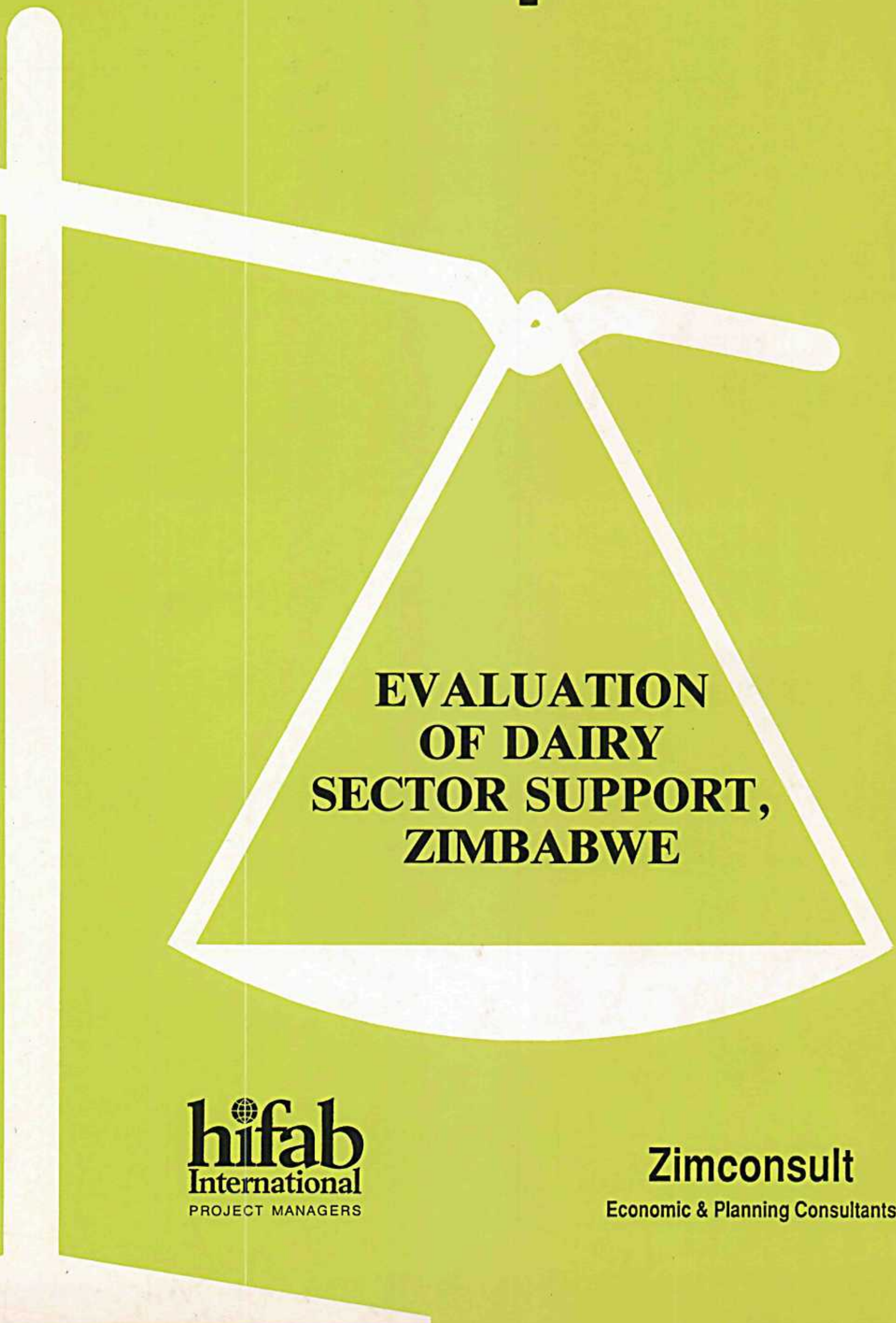




THE ROYAL NORWEGIAN MINISTRY  
OF DEVELOPMENT COOPERATION

# Evaluation Report 9.89

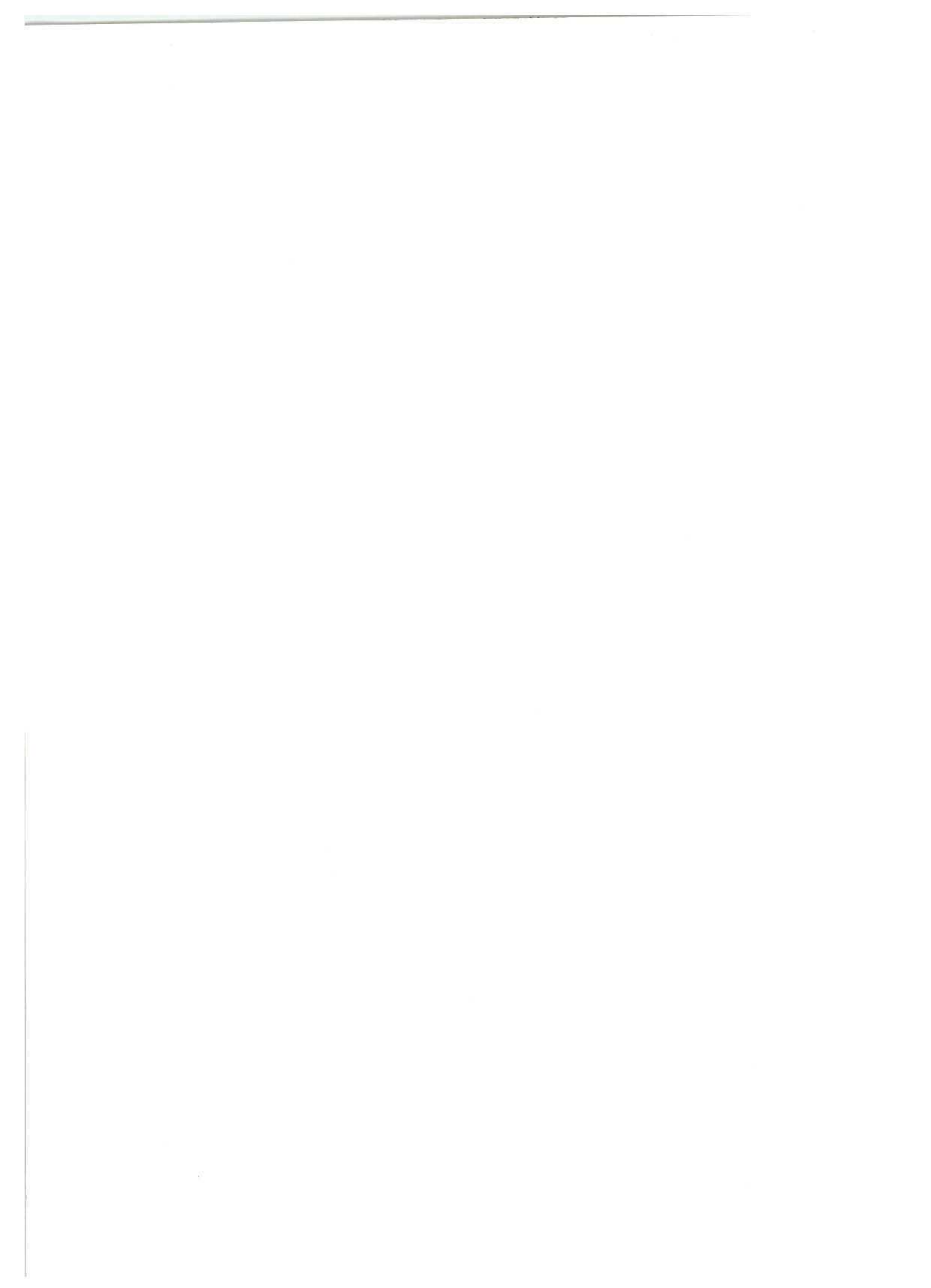


**EVALUATION  
OF DAIRY  
SECTOR SUPPORT,  
ZIMBABWE**

**hifab**  
International  
PROJECT MANAGERS

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The views expressed in this report are those of  
the authors and should not be attributed to  
the Royal Norwegian Ministry of Development Cooperation.



