	53.65 (92)	95.83
(ii) Kharif	72.98 (14.58)	2705.00 (15.79)	37.06 (92)	95.83
<b>A. Total On-farm (i+ii)</b>	175.99 (35.17)	8231.29 (48.06)	46.77 (92)	95.83
<b>B. Dairying</b>	318.52 (63.66)	8633.57 (50.41)	27.11 (90)	93.75
<b>C. Wage-Paid Employment</b>	5.83 (1.17)	262.08 (1.53)	44.95 (6.0)	6.25
<b>Total On-Farm Employment(A+B+C)</b>	500.34 (100.00)	17126.94 (100.00)	34.23 (96)	100.00

- Note:** (i) Figures in parentheses under the heads Emp and Ern represent percentage of the overall yearly on-farm employment and earnings and under PPR the number of positive responses.
- (ii) The terms Emp, Ern and Epd are explained earlier in Table 2. PPR stands for the percentage of positive responses.

**Source:** Field Survey.

**Table 4: Structure of On-farm Employment and Earnings – Per Household and  
Per Unit of Cultivated Area, 1992-93**

<b>Sr.No.</b>	<b>Item</b>	<b>Value</b>
<b>A.</b>	<b>On-farm (Crop-raising)</b>	
(I)	Employment (Mandays):	
	(a) Per Household	175.99
	(b) Per Acre Cultivated Area	78.70
(II)	Earnings (Rs.):	
	(a) Per Household	8231.29
	(b) Per Acre Cultivated Area	3980.20
	<b>(c) Farm-business Income (Crop-raising + Dairying)</b>	
(I)	Employment (Mandays):	
	(a) Per Household	279.00
	(b) Per Acre Cultivated Area	124.70
(II)	Earnings (Rs.):	
	(a) Per Household	16864.86
	(b) Per Acre Cultivated Area	7538.75
<b>B.</b>	<b>Overall Farm Business Income (Crop-raising+Dairying+Wages)</b>	
	I. Employment (Mandays):	
	(a) Per Household	500.34
(I)	Earnings (Rs.):	
	(a) Per Household	17126.94
	(b) Per Capita	2634.91

**Source:** Field Survey

Table 4 looks at the structure of on-farm employment and earnings on per household and per unit of cultivated area basis. The structure of employment/earnings on per household basis seems to be more remunerative compared with per unit of cultivated area basis. This lends further strength to the commonly held view that the substitution of hired inputs by means of

family labour enables small farmers to raise more output. Thus, the availability of water for irrigation coupled with other complementary inputs had a dramatic impact in enhancing yield rates of individual crops by 2-3 times. It also made possible the introduction of a new fodder crop called 'barseem,' which alone resulted in a net annual saving worth Rs.3 lakhs for the village. Consequently, massive investments in livestock especially buffaloes (Appendix-IV) have been witnessed in the village over the past few years. Following this, production and sale of milk has increased manifold. Besides, some new vegetable crops such as peas, garlic, onion, tomato, potato, etc. are also being grown in the village. In fine, with the emergence of dairying as a very remunerative economic enterprise together with the appearance of aforementioned new crops, farming in Sukhomajri has tended to get highly diversified over the years. Consequently, the village stands remarkably transformed from a food deficit to a highly surplus economic regime.

Table 5 shows that Sukhomajri households are engaged in a highly remunerative structure of non-farm employment and earnings. They are not only optimising their employment and earnings from on-farm employment, but are also availing themselves of a very lucrative non-farm employment and earning structure. Their availing of non-farm employment and earnings through industrial work in the nearby Surajpur Cement Factory and, to some extent, in Hindustan Machine Tools factory at Pinjore needs to be underlined in particular. It contributes roughly 52 per cent of the non-farm employment and nearly 60 per cent of non-farm earnings.

**Table 5: Structure of Non-farm Employment and Earnings, 1992-93**

Sr.No.Source	(Mean Value Per Household)			
	Emp (Mandays)	Ern (Rs.)	Epd (Rs.)	PPR
<b>A. Wage Employment:</b>				
(a) Industrial Work	169.76 (52.07)	18145.75 (59.07)	106.89	48.96 (47)
(b) Construction	25.00 (7.67)	1341.56 (4.37)	53.66 (10)	10.42
(c) Govt. Service	68.58 (21.03)	6238.29 (20.30)	90.96	20.83 (20)
(d) Miscellaneous	29.27 (8.98)	1381.25 (4.49)	47.19	11.46 (11)
Total Wage Employment (a+b+c+d)	292.61 (89.75)	27106.85 (88.23)	92.64	75.00 (72)
<b>B. Non-Wage Employment:</b>				
(a) Household Enterprises	14.32	1352.08	94.42	5.21

	(4.40)	(4.40)		(5)
Milk Vending	19.08	2262.50	118.58	8.33
	(5.85)	(7.36)		(8)
Total Non Wage Employment	33.40	3614.58	108.22	11.46
(a+b)	(10.25)	(11.77)		(11)
<b>C. Overall Non-farm</b>				
<b>Employment</b>	326.01	30721.43	94.23	79.17
<b>(A+B)</b>	(100.00)	(100.00)	(76)	

- Note:** (i) Terms Emp, Ern, Epd and PPR are explained earlier in Tables 2 and 3.
- (ii) Figures in parentheses under the head Emp and Ern represent percentage of the overall non-farm employment and earnings respectively and under the head PPR the percentage of positive responses.

