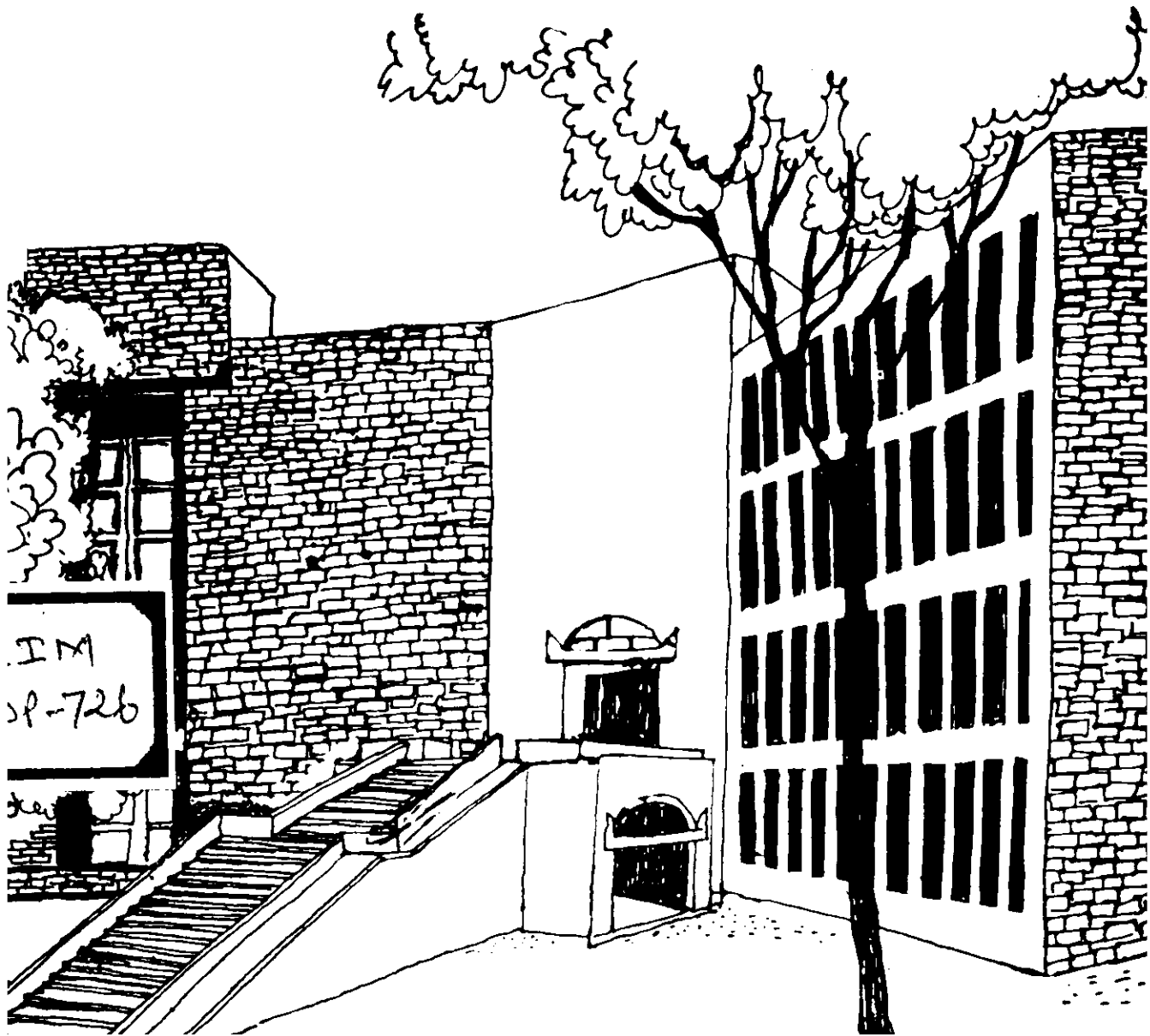




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PROBLEMS AND PROSPECTS OF VILLAGE
PASTURE DEVELOPMENT PROJECT IN
A MIXED ECONOMY

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PROBLEMS AND PROSPECTS OF VILLAGE PASTURE
DEVELOPMENT PROJECT IN A MIXED ECONOMY

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Abstract

The present case discusses the pasture development (PD) project in Sayla Block of Surendranagar District of Gujarat state in India. The PD project was identified as the key project for the block level plan (BLP) scheme in June 1980. The case brings out merits of the PD project as a rural development project and describes the attitude of the bureaucracy and local polity towards the project. It is shown that a viable rural development project of considerable merit without having any constraints of finance or technical knowhow may also fail to get implemented if the initiative to motivate villagers and mobilize support from necessary corners is missing. Voluntary agencies with commitment are likely to produce spectacular outcome in such cases where the government machinery may not even perceive the potential.