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## ACRONYMS

AFC	Agricultural Finance Corporation
Agritex	Agricultural Technical & Extension Services
AMA	Agricultural Marketing Authority
ARDA	Agricultural & Rural Development Authority
BMCS	Bulk Milk Collection Scheme
CA	Communal Areas
CFU	Commercial Farmers' Union
CMB	Cotton Marketing Board
CSC	Cold Storage Commission
CSO	Central Statistics Office
DDP	Dairy Development Programme
DDPlan	Dairy Development Plan
DFL	Dutch Florins
DMB	Dairy Marketing Board (Dairibord)
DPCC	Dairy Programme Co-ordinating Committee
DR&SS	Department of Research & Specialist Services
EEC	European Economic Community
FAO	Food & Agriculture Organization
GATT	General Agreement on Tariffs & Trade
GDP	Gross Domestic Product
GMB	Grain Marketing Board
HNDI	Henderson National Dairy Institute
ITCZ	Inter-tropical Convergence Zone
LSCFA	Large-scale Commercial Farming Area
MCC	Milk Collection Centre
MDC	Ministry of Development Cooperation
MLARR	Ministry of Lands, Agriculture and Rural Resettlement
NADF	National Association of Dairy Farmers
NBMAC	National Bulk Milk Advisory Committee
NDA	Norwegian Development Assistance
NDDS	National Dairy Development Strategy
NFAZ	National Farmers' Association of Zimbabwe
NGO	Non-Governmental Organization
NOK	Norwegian Crowns
RDS	Rural Distribution Service
SSCFA	Small-scale Commercial Farming Area
TILCOR	Tribal Trust Lands Development Corporation
TOR	Terms of Reference
UHT	Ultra High Temperature Milk
UK	United Kingdom of Great Britain and Northern Ireland
VIDCO	Village Development Committee
WADCO	Ward Development Committee
ZNFU	Zimbabwe National Farmers' Union
Z\$	Zimbabwe Dollar



## SUMMARY

### THE DAIRY SECTOR IN ZIMBABWE

The modes of production of the commercial and peasant subsectors of agriculture differ markedly and this dualistic character is particularly pronounced in the case of dairying. Zimbabwe is not naturally suited to milk production and commercial milk production is based on the conservation of fodder and compound feeds. Production of rain-fed pasture (both natural and reinforced) is only possible for about 6–8 weeks a year. However, with extensive state intervention over the past 70 years, the dairy industry in Zimbabwe has grown into a mature and well-established one.

At the present time there are approximately 540 large-scale commercial producers in Zimbabwe who own some 118 000 exotic dairy animals and produce about 240 million litres of milk a year. The average yield for commercial herds is estimated at about 4 000 kg per cow pa, but the top herd in 1987 produced an average of 8 532 kg per lactation.

Small-scale production on the other hand is limited to the milking of indigenous, multi-purpose animals on a seasonal basis for home consumption. Not surprisingly yields are low, but with crossbreeding and increased availability of feed resources, it is considered that these yields can be considerably increased. The Dairy Development Programme [DDP] interventions are the first to look at dairying as a farming activity well-suited to small-scale production.

Despite this dualism, the two sectors should not be seen as inherently antagonistic: indeed they can be usefully complementary. The LSC sector can offer the embryonic small-scale sector an array of services often problematic in other developing countries attempting to foster small-scale indigenous milk production. In particular it can provide training in relevant areas and is a source of breeding stock. The large-scale sector has available to it a sophisticated array of production inputs some of which will be useful in the development of small-scale dairying systems. Furthermore, the range of state services which have hitherto supported the large-scale sector (veterinary services, research, dairy services) are now turning their attention to the small-scale sector. Policy statements of the Government of Zimbabwe on the production of milk within the small-scale sector place special emphasis on this complementarity between the two systems.