**Source:** Field Survey

**Table 6: Net Household and Per Capita Income and Savings, 1992-93**

Sr.No.	Item	Value
<b>I.</b>	Annual Household:	
	(a) Employment (Mandays)	826.35
	(b) Earnings (Rs.)	47848.37
2.	Per Earner:	
	(a) Employment (Mandays)	306.06
	(b) Earnings (Rs.)	17721.62
3.	Transfer Payments (Rs.)	2491.67
4.	Net Household Income (Rs.)	50340.04
5.	Per Capita Income (Rs.)	7744.62
6.	Per Capita Consumption Expenditure (Rs.)	5023.97
7.	Per Capita Household Savings (Rs.)	2720.65

**Source:** Field Survey

#### CONSUMPTION/SAVINGS STANDARDS

The information presented in Table 6 is quite informative in that it gives useful clues about

the level of net household income, per capita income and savings. This further reinforces our earlier conclusion that people of Sukhomajri are benefiting significantly from all the main components of on- and non-farm employment/earnings. There is no question of substitution of one component for the other. Since women-folk of the village extensively participate in various on-farm activities including dairying, the men, on the other hand, seem to involve themselves in the highly remunerative non-farm avenues with the net result that they get the best of both on-farm as well as non-farm avenues. It is not a trivial achievement that the level of per capita annual savings is as high as Rs. 2720.65, which, by normal Indian standards, is very impressive for a village. These savings are being increasingly utilized in the construction of residential accommodation, in making huge investments in dairying and agricultural implements and machinery. Besides, some households reported the purchase of tiny plots of land for cultivation and homestead purposes. Marriage and other social ceremonies also draw upon savings quite substantially (Table 7).

Information on per capita consumption expenditure (Table 7) is suggestive of the higher income levels reflecting in higher levels of living. Furthermore, the consumption basket of an average household of Sukhomajri seems to be getting non-food oriented. Education and health are considered to be important components of PQLI<sup>13</sup> (Physical Quality Life Index) – a measure presently in vogue for the measurement of economic development. It is important to note that people of the village are becoming increasingly conscious in this regard since expenditure under these two heads roughly accounts for 11 per cent of total annual consumption expenditure. This, too, is a very high proportion by normal rural Indian standards. Finally, among food-items, home grown milk and milk products account for nearly 18 per cent of the annual consumption expenditure.

#### Temporal View of Change

Precise temporal improvements are difficult to compute. Yet, through some proxies, we look at the degree and extent of change. The necessary information is set out in Table 8. It is interesting to note that roughly 79 per cent of the households reported drastic change in their household expenditure after the initiation of the community development projects, while only 19 per cent reported a slow change in their household expenditure after the onset of the change process. As regards the food stocks for the family, about 50 per cent of the households recorded a drastic improvement, while the other half saw only a slow or no change on this count. With respect to educational facilities in the village, for about 63 per cent of the households, the change reported is slow and as such falls short of the desired levels. Almost all households reported that there has been no change, whatsoever, as far as the availability of health care facilities in the village is concerned.

The preceding analysis suggests that in many important respects, the process of socio-economic transformation characterising this model has bestowed spectacular gains on Sukhomajri households. This is not to deny that in some other aspects, the village still seems to be languishing.

**Table 7: Per Capita Annual Consumption Expenditure: 1992-93**

<b>Sr. No.</b>	<b>Items</b>	<b>Rs.</b>
1.	Milk and Milk Products (Home Grown)	900.87 (17.93)
2.	Other Food-items	2030.45 (40.41)
A.	Total Food-items (1+2)	2931.32 (58.34)
3.	Education	149.37 (2.97)
4.	Health Care	409.46 (8.15)
5.	Clothing and Footwear	471.88 (9.40)
B.	Total Non-food Items (3+4+5)	1030.71 (20.52)
C.	Total Food and Non-food Items (A+B)	3962.03 (78.86)
D.	Marriage and Other Social Ceremonies	1061.94 (21.14)
E.	Total Yearly Expenditure (C+D)	5023.97 (100.00)
F.	Per Capita Monthly Expenditure (at 1992-93 prices)	418.66

**Note:** Figures in parentheses represent percentage of Total Per Capita Annual Household Expenditure.

**Source:** Field Survey

**Table 8: Estimation of Change in Household Expenditure since the Commencement of Community Level Programme**

Type of Change	<u>Households (No.) Reporting Change in:</u>			
	Expenditure Priorities	Stock for the family	Educational facilities within the village	Availability of health care facilities within the village
Drastic	76 (79.17)	47 (48.96)	-	-
Slow	18 (18.75)	27 (28.12)	60 (62.50)	-
No Change	02 (2.08)	22 (22.92)	36 (37.50)	96 (100.00)
Total Respondents	96 (100.00)	96 (100.00)	96 (100.00)	96 (100.00)