PROBLEMS AND PROSPECTS OF VILLAGE PASTURE
DEVELOPMENT PROJECT IN A MIXED ECONOMY

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It is by now a well-recognised fact that the conditions in the rural India differ considerably from region to region. The geo-physical situation, socio-political factors and cultural-demographic environment vary so substantially across regions even within a state, that the best generalization about rural development projects in India without many exceptions could be that generalizations are not possible! Each project in each area becomes a separate experience. However, there are likely to be some common features associated with such diverse experiences. In-depth study of isolated experiences of some rural development projects in certain specified areas may also, therefore, be expected to shed useful light on definite processes and forces existing in rural environment inhibiting progress in economic sense.

The present case discusses the village Pasture Development Project (PD Project) in Sayla Block of Surendranagar District in Gujarat State. Sayla block was selected in the second round of the Block Level Planning (i.e. BLP) Programme undertaken by the Government of Gujarat during 1979-80. The BLP programme

primarily aimed at generating self-sustaining productive employment opportunities in the selected blocks. A provision of Rs.10 lakhs per annum per block for 5 years was made in the state plan. The other objective of this programme was also to better the quality of life in the region by raising productivity levels of human and physical resources like land, animal and water. Research and academic institutions were invited to prepare the 'Block Level Plans' for the selected blocks by the State Government. We were involved in planning for Sayla block. Pasture Development Project was identified by us as the key project for the block plan.

Here we attempt to bring out the merits of the pasture development project as a rural development project and describe the attitudes of the bureaucracy and local polity towards the project. The first section brings out the relevant feature of the Sayla economy. The second section, then, discusses the merit of the PD Project for the Sayla economy. The third section is devoted to the economic viability calculations of the PD project in Sayla. The fourth section discusses the major constraints on the PD project particularly in Sayla. In the fifth and the final section, we state the latest position of the PD project in the block.

I. Features of Sayla Economy

In order to appraise the potential for a pasture development (PD) project in Sayla, we may now discuss some of the relevant

features of the Sayla economy. Sayla taluka is situated between lat. $22^{\circ}.13'$ to $22^{\circ}.35'$ N and long. $71^{\circ}.15'$ to $71^{\circ}.39'$ E. The ecoclimate of the area is semi-arid with no water surplus at any time of the year in the soil. It has low and erratic rainfall and high summer temperatures. Physiography of the area is undulating country-side interspersed with a few hillocks. This area has outcrops of basalt (Deccan trap) of cretaceous period. Soils are medium to deep black, commonly called black-cotton soils. Hill tops have coarse thin soils, upper and lower slopes are marked with coarse thin soils, whereas at foots of hillocks the soil are gravelley clayey. The grasslands are of *Dichanthium-Sehima* types.

Total geographical area of the taluka is 97,288 hectare, out of which 27,254 hectare of land is put under forests, barren and uncultivable land and cultivable waste lands (Table 1) on which livestock graze freely. Under the present situation of severe grazing, the average herbage production in these categorie of land has been worked out to be 0.4 metric tons of dry matter per hectare per year (Pandeya et al., 1977). Accordingly, the total herbage production in Sayla taluka, from these lands, is 10,902 metric ton of dry matter per year. Apart from this area, 4045 hectare of land is put under permanent pastures and gauchar lands. At an average rate of herbage production of 1.0 metric ton of dry matter/ha/year, the total herbage production from permanent pastures and gauchar lands is 4045 m.tons of dry matter per year.