At Independence, the Dairy Marketing Board [DMB], the parastatal charged with collecting, processing and marketing milk, was faced with a milk deficit caused by a relatively low consumer price paralleled by a sharp increase in real wages (following the implementation of minimum wage legislation). Various steps were taken to respond to this situation, including a substantial rise in the producer price, the introduction of bulk milk collection to improve the efficiency of the LSC sector, and the reconstitution of donated EEC milk powder and butterfat.

The incentive producer price had quick and very positive results and soon DMB found itself in a position of "surplus". From 1983 no further imports of milk powder were necessary and DMB instigated the Rural Distribution Service [RDS] in an attempt to sell the "surplus" in the hitherto unserved rural market. DMB was also in this way responding to Government's call for parastatals to fulfil a more social role in society. In the same spirit, a sterilized milk plant was built in Chipinge and later UHT production commenced in Harare. Though these products were destined for the rural market, due to transport mark-ups, high production costs, and an unregulated (and unsubsidized) sales price, they ended up costing considerably more than the regulated (and subsidized) price of wholemilk in the urban areas.

The myth of Zimbabwe having a "surplus" of milk is destroyed when consideration is given to unsatisfied demand in the rural areas. This is estimated to be of the order of 160 million litres pa. It is also estimated, however, that there is potential in the peasant sector to produce 250 million litres pa — as much milk as is currently processed by DMB from the large-scale commercial sector. The DDP envisages meeting this rural demand through local marketing of milk — thus keeping prices down for the rural people while at the same time avoiding for Zimbabwe the expensive and foreign



exchange intensive transport-processing-packaging-transport cycle which presently characterizes the RDS.

## EVALUATION OF THE BULK TANK PROJECT

As mentioned above, Zimbabwe introduced a Bulk Milk Tank Scheme in 1981 because the milk churn system had become ungainly and costly and was inadequate to service the increased demands being made on the large-scale suppliers. Projections made in the early 1980s of milk production levels expected in the 1990s suggested that milk intake by the DMB would more than double from the then level of about 140 million litres per annum. In the current 1988/89 summer flush season, intake has been in excess of 20 million litres per month, so that 280 million pa in 1990 would be a not unduly high projection if incentives are maintained.

The first batch of 361 bulk milk tanks were supplied under Norwegian CIP grant assistance of NOK 34 million, negotiated in 1982. A further grant of NOK 20 million was made in 1986 for the purchase of 200 additional tanks. The conditions on which they were supplied stipulated that counterpart funds generated through rental of the tanks to commercial farmers should accrue to the small-scale sector. It is not clear why counterpart funds for the subsequent Norwegian allocation for spare parts did not stipulate that the funds should go to dairy development.

To date, 461 of the tanks have been installed. At the time of writing, the installation programme had been suspended due to a crisis relating to the road tanker fleet's capacity to service the extra tanks. It is hoped that the impasse reached in negotiations with the donor concerned will be quickly overcome; if the tanker problem is not solved rapidly, the whole bulk tank scheme, and hence effectively the whole industry, will come under threat. This crisis serves to highlight the vulnerability of the programme to foreign exchange constraints, both for tanks and tankers, covering both maintenance and ultimately replacement. It also serves to underline the irrevocable nature of the move to Bulk Milk Collection. With these provisos, the tank maintenance programme itself is considered appropriate to the needs of the industry and low annual costs of maintenance and repair of farm tanks indicate a substantial level of reliability.

The Bulk Milk scheme is operated by the DMB on behalf of a National Steering Committee formed by farmer representatives, DMB executives and dairy officers. Certain inconsistencies have been identified in the formula for calculating and transferring counterpart funds to DDP (see next section).

At present 78% of DMB's intake is delivered in bulk. Once all of the latest supply of tanks has been installed about 96% of deliveries will be in bulk. The current cost to the dairy farmer averages about 3,8 cents per litre or 11% of total costs. The counterpart fund element of the cost of the tanks themselves is less than 0,5% of total costs, the major part of the bulk charges being for transport.