**Note:** Figures in parentheses represent percentage of total respondents.

**Source:** Field Survey

## VI. UNDERSTANDING THE CHANGE

In the preceding section, the focus of our discussion is on employment/earning structures that were availed of by the people of Sukhomajri in the wake of the process of socio-economic transformation. To lend further substance to our findings, we made an attempt to capture the temporal view of change affecting the people of Sukhomajri. We feel that it is important to understand the change that has occurred in Sukhomajri in terms of its content, its price tag, the possibility of its replication elsewhere, more particularly, in areas exceedingly envious of this change and desperately clamouring for it, and above all its policy implications. In addition, we also aim to focus upon the issues which, in the opinion of the people of the village, are going to



be critically important in determining their well-being in the future. In the present section, we take up these issues in this order

#### The Content of Transformation

A series of self-binding measures described above made a splendid contribution in the initiation and intensification of the process of socio-economic transformation on a sustained basis. This development process has tended to gain accelerated momentum over the years in bestowing multiple gains on the villagers of Sukhomajri. Some such gains can be summarized as under:

First, at the community level, the conservation and management of the hill resources have resulted in their augmented use on a sustained basis. At the household level, it has tended to diversify not only the on-farm production structures but also the employment and earning structures. These changes have, in turn, initiated the process of socio-economic transformation, which has apparently gathered momentum over a period of time. Second, following a significant increase in household income, all houses have been transformed from their previous *kutcha state* to their present *pucca state*. Third, besides selling grass to the villagers and bhabbar to contractors, some income of the society is also coming from the sale of dam water for irrigation and for raising fish. Thus, a large fund became available with the local "*Hill Resources Management Society*" for undertaking a variety of developmental activities in the village, such as the construction of school building, laying pucca streets in the village, etc. Fourth, as stated earlier, the basic aim of undertaking the project was to check the sedimentation flow to Sukhna Lake. As such, the project succeeded in its primary goal in that the sediment flow was substantially reduced. Finally, the people have on their own learnt the art of managing their common resources on a cooperative basis. This has generated a sense of social consciousness among the people toward various socio-economic problems.

Fascinated by the phenomenal success of Sukhomajri Development Model, one might be tempted to know the factors responsible for it. Apart from the financial help from the Ford Foundation in the earlier stages, some other important factors accounting for its magnificent success have been a total commitment on the part of the official agencies (so at least in the earlier stages of project implementation), the human endowments, dynamic leadership at the grassroots level and above all, the emergence of social consciousness on the part of the entire rural community, and a consequent change in their socio-economic outlook and attitudes.

#### Sukhomajri Model: The Price Tag

From the above discussion, it should not be construed that the formidable social and economic gains, as referred to above, have accrued to the villagers of Sukhomajri without a price tag. A few such price tags need to be underlined in particular.

*First*, the available water resource has been far too inadequate to meet the growing requirements of the land. It could not serve even one half of the cultivated area. Though two private tubewells have been sunk recently, yet the task of supplementing irrigation through tubewells has not been

taken up on an institutional basis.

*Second*, although the production of milk has registered a manifold increase, yet no arrangement has been made by the official agencies for the procurement and marketing of milk on organized lines. Consequently, depending upon seasonal variations, people are compelled to sell their milk to the local vendors at a very low rate, roughly 40 to 50 per cent lower than the one prevailing in the nearby town of Pinjore.

*Third*, a very peculiar fallout of this project has been noted. The newly planted forest, natural grass and the four water dams have provided an ideal roaming ground for wild life, including deer, boars and neel gai. They have become a menace for the crops in the field; and frequent crop losses in the range of 25 to 50 per cent are reported on this count. The degree of such crop losses notwithstanding, it is important to note that such losses often adversely affect the economy of individual households. Ironically, the very people who had earlier removed the barbed wire fence (an initial protective measure) are now impatiently pleading for a more powerful measure of this type to protect their crops from wild animals.

*Finally*, it was on the advice of some well-meaning officials that the people of Sukhomajri chose not to seek subsidized institutional loans. The officials did not want the gains emanating from this model to be diluted owing to repayments. It is now being felt by some villagers that such loans could have benefitted them quite substantially.

Is Sukhomajri Replicable?

A question often repeated in academic and administrative circles is: Can the Sukhomajri Model be replicated elsewhere with the same degree of success? In this regard, the evidence gathered by us from a cross-section of knowledgeable persons in village Nadha of Punjab and village Nadha Sahib of Haryana (both in the vicinity of Chandigarh and both epitomizing a story of failure in the very area of combined community effort where Sukhomajri succeeded) is a bold pointer to the inherent difficulties. Inadequate or unsatisfactory progress, discernible in both these villages, is attributable, at least, in part, to the lack of social consciousness among the people who do not seem to be interested in working together for the socio-economic betterment of their communities. Also, it owes itself to lukewarm attitude and the resultant lackadaisical functioning of the officials associated with rural development projects and those entrusted with the task of social mobilization of the masses in the countryside. After all, we do not have the likes of Mishras and Bhumbas from the government side and Daulat Rams from the peoples' side everywhere.