On the other hand, the total livestock population of the taluka is 49,679 (Table 2) which is equivalent to 23,261 Adult Animal Cattle Units (ACU)*. Requirement of dry fodder and herbage by one ACU in a year is 2.6 m ton. Total requirement of dry fodder and herbage for all the livestock in the taluka, therefore, is 60,478 m.tons per year. Against this figure, the present level of herbage production in the taluka is just 14,947 m.ton/year. This results into a deficit of 45,531 m.ton of dry herbage per annum. A large part of this deficit is being supplemented by fodder (residues) of bajra, maize, jowar and groundnut crops, which is very low in nutritive contents as compared to the grasses like *Dichanthium* and *Sehima* growing naturally in these areas. In Sayla taluka, area under bajra, jowar and maize crops is 18,672 ha. which yields 37,344 m.t. of usable dry fodder per year. The area under groundnut crop is 6,285 ha. which yields 6,285 m.t. of usable dry fodder per annum. If the herbage and fodder production per annum is combined, the figure comes to 58,576 m.t. Since the total demand of fodder and herbage in the taluka is about 60,478 m.t., the total overall deficit works out at 1,902 m.t. per year.

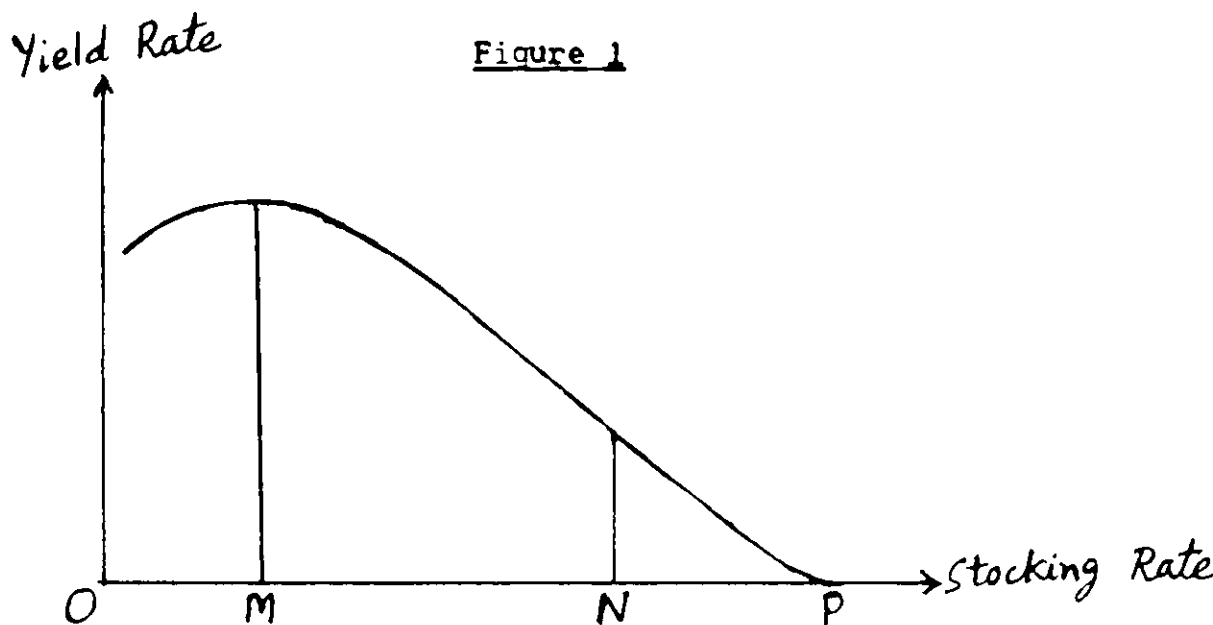
The above exercise clearly shows that the livestock in the taluka is ill-fed due to (i) less supply of feed than requirement, and (ii) major portion of feed is constituted of highly low

*1 ACU = Animal of 300 kg. live body weight.

nutritive content. This, in turn, is directly affecting the production of milk as well as body weight and might affect the mortality rate of animals in the taluka. The imbalance has been largely created by the interference of biotic factors including man's activity of over-exploiting the land. This is natural because, in a democratic society with mixed economy like India, no restrictions exist on individual or family ownership of livestock. Lack of specific awareness among rural populace and traditional customs of communal ownership and grazing of land result in absence of any pasture management practices. This is obvious because individual rationality determines the rate of exploitation of the common property by considerations of average product rather than marginal product (Kothari, 1976). In the case of the grazing land, therefore, communal ownership usually implies over exploitation in the sense that the actual stocking rate invariably exceeds the optimum stocking rate.