The benefits realized by implementation of bulk milk collection are a high degree of convenience for the DMB and the producers, reduction in costs and significant improvement in milk quality. From a national point of view the main benefit, within the foreign exchange constraint outlined above, is the assurance of an efficient supply of milk sufficient at least to satisfy the urban market; other benefits include less wear-and-tear on roads and less fuel, tyres and other consumables.

## COUNTERPART FUNDS FOR THE DAIRY DEVELOPMENT PROGRAMME

Although the supply of bulk milk tanks started as commodity import assistance, it was clearly stipulated by Norway that the benefits therefrom must accrue to the peasant and small-scale sector. More specifically, it was agreed that the counterpart fund should be used to promote dairying and to this end the Dairy Development Programme [DDP] was formed as a Government entity responsible for extending dairying beyond the large-scale commercial farming sector. In order to maximize funds for DDP, the Norwegian intention was that the large-scale farmers should pay rentals on the bulk tanks at commercial rates. While acknowledging that intention, in practice both a low capital base for



the calculation of the rentals and an interest rate of 7,5% were set, as compared with commercial rates of 12–20%. Other than stipulating in the second agreement that a minimum interest rate of 9,75% should be charged, Norway did not raise the issue of the low rentals until questions had been raised during this evaluation.

Projecting to the end of June 1989, the difference between the \$1,75 million which was in principle generated for the counterpart fund (not all of which had actually reached DDP) and the \$4,0 million which should have accrued if a commercial repayment basis had been used from the start of the project, is a shortfall of \$2,25 million. Whether this can be recovered and future rentals on the first 361 tanks raised to commercial levels depends on the outcome of discussions currently in progress. What is to be implemented immediately is the raising of the rentals on the tanks from the second consignment; this alone will increase the monthly inflow to the counterpart fund from the present level of about \$39 000 to \$66 000 (this assumes capital costs based on prevailing exchange rates and an interest rate of 13% — details of the basis to be used are also under discussion).

Disbursement of the counterpart funds through the Ministry of Lands, Agriculture and Rural Resettlement [MLARR] has been regrettably slow; the budget presented by DDP in May 1988 had still not been approved one year later, leaving DDP in a precarious financial state. Up to the end of 1988, DDP had been located in the Dairy Marketing Board (DMB). The parent ministry of DMB has never been fully behind the idea that the programme should be run from DMB, and has now transferred the programme to another parastatal, the Agricultural and Rural Development Authority [ARDA]. It is expected that this decision will facilitate efficient disbursement of both direct Government funding and of the counterpart funds to DDP. It is notable that the long-awaited formal request from the Government to NORAD for support over and above the resources made available from the counterpart fund, was submitted just prior to the Country Programme discussions in March 1989, this being at the time when the transfer of DDP to ARDA was being affected.

#### DAIRY DEVELOPMENT PROGRAMME: OBJECTIVES AND STRATEGY

Although the Dairy Development Programme has always acknowledged its role in increasing the availability of dairy products in areas never adequately served by DMB, the main objective has been to improve incomes and living standards of peasant communities. The implication of this is that the actual production of milk may be slow to materialize, but the communities will in the interim be deriving benefit from improved water supply and sanitation, improved methods of animal husbandry, better planning of productive activities etc, all of which are, in turn, prerequisites for the hygienic production and orderly marketing of milk. This approach has the further advantage of tending to spread benefits more equitably through the community than a simple milk intervention which would be bound to benefit primarily the owners of cattle.

A strong element of the DDP philosophy is a commitment to work closely with communities to ensure that the programme is responding to real needs and is doing so in a way which will become self-sustaining. It is believed that community experience in making decisions, managing grazing schemes and marketing co-operatively will have development benefits in other spheres of activity. An emphasis on community involvement will thus have long-term pay-offs, and the programme does not wish to force the pace of the more limited objective of increased milk production.