We, therefore, reiterate that development and strengthening of the village level institutions on the pattern similar to the one witnessed in Sukhomajri over the years is a pre-requisite and hence a must if community level development programmes have to make some important headway in the real sense. The community level participation in such development programmes can be secured only if the gains emanating from these programmes trickle-down more or less equitably

rather than getting cornered by a privileged few by virtue of their socio-economic and political domination, as we saw currently happening in the two villages referred to above. In the latter case, what is bound to crop up are the sheer inter- and intra- group, social tensions and growing indifference of the masses in general toward the community level development programmes which might prove to be highly detrimental to the growth of the village communities themselves.

#### The Policy Implications

The remarkable accomplishments of the '*Sukhomajri Participatory Development Model*,' in its various manifestations, are a class by itself. It is indicative of what can be achieved by a combination of enlightened and dedicated government officials and a responsive farming community. The '*Sukhomajri Model*' bears ample testimony to the fact that the former, on their part, not only succeeded in convincing the villagers about the need for active involvement and participation in the community development projects, but also in helping them effectively through the provision of improved variety of seeds, new irrigation facilities, chemical fertilizers, improved farm practices, so on and so forth. The implementation of these measures has had the most salutary effect in bringing the people to work together for the betterment of the community as a whole as also for their own economic betterment by realizing highly impressive gains, most noticeably enhanced farm productivity and a dispersed and highly remunerative production and employment structure.

The behavioural pattern that typifies the farming community of Sukhomajri, for its part, also constitutes an example by itself. It shows that once the people at the grassroots level are adequately convinced and assured of the gains likely to percolate from the community level participation in various development projects, they would overwhelmingly respond to the incentives in raising output of traditional crops and also in switching over to newer and commercially more profitable alternatives by working still harder. It, therefore, follows that the initial inhibitions and apprehensions, which the rural masses in general might harbour due to one reason or the other, do not become permanent bottlenecks in involving the village communities in the development process, after it has been demonstrated that the communities themselves are the prospective beneficiaries. Empathy, patience and humane approach are the watchwords of the community approach to development.

Viewed from a different angle, Sukhomajri experience shows that if the well-springs of development efforts in certain areas now seem to be drying up, the explanation must, in large part, be traced to the inability or unwillingness on the part of those who are otherwise responsible for reforming the existing, retrogressive social and economic institutions in these areas. The above recapitulation of the '*Sukhomajri Participatory Development Model*' carries encouraging implications for the socially and economically deprived areas, aspiring for development in these respects.

Recognizing that the progressively growing institutions at the grassroots level, clearly discernible in case of Sukhomajri, do make a remarkable contribution to socio-economic transformation in

the countryside, a major implication is that it poses a great challenge to our planners and policy makers to devise mechanisms to foster the growth of such institutions. The implementation of such policy measures would expectedly contribute, in a significant manner, towards optimizing the level of current social production and consumption without inflicting economic destitution or impoverishment on the coming generations. For the fulfillment of this cherished objective, the perceptions, motivations and values of the people need to be modified at the grassroots level to make them willing partners in the desired development efforts: 'Sukhomajri Participatory Development Model' clearly demonstrates that a village economy's success in achieving and maintaining development on an enduring basis depends critically on all such crucial factors. What is, therefore, desired is the creation and systematization of knowledge of the grassroots realities so that the desired situation-specific measures get incorporated in any proposed strategy of rural development. "Good Vision" on the part of our rural planners and policymakers and "good management" on that of the rural communities are, in our opinion, the most critical variables for ushering in the desired process of socio-economic modernization on a lasting basis.

Furthermore, in order to economize effort and promote economic rationality, it is necessary to involve the grassroots institutions. They can play a commendable role in the diffusion of new ideas, so very crucial for the removal of economic backwardness, and instilling the human abilities and motivations favourable for the process of socio-economic development. We must not overlook the fact that if the model under consideration was executed in an expeditious, comprehensive and effective manner, it was because a powerful and original mind (such as that of Mr. Mishra, Dr. Bhumbra, and Mr. Daulat Ram) conceived a bold strategy and also painstakingly transmitted the same to the people of Sukhomajri.

The most unfortunate part of our emerging reality is that people of integrity, dedication and practical intelligence are being increasingly marginalized in our system. Efforts should, therefore, be made to encourage social organizations interested in socio-economic betterment of the community as a whole, and necessary incentives and infrastructure such as financial assistance et al be provided to them. Such organizations can play an effective role in generating the much needed social consciousness and commitment among the masses about the community approach to rural development programmes. This is bound to go a long way toward the consummation of these programmes and projects. Enough in-built correctives should also be introduced so that self-aggrandizing people, who usually wield considerable social, economic and political power in the rural areas, do not hijack such institutions, otherwise meant for community's socio-economic betterment. Such correctives are possible only when peoples' involvement and commitment at the grassroots level becomes constantly available.