In the case of pastures, the production of useful grasses depend crucially on the stocking rate. The functional relationship between the two is such that other things remaining the same, the yield rate of useful grasses increases slowly with an increase in the stocking rate when it is too low. The yield rate, then reaches a maximum when the stocking rate is optimum. At higher stocking rates, the yield rate sharply declines to a low level and then, gradually falling to zero yield-rate of useful grasses. This happens because high stocking rates cannot adjust to seasonal

variations in the growth of grasses. Therefore, the soil erosion takes place and due to loss in soil fertility production of useful grass species also declines. In such degraded lands, non-useful plant species invades and covers the whole area within a few years time period. Figure 1 depicts this type of functional relationship between the yield rate on pastures and stocking rates as measured by number of ACUs/ha.



If the pastures are owned privately, the individual rationality either through experience or through knowledge of technical matters, is likely to adjust the stocking rate in practice around the optimum (OM). It will not only maximise the yield-rate but would also benefit the animals being actually fed on such high nutritive grasses.

At this stage, it may be argued that if the actual stocking rate at present is ON, private ownership or better management of common pastures may not solve the problem because there are simply too many cattle in relation to the available area. However, this argument suffers from the fallacy of ~~composition~~^{composition}. This is because the stocking rate of ON is an average rate and not uniform rate on all possible plots. As a result, we do have several plots in or around OP of stocking rate. Such plots would get excluded from our consideration as barren land. With a little systematic effort, however such plots can be reclaimed for pasture purposes. If optimum stocking rate is maintained on different plots of common ownership, the gain could be a real one as can be seen from the Figure 1. Looking to the actual stocking rate as obtaining on the pastures of Sayla with complete lack of any type of pasture management practices, however, we find rapid depletion of land resources.

On the other hand, animal population is increasing day by day and its growth is actually encouraged by providing several incentives including direct subsidy to purchase animals from outside the taluka. The animal husbandry department at the district level is extremely keen and enthusiastic to implement such animal subsidy programmes in Sayla taluka which has been covered under various special programmes like DPAP, SFDA, MFAL, Antyodaya, IRD, etc. In all these programmes, the animal subsidy

is one of the most popular schemes in the taluka. The growth of animal population merely increases the intensity of grazing pressure on already depleting land resources. Migration of livestock thus becomes inevitable during lean periods every year. This type of seasonal migration on large scale is an important characteristic of the Sayla economy. In the drought-prone area like Sayla, the erratic nature of rainfall compels people to depend more on animal husbandry than on agriculture. Shortage of fodder and forage, therefore, is a sufficient reason for a large number of families to regularly migrate during lean seasons.

The seasonal migration in search of fodder and forage creates many problems both for the people who migrate and for the people of those regions where they migrate. The education of the children of the migrating family suffers the most. The health of both the migrating people and animals tends to be neglected. Moreover, psychologically also these families are adversely affected. Even if they own land in the taluka, they pay little attention on improving productivity on the land. Investments on land improvement or betterment of agriculture by such families are almost absent. Similarly at the destination also, the ecological balance gets adversely affected by these migrating families. The stocking rates suddenly jumps in the areas they visit. The yield-rates in the desti-

nation consequently suffer. Moreover, such large-scale migration of animals also creates problems of traffic-jam and accidents on highways and other roads.

II. Merits of PD Project

As can be seen from Figure 1, the yield-rate of useful grasses can substantially improve if the excessively high stocking rate is adjusted with appropriate management of pastures plots in the Sayla taluka. Studies in these areas (Pandeya, et al 1977; G. Wala, 1974, etc.) have shown that the land has potentiality to produce the highly nutritive natural herbage at a rate of 3.0 m.t./ha/year, if properly managed. Mankad (1974) has shown that in open and free grazing lands of this region, density and production of non-useful forage species are high, and by mere fencing of these plots for just two years, useful grasses like *Sehima nervosum*, *Dichanthium annulatum*, etc. have invaded the plot raising the production by 7 to 8 fold. Thus the obtainable increase in the yield-rate is about 7 to 8 times the current level. This certainly suggests the great scope of pasture development on degraded lands in arid and semi-arid areas like this one. Moreover, crop-production may fail due to low and erratic rainfall, but if the pasture is well-established and properly managed, then the herbage production will be affected to a very little extent.