The interface between the large-scale and small-scale sectors is of particular importance to this evaluation. The existence of a productive large-scale commercial sector can even be posed as a pre-condition for the successful implementation of DDP. The ability of the commercial sector to continue to satisfy urban demand makes it possible for DDP to pursue a broad-based development approach which leaves milk production within the existing mixed farm system. The long-term sustainability of the peasant sector projects, in organizational and environmental terms, depends on this iterative process and long time-frame. An urban milk shortage may put pressure on potential peasant producers, turning dairy development projects into milk extraction schemes as has been reported from India's Operation Flood.



Three study areas were selected for fieldwork, mainly because these represented the DDP's longest running projects. One was a small scale commercial farming area, Marirangwe, where a milk collection centre has been functioning for almost four years. The second was the Chikwaka communal area in which the DDP has been involved in research and mobilization since 1982, and where a collection centre was opened by President Mugabe late in 1987. The third was a communal area in the Honde Valley, where the DDP has worked since 1985. Marirangwe and Chikwaka are in Mashonaland and in Natural Region II, and the Honde Valley is in Manicaland and Natural Region I. The findings of the fieldwork will be summarized by area, beginning with Chikwaka.

## HOUSEHOLD DIFFERENTIATION IN CHIKWAKA

During fieldwork to assess the impact of this programme, the internal differentiation within the communal areas of Zimbabwe emerged with the processing of data from one such area, Chikwaka in Mashonaland East and Natural Region IIa. We selected 29 households for our sample out of a total of 161 affiliated to the local dairy project, and these were then subdivided into (1) those who supplied milk to the collection centre, (2) those who had formerly supplied milk but had discontinued because of transport problems or the end of their cows' lactation, (3) those who milked their cows but had no surplus for sale, (4) those with cattle but without milk, either because they had no adult female stock or because they felt that the milk sufficed only for calves, and (5) those without cattle.

We found that these five categories differed from each other in ways that pertained not only to the production and sale of milk, but ranged across their entire lifestyle. These overall patterns were clear at the extremes, though less so in the middle ranges, and households lay along a continuum rather than in discrete compartments.

- (1) The *suppliers* tended to employ permanent labour, to hire out plough oxen for an income of \$100 to \$200 per season, to sell their maize to the Grain Marketing Board (GMB), to use chemical fertilizer in agriculture and to eat meat twice a week or even daily.
- (2) The *ex-suppliers* were likely to employ casual labour, to own oxen but not derive additional income from them, to eat meat less regularly, and

to mention their supply of woodfuel as a problem.

- (3) The *milkers* seemed to depend on family labour in agriculture and not to own any means of transport.
- (4) The *non-milkers* tended to sell their few bags of surplus grain to local registered buyers rather than to the GMB, to hire oxen during the ploughing season, to cultivate less than their entire holding because they lacked sufficient inputs, and to eat meat once a week or less.
- (5) The *non-owners* also hired plough oxen, often had neither organic manure nor synthetic fertilizer to use, and rarely had surplus maize for sale to anyone.

The explanation of these differences is not that selling milk enabled those in Category 1 to improve their production and consumption status, but that their superior asset position allowed them to participate in one more productive activity, namely the sale of milk. The productivity of a household's cattle was symbiotic with that of its land base. Further, the general resource base of a household did not rest only on agriculture (and cattle), but drew on other sources, notably the urban employment of one or more male members and other off-farm income. Thus the sharp difference between the five categories lay not in the amount of land held, but in the ability to use land effectively through inputs such as cattle, with clear differences between categories in the size of herd owned.



Of the three areas, *Chikwaka* manifested the widest range of households, in a sample of 29 chosen from a list of 161 members. The categories included suppliers to the collection centre, former suppliers including some who now sell milk privately, those who milk their cows but have no surplus to sell, those who have cows but cannot/do not milk them, and those without cattle. The differences between these categories extended from dairy activity to wider patterns of production and consumption, with clear socio-economic differentiation between suppliers, ex-suppliers, milkers, non-milkers, and non-owners (see Box, previous page).

Benefits from dairying, and thus from the production and marketing activities of the DDP, seemed proportionate to the resource base of a household. However