In this context, we should not overlook an important fact that unless the economic interests of the villagers are strongly tied with any proposed strategy of rural development, they cannot be motivated and mobilized *en masse* to refrain from engaging in activities, which, sooner or later, are bound to prove detrimental from the community's point of view. This, in all probability,

would ensure that the people become partners in the plan, associate themselves closely with its formulation as well as in its implementation. In our considered opinion, with the bolstering of in-built timely correctives through peoples' involvement at the grassroots level, the initiation and fostering of the process of socio-economic transformation, as outlined in the present study, would be on far more enduring basis compared with that under any other approach.

In sum, we might observe that it was fundamentally a change in the socio-economic outlook of the people, which prompted them to volunteer and shoulder the responsibility for the management of hill resources. The moot point this model drives home is that no model is likely to succeed if it does not enjoy the support of the masses at the grassroots level. And the masses would most readily cooperate only if the development model proposed to them encompasses some tangible economic gains for them on an equitable and enduring basis.

#### The Issues Ahead

In spite of the fact that the model under consideration has conferred international status on this village and has also shown much to the outside world, the fact remains that the village has suffered neglect in several respects. For instance, its school is only up to 3<sup>rd</sup> class, primary health care facilities and veterinary hospital are located miles away, the current provision of drinking water facilities is inadequate, and so on. Besides, there is no institutional set up in the village to sanction loans to the inhabitants. There is no provision of even a sub-post office in the village.

Having demonstrated a wonderfully successful model of village development through community action, now the residents of Sukhomajri have a passionate desire for getting their village declared as a '*Model Village*.' To strengthen this demand, some knowledgeable persons of the village have put forward a number of claims, too.

*First*, the inhabitants of the village are basically peace loving and law-abiding citizens, since no one has ever gone to the police station to lodge a complaint, nor has anyone knocked at the door of the judiciary to seek justice or redressal of any grievance whatsoever. Disputes, if any, are solved amicably within the village itself to the satisfaction of the disputants through the intervention of the village elders. *Second*, 'Sukhomajri Model' has demonstrated to the outside world its socio-economic accomplishments, and as such, many other areas in the region have emulated this model. *Third*, no deficient household exists in the village any more. Again no household in the village is under a perpetual debt obligation. There are no outstanding loans against any household of the village and no one has ever defaulted in discharging repayment responsibility. *Fourth*, as claimed by the villagers and authenticated by the '*Visitors Book*'<sup>14</sup> kept with a village elderly person (Mr. Jethu Ram), apart from a bee-line of social scientists, many Indian as well as foreign dignitaries have also visited this village to gain a first-hand understanding of the process of socio-economic transformation that dawned on the village during the last couple of years. As such, the village has become popular across the world. *Finally*, with increase in economic prosperity of the village, its problems have also multiplied, and demand immediate

attention in many areas. It is being increasingly felt by the villagers that once Sukhomajri is declared as a *Model Village*, some of the problems referred to above would get automatically solved because many new amenities of social and economic well-being would get stationed in the village itself. This, in turn, is expected to contribute further to the ongoing process of socio-economic transformation. The village's claim deserves a serious consideration by the state government.

## VII. SUMMING UP

This paper has sought to describe the enviable growth experience of the village Sukhomajri in terms of its socio-economic transformation. The portrayal of Sukhomajri's participatory growth experience assumes tremendous significance in view of the fact that it started with practically no-growth situation and faced heavy odds in the mid-1970s. For this reason, therefore, we could draw quite a few lessons from this unique experiment. With Sukhomajri having registered a steady pattern of growth over the years, the time is perhaps ripe to look forward at the new drivers of socio-economic transformation. Priority thrusts in laggard areas particularly education and health care coupled with employment-oriented economic activities should be a key source of its enduring growth in the future. The changes must manifest themselves in terms of substantial improvements to the underlying socio-economic structures. Some positive changes have, of course, taken place ever so slowly in a few areas, which in pre-transformation times, were considered sacrosanct. Among these are tendency to send children to schools, health care consciousness, etc. Thus with respect to Sukhomajri, it can be maintained that the socio-economic growth experienced earlier was a mere wake up call from a chronic slumber characterized by utter economic destitution with all its accompanying traits. Much before the process of growth got underway in this village, the pre-occupation was less with the economic growth of this village and more with the efforts to salvage the Sukhna Lake. Now with the success of the experiment behind us, if the right kind of policy measures are adopted, there is every likelihood that Sukhomajri might move onto a still higher and enviable trajectory of socio-economic transformation. It is quite obvious that besides the various official drives, the peoples' responses to the same also have an equally significant effect on the process of socio-economic modernization. It is very important that this is taken into account while formulating policies in the future for the benefit of the people living in the Indian countryside. The Sukhomajri growth experience has shown that high and rapid socio-economic transformation is sustainable in the long run, particularly when the build up of grassroots institutions at the local level accompanies it. Above all, this growth experience has shown that a measure of coherence and consistency in policy-making must always be maintained. In the absence of such pre-requisites, the people at the local level will, in all probability, always remain skeptical to the agents of change from outside and, accordingly, desist from participation in the process of socio-economic development. The findings of our study clearly indicate that the gains emanating from the process of socio-economic transformation, witnessed at Sukhomajri in terms of household level improvements in augmented production, dispersed and more remunerative employment structures, appreciable rise in the levels of living and savings, including growing tendencies toward better health care,