Proper management of range lands would yield more forage production of useful and nutritious plant species. If balance

between demand and supply of nutritious forage can be maintained then increase in milk production and body weight of animals can be obtained. With proper and nutritious feeding, mortality rates of animals can be decreased to a great extent. Migration of animals could also be checked which will result into obtaining well defined socio-economic benefits. Apart from these direct benefits, other indirect benefits like reduction in soil erosion, increase in soil fertility, upliftment of socio-economic conditions of the rural population, employment generation, restoration of ecological balance, etc. can be obtained from the pasture development project.

It should also be pointed out that the PD project possesses all the requisite characteristics of a good rural development project. It is a project which can be taken up at any level of planning from a village or a block level to the district or a state level. The demand and the supply of the project output can very well be considered at any of these levels. Moreover, the PD project has the merit of providing a genuine output base to many more employment generating programmes in the area. Without removing forage deficit through the PD project, several of the animal husbandry programmes cannot succeed. Moreover, the inputs required by the PD project are not of the type which would disturb the existing balance outside the regional economy. In fact, it is a project which truly represents optimization of the underused or mismanaged

local resources. For instance, it is based on the optimum use of class V and VI land in the taluka which is considered to be the wasteland. In other words, the PD project is based on exploitation of the hitherto unutilized or highly under-utilized natural resource in the region. Since the PD project also has far-reaching implications on the village economy, and the ecological balance besides providing self-sustaining productive employment on regular basis to the weaker sections of the rural population, it can be considered to be the ideal project for rural development at least in the arid and semi-arid regions.

III. Economic Viability of PD Project

Under the Block Level Planning exercise of the Government of Gujarat, we proposed the PD project in Sayla taluka. To meet the forage deficit of 1900 m.t./year, about 800 ha. of land would be required to be brought under the pasture development. From this land, about 2080 m.t. of additional dry matter/year would be produced, which would be sufficient to meet the present demand of forage by livestock. For implementation of the project, pasture plots of 10 ha. unit can be developed in the villages according to the demand of forage and land availability. Development of 10 ha. unit of pasture plot would be an economically viable unit. In order to create an impact in the taluka, the project was proposed as a major project accounting for about 50 per cent of the BLP budget and covering 80 plots in about 40 per cent of the villages all over the taluka. The major problem

of administration of the project was proposed to be tackled either by creating cooperative societies of the cattle owner who would manage the plot or by handing it over to the village panchayats with certain conditions. The most important element in the PD plot project was to fence the plot after acquiring the plot for the purpose.

Tables 3 to 6 present the details of the estimates of costs, benefits and employment generation of one unit of 10 ha. of the pasture plot proposed in the block. The benefit cost ratios at 12% interest rate worked out to be 1.35 and 1.85 for the pasture projects with cow and sheep respectively. Considering the possibility of rain failure during the first year the benefit-cost ratios were recalculated to be 1.23 for pasture plot with cow and 1.69 for the plot with sheep. Moreover, the project had considerable potential to generate self-sustaining employment in the rural areas. Thus, the project was found to be economically viable and could be undertaken even after considering the risk of rain failure during the first year.

IV. Constraints on PD Project

One of the major constraints on the PD project in Sayla is that large areas of degraded lands are in private possessions of farmers who hardly practice any agriculture on it because of its deteriorated condition. Their orthodox attitude

and obstinacy make it difficult even for an extension worker to convince them to follow any prescribed management practice on their plots. Farmers in semi-arid regions usually have a very high marginal rate of time preference. PD Project requiring substantial investment in the initial year with a long waiting period for spectacular outcome, therefore, does not appeal to them. Moreover, seasonal migration of these families restricts the scope for educating them and influencing their preferences. Thus, under the present circumstances the only remedy seems to be the government intervention through demonstration plots and/or direct subsidy programmes.

If the scheme of demonstration plot is undertaken on private land, the project is usually viewed by the villagers as a special favour and subsidy to the person chosen (see, Dholakia & Iyengar, 1988). It hardly serves the purpose of providing demonstration to a majority of the farmers. If the demonstration is to be carried out on the government land, two types of problems arise. Many a times, the government land is illegally occupied by farmers. A lot of time and resources have to be wasted to evacuate them. The second and major problem is to manage and look after such plots. The local administrative machinery is very often inadequate. The local level self-government in Sayla, for instance, had a history of registering miserable failures in every project assigned to them (see Dholakia, 1979). This happens because the rural elite usually have a strong resource base in

the region. The masses historically depend on them in destitution - a common feature of arid and semi-arid zones. They control many things in the community life of the village. They, therefore, become opinion leaders in the village and occupy important positions in the self-government. Since these people are very powerful and influential in the village life, the local administrative machinery cannot ignore them. Several times, actually, it has to work under their instructions only.

In Sayla, whatever pastures are developed on the private land belong to landlords who generally do not possess animals. The persons who own livestock are devoid of pastures. Landlords either auction the pastures to livestock owners for grazing or sell the harvested grasses. Therefore, it is but natural that the interest groups are highly adverse to PD projects in Sayla because the project is against their interest. The taluka or village level administration, therefore, cannot have a favourable attitude towards the PD project in the Sayla taluka. What surprised us at the time of the BLP exercise was the fact that even at the district level, the bureaucracy was not at all interested in the PD project with clearly outstanding score in terms of economic viability calculations, employment generation capacity and several indirect and direct benefits including restoration of ecological balance.

One of the probable reasons why the PD project evoked a cool response from the district bureaucracy was that it was a 'new' project which was not included in the list of technically

approved projects/schemes supplied by the state government to the district planning office and other departments at the district! Although we had a completely and competently prepared project proposal for obtaining whatever sanctions one has to obtain ⁱⁿ the government, the attitude of the district officials was largely negative and discouraging. The officials at the district and the taluka were too strongly pleading for direct cash subsidy schemes for purchasing cows, buffaloes and sheep! Their insistence was in spite of our estimates of forage deficit in the taluka and in spite of heavy seasonal out-migration of cattle owners from the taluka!

Although the district officials agreed that the PD plot project proposed by us in Sayla was technically feasible and economically viable, they went on raising other points against the project. A look at a couple of these points can throw very useful light on the non-economic aspects involved in the whole exercise of planning and implementing a rural development project of considerable merit. The officer of the rank of collector raised a question after seeing our proposal whether we have identified the exact plots by revenue numbers in each village for the project! It is very wellknown that none of the similar projects/schemes planned or proposed at the district level ever specify even the talukas or villages - leave aside such details! We had only ensured that the villages we were proposing had large amount of the government land of the category we wanted for the project.

Another point raised by the district planning officer and the district animal husbandry officer was regarding the fencing of the plot. They said that since we would be 'encroaching upon' the common property land, the fencing will not be tolerated by the people. If out of 100 hectares of such land available in the village, 10 ha. are forged for the PD project which would ultimately benefit everybody in the village, the objection does not remain valid. However, what they meant was that the interest groups in the villages would not tolerate this project and that they could easily foil any attempt, against their will, to fence the plots which is the most crucial element in pasture management. Similarly, the collector was probably hinting at the problem of evacuating illegally occupied government land by individuals.

The idea of creating a cooperative society of cattle owners was also not accepted by the district officials on the ground that such a society would simply not get formed and even if it got formed, it would not be able to manage the plots. The reason was also probably in terms of presence of interest groups. What struck us most as planners was the complete lack of willingness and enthusiasm on the part of the district bureaucracy to overcome these difficulties.

V. Current Status of the Project

The Pasture Development Project of 80 plots of 10 ha. each spread over different forage deficient villages in Sayla Block was forcefully proposed in the Block Plan in June 1980. All the necessary monetary resources to implement the project were provided in the Plan. Several rounds of discussion on the Sayla Plan document were subsequently held involving the collector, the District Development Officer and all the departmental heads at the district level. Finally it was reluctantly agreed around March 1981 to take up one or two plots on experimental basis during the plan period.

When we visited the Sayla taluka again in May 1987, we learnt that the proposed Pasture Development Project was not taken up at all even on experimental basis. During our field visits, however, we located a voluntary agency (AKRSP) that had successfully developed a few pasture plots in a couple of villages in Sayla block. Although the agency had not consulted our project proposal giving all the technical specifications and list of villages where the project needs to be undertaken, one of the two villages it selected belonged to our list. The agency has also selected about 25 acres of land out of the waste land particularly the common grazing land available in the village. The chief executive of this voluntary agency had taken personal interest in the launching of the project by persuading the revenue department at the state level to empower the District

Collector to release the required land to the village institution. The project is implemented through the village milk cooperative society deriving active support from the District Cooperative Dairy Union. The financial assistance is also managed from the 'fodder farm scheme' of the rural development department. The project in both the villages has been very successful. The agency does not find any problem in fencing the plot though located in the common grazing land because it is selling the grass at lower cost than the market rate to the villagers. The villagers seem to have realized the importance of the project. The agency expects to cover 10 villages by June 1988.