education, etc., have been shared by all on a more or less equitable basis rather than being cornered only by a privileged few by virtue of their socio-economic and political domination as is normally alleged to be the case in likewise situations in the Indian countryside. The analysis in the paper reinforces the fact that in effecting socio-economic transformation at the grassroots level, what is needed aside from the supply of capital, is a unique synchronization between the enlightened, dedicated and enterprising human endowments (both official and non-official at the local level), progressive social attitudes of the people at the grassroots level, dynamic and growth-oriented rural institutions, technology-in-use, infrastructural facilities and beneficial historical accidents. In precise terms, while focusing on the self-binding measures, particularly in the form of 'Social Fencing' and community level 'Conservation and Management of the Common Property Resources,' the paper forcefully argues for the need to ensure community level mobilization, involvement and effective participation in the decision-making process pertaining to various development projects so that gains trickling-down from such resources or projects get evenly or equitably distributed, and that too, on a prolonged basis. The aforementioned measures, coupled with the progressively growing rural institutions like the ones in Sukhomajri, in our view, do play a decisive role in the conservation, management and augmented use of scarce local resources, and as such, also make remarkable contribution in the initiation and intensification of the community friendly process of socio-economic transformation in the countryside. What is imperatively needed for such spectacular accomplishments is that the perception, motivations, attitudes and values of the people must necessarily undergo a perceptible change. *Sukhomajri Model,*' it needs to be stressed in particular, is a classic example of peoples' participation in the process of development that ushered in all round prosperity in the said village, and also that of sustainability of this process on an enduring basis. This model has clearly shown to the outside world that given the requisite official support and vision, what a poverty-ridden rural community is capable of accomplishing. And since the existence and persistence of socio-economic deprivation together with its numerous disturbing implications in several of their manifestations in the Indian countryside, is one of the most perplexing issues confronting the national planners and policy-makers, the lessons of the Sukhomajri experience, it is expected, might help in containing and mollifying the severity of the socially and economically destabilizing effects being presently witnessed in different parts of the country. Therefore, to the extent, our planners and policy makers have genuine concern in initiating the process of development as also in the upliftment of the socially and economically deprived sections of the rural communities on a sustained basis, attention must be focused on the development, fostering and strengthening of the grassroots institutions on the pattern similar to the one witnessed in Sukhomajri over the years. We feel strongly convinced that the envisioned success, in any case, is going to depend critically on how well-synchronized combination of "good vision" and "good management" would there be on the part of our planners and policymakers on the one hand, and on that of the rural communities themselves, on the other.

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## NOTES

1. For example, Nurkse (1953), Cairncross (1962), Todaro and Smith (2003) and score of other development economists have aptly argued that economic development, in addition to the supply of capital, is also considerably influenced by several economic and non-economic factors such as human endowments (both in terms of quantity and quality of population), social attitudes and motivations of the people, political conditions, historical accidents, so on and so forth. For necessary details in this regard, see R Nurkse (1953), *Problems of Capital Formation in Underdeveloped Countries*, Oxford University press, New Delhi, p.1; A.K. Cairncross (1962), *Factors in Economic Development*, George Allen and Unwin Limited, London, p.26; and Michael P. Todaro and Stephen C. Smith (2003), *Economic Development*, Eighth edition, Pearson Education (Singapore) Pvt. Ltd., Delhi, pp. 37- 46.
2. When the rural communities themselves arrive at a consensus on the need for undertaking to protect the local common property resources for their conservation and augmented use on a long term basis, and accordingly, design and implement the requisite measures in the form of certain 'dos and don'ts', it is known as 'Social Fencing'. Needless to overemphasize, in the case of Sukhomajri, 'Social Fencing', has been discernible in the form of various situations, such as the villagers' agreeing not to graze animals in the nearby hilly forest areas, not indulging in the illicit felling or cutting of the trees and other natural vegetation, becoming entitled to cut grass from the forest area against per-sickle payment in lieu thereof to stall fee their cattle, and for collecting dead and dry wood and for pruning of the tree branches rather than chopping the whole tree for meeting their domestic consumption requirements of fuel, etc.
3. The term "*Joint Management of Resources*" refers to the management of the common property resources by the rural communities through the setting up of some local level body or organization. In Sukhomajri, with the prime objective of formalizing and strengthening the attitudinal change brought about by 'Social Fencing', this job was, in the earlier stage of the model, sought to be performed by the setting up of *Water Users' Association* which was subsequently transformed into a broader *Hill Resource Management Society*, popularly known as HRMS. HRMS, it is important to note is quite independent of the 'Village Panchayat', and discharges 3 primary functions viz. protection of the hilly forest area from grazing and illicit felling of trees including cutting of natural vegetation, equitable distribution of water from the dams amongst the local inhabitants, and repair and maintenance of dams and water conveyance system i.e. water pipes etc.
4. During our survey, it was invariably pointed out to us by the village elders that before the process of change got underway, Sukhomajri, in terms of its socio-economic development, presented a spectacle of utter destitution along with all of its accompanying attributes.