Here is a case where a viable project was identified, proposed and seriously considered within the block plan. Finance was not a constraint. Technical know-how was also not a constraint. It was merely a question of taking initiative in motivating the villagers and mobilizing support from the District Cooperative Dairy Union on one hand and from the government administration at different levels on the other hand. The voluntary agency played this role successfully where the government machinery on its own could not even see the potential.

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Table 1 : Land Use Classification Of Sayla Taluka
for the Year 1976-77

Land Class	Area in Hectare
1. Total geographical area	97,288
2. Forests	4,886
3. Barren and Uncultivable Land	20,051
4. Land put to non-agricultural uses	3,922
5. Cultivable waste	2,317
6. Permanent pastures and gauchar	4,045
7. Current fallows	3,946
8. Other fallow land	6,029
9. Net area sown	52,092

Source : Taluka Panchayat, Sayla.

Table 2 : Livestock Population (1977) of Sayla Taluka, Number of Adult Cattle Units and Their Herbage Requirement

Sl. No.	Livestock Category	No. of Animals**	No. of Animal Cattle Units (ACU)*	Dry Herbage Requirement
1.	Cattle (Over 3 years)	14,348	12,226	31,788
2.	Cattle (below 3 years)	4,325	2,162	5,621
3.	Buffaloes (Over 3 years)	2,653	2,653	6,898
4.	Buffaloes (below 3 years)	1,693	1,117	2,904
5.	Sheep	12,467	1,657	4,313
6.	Goats	13,282	2,546	6,620
7.	Horse and ponies	494	494	1,284
8.	Donkeys	289	289	751
9.	Camels	92	115	299
10.	Others	-	-	-
Total		49,679	23,261	60,478

* ACU = Animal of 300 kg. live body weight

** Source : Cattle Census, 1977.

Table 3 : Capital Investment and Recurring Expenditure Required
For Development of 10 ha. Pasture Plot (at 1979-80 Prices)

Components	in Rs.
I. Capital Investments (Non-Recurring)	
1. Fencing (angle iron-barbed wire)	15,600
2. Land Development and soil conservation works	1,000
3. Fertilizer	500
4. Tree Plantation	500
5. Miscellaneous	100
Total	<u>17,700</u>
II. Recurring Expenditure	
1. Salary of Watchman	3,600
2. Fencing Maintenance	1,560
3. Soil Conservation (Rs.100 for every third year)	33
4. Fertilizer (Rs.100 for every 3rd year)	33
Total	<u>5,226</u>

Table 4 : Returns from 10 ha. Pasture Plot with Cows. With and Without Project and Net Additional Returns

Benefits	Without Project	With Project	Net Additional Returns
1. Herbage Production	4 m.t./yr.	30 m.t./yr.	26 m.t./yr.
2. Milk Production	9,600 litre	14,400 litre	4,800 litre
3. Value of Milk	Rs.14,400	Rs.21,600	Rs.7,000
4. No. of off-springs	5	10	5
5. Value of off-springs	Rs.1,000	Rs.2,000	Rs.1,000
6. Saving of forage	-800 kg	Nil	800 kg
7. Saving on imported forage(Rs)-700		-	Rs.700
8. From tree plantation	-	Rs.2,000	Rs.2,000
Total Benefits in Rs.	15,400	25,600	10,900

Note (i) The estimates for additional benefits in each category are the most conservative estimates.

(ii) Value figures are at 1979-80 prices.

Table 6 : Additional Mandays Generated From The Development of 10 ha. Pasture Plot

Item	Mandays
A. Employment generated once and for all or on short term basis :	
1. Fencing	60
2. Preparation of pits for tree plantation	100
3. Land Development and soil conservation works	200

Total	350

B. Employment generation on regular basis :	
1. Watchman	260
2. Harvesting of grasses	1000
3. Maintenance of fencing	20
4. Soil conservation and other miscellaneous work	20
5. Increased milk production (at the rate of one man-hour per additional litre of milk)	600

Total	2000