5. For example, as per the information available up to 1996, people from over 120 countries had visited the Sukhomajri village to have a first hand account of the process of socio-economic transformation that has dawned in this village in the wake of Watershed Development Project since mid- 1970s.
6. In view of our deep interest in the Sukhomajri model, we have been eagerly following whatever has come to be reported in its case over the period of time. Our brief description of the present situation of the village has grown out of this effort in our post-survey period.
7. In respect of the observations that '*Gujjars are Jats and Jats are Gujjars*', it needs to be clarified that both Gujjar and Jats belong to different communities. In terms of their occupational classification, while the former are said to be professional cultivators; and later, on the other hand, are normally associated with the tending of cattle. However, the bonds of mutual affinity, love and belongingness between the two communities have developed and strengthened so much so that the distinction between the two, in terms of their respective castes, seems to have ceased. Such an observation therefore, though somewhat exaggerated, does not seem to be completely untrue. For instance, in the event of death of a person in the village, it is a sort of convention that each household, regardless of caste of the deceased, contributes a piece of wood for burning the dead body as a mark of respect to the deceased. Likewise, in times of merriment, all households participate in social ceremony that takes place in any household in the village. This practice of sharing joys and sorrows has been going on since the past over hindered years when the Jat family had come and settled here.
8. The term '*mono-caste society*' literally means a uni-caste society in which there is only one caste. From this viewpoint, Sukhomajri represents a case of multi-caste society because there were as many as 93 Gujjar families, 03 Jat households and 01 household belonging to a caste other than the said two castes. But in view of the exceptionally good and harmonious relationship between the Gujjars and the Jats and in view of the observation made above in 07 about Jats and Gujjars, the distinction between the two seems to have disappeared. It would, therefore, not be inappropriate to discern the caste structure of Sukhomajri in terms of '*mono-caste*' society.
9. Nurkse(1953) gives a vivid account of the convict of the '*Vicious Circle of Poverty*' which operates in a fashion whereby poverty breeds along with all of its deleterious consequences. Poverty thus becomes the cause as well as the effect of poverty which get accentuated in terms of time. From the viewpoint of the growth of an underdeveloped economy, breaking of this vicious circle of poverty unquestionably is a matter of topmost priority. Nurkse recommends the need for a '*Frontal Attack*' in this regard. For details, see, Nurkse (1953).
10. The phrase under reference signifies that attitudes and motivations of the people play an important role in the sustainability of the process of development. It lays stress on the fact that development-oriented and forward-looking people provide the required wherewithal for the process of economic development. For details in this regard, see Cairncross (1962) and Todaro and Smith (2003).
11. In the present context, the term '*Catch-ball game*' can be called as initiative-response game. It tantamounts to mean the throwing up of an initiative by the officials to the people of

- Sukhomajri; the latter's responding to it, again officials offering them something additional through a new drive and again the peoples' responding to it with still greater enthusiasm, so on and so forth.
12. The term sheet-anchor emphasizes the critical significance of irrigation underlying the process of agricultural growth in the wake of the introduction of New Agricultural Technology i.e. The Green Revolution Technology. It is important to note that the role of irrigation has invariably been stressed by almost all research workers in empirical research pertaining to agricultural growth. For details, in this regard, see, G K Chadha (1986), "*The State and Rural Economic Transformation: The Case of Punjab, 1950-85*," Sage Publications, New Delhi, p.68. It is also not impertinent to note in this regard that in Sukhomajri, the provision of irrigation water through the construction of earthen dams has been equate with the capturing of 'Akash Ganga' i.e. the rain water, and Mr. P R Mishra, the mind behind the whole exercise, is held in god-like esteem in the village. This illuminates the way the rural people pay their respectful gratitude to someone who shows genuine concern about their problems and seeks keen interest in their socio-economic well being.
  13. It is not irrelevant to point out in respect of POLI (Physical Quality of Life Index) that it is a well-known composite index, which seeks to measure development in terms of quality of life. The PQLI is constructed by using three indicators, namely life expectancy at page 1, infant mortality and literacy. For further details in this regard, see Morris D Morris, (1979), "*Measuring the Conditions of the World's Poor: the Physical Quality of Life Index*", Frank Cass, London.
  14. Sukhomajri in fact, has become a sort of pilgrimage for people from different walks of life. To record the impressions of the visitors about their visit to the earthen dams, state of natural vegetation around the dams in the hilly forest area and the socio-economic developments in the village in the wake of Watershed Development Project, a visitors' book has been kept with an elderly person, Mr. Jethu Ram.

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**Appendix – I**  
**Sub-castewise Distribution of Households in Sukhomajri**

Sr.No.	Caste	Sub-Caste	No. of Households	Population (No.)
1.	Jats	Rangi	03 (3.13)	20 (3.21)
2.	Gujjars	Chardh	02 (2.08)	18 (2.88)
		Kauli	13 (13.54)	106 (16.99)
		Khepar	14 (14.58)	82 (13.54)
		Mellu	15 (15.63)	110 (17.63)
		Messy	32 (33.33)	184 (29.54)
		Mundan	16 (16.67)	97 (15.54)
		Poswal	01 (1.04)	07 (1.12)
		All Households	96 (100.00)	624 (100.00)

**Note:** Figures in parentheses represent percentage of the total households/population.

**Source:** Field Survey

**Appendix-II**

**Educational Status of Household Members**

Literacy level	Males (No.)		Females (No.)		Total
	2	3	4	5	6
Illiterate	160 (45.84)	(44.57)	199 (72.36)	(55.43) (57.53)	359
Below Primary	75 (21.49)	(58.14)	54 (19.64)	(41.86)	98 (20.67)
Below Middle	64 (18.34)	(80.00)	16 (5.82)	(20.00)	80 (12.82)
Below Matric	30 (8.60)	(88.24)	04 (1.45)	(11.76)	34 (5.45)
Below +2	16 (4.58)	(88.89)	02 (0.73)	(11.11)	18 (2.89)
Below B.A.	01 (0.29)	(100.00)	- (0.16)	-	01
Others Technically Trained)	03 (0.86)	(100.00)	-	-	03 (0.48)
Total	349 (100.00)		275 (100.00)		624 (100.00)

**Note:** Figures in parentheses represent percentages. In columns 3 and 5 percentages are of the respective categories total i.e., of column 6.

**Source:** Field Survey.

### Appendix – III

#### Introductory Information about Common Property Resources (Water Reservoirs) in Sukhomajri, Nada Sahib and Nada

Village	Water Reservoir No.	Executing Agency	Year of Construction	R.D. (Mts.)	Average Height (Mts.)	Catchment Area (Ha)	Basin Irrigation (Acres)	Cost of the Scheme (Rs. in lakhs)
Sukhomajri (Haryana)	No. I	ICAR	1976	68	6.0	4.38	0.47	0.72
	No. II	ICAR	1978	77	12.0	9.10	1.58	1.89
	No. III	ICAR	1980	30	6.0	1.50	0.36	0.23
	No. IV	HFD	1985	120	7.5	2.63	0.71	1.50
Nada Sahib	No. I	HFD	1979	105	14.0	25.00	1.66	4.65
	No. II	HFD	1979	109	14.0	22.00	1.66	2.90
	No. III	HFD	1979	85	14.0	11.70	1.69	3.70
	No. IV	HFD	1985	105	14.0	25.00	1.69	4.80
	No. V	HFD	1986	100	13.0	45.00	4.02	6.24
	No. VI	HFD	1989	60	14.0	10.00	1.95	4.03
Nada (Punjab)	No. I	SWCWDD	1988	n.a.	12.5	125.00	n.a.	12.50

- Note:** (i) R.D. is the Reduced Distance and HFD is Haryana Forest Department, Government of Haryana
- (ii) Information about Sukhomajri and Nada Sahib villages is collected from the office of the Divisional Forest Officer, Morni-Pinjore Forest Division, Pinjore, and Government of Haryana and about Nada village from Soil and Water Conservation and Wasteland Development Department (SWCWDD), Government of Punjab.

**Appendix-IV**  
**Inventory of Livestock in Sukhomajri: Temporal Behaviour**

Type	Year				Change (di)
	1977*	1981*	1986*	1993*	
1. Buffaloes					
Number	136	149	182	231 <sup>\$</sup>	69.85
Value	4,14,936	4,54,599	5,55,282	16,45,300 <sup>\$</sup>	296.52
2. Cows					
Number	28	16	06	04	-85.71
Value	29,904	17,088	6,488	13,100	-56.19
3. Goats					
Number	144**	50	10	56	-61.11
Value	-	-	-	40,500	-
4. Draught Animals					
Number	-	-	-	63	-
Value				1,42,650	
5. Bow					
Number	-	-	-	42	-
Value				10,000	

**Note:** Value is measured in Rupees.

• For figures of 1977, 1981 and 1986 please refer to Kanchan Chopra, et al., (1990), "Participatory Development: People and Common Property Resources," Sage Publications, New Delhi, p-107.

\*\* Courtesy, S.S. Grewal, Central Soil and Water Conservation Research and Training Institute (CSWCRTI), Chandigarh.

\$ Besides 231 buffaloes there were 144 young ones of buffaloes too.

$$Di = (V_{1993} - V_{1977}) / V_{1977}$$

Where Di is the differential / change and V is Value/Number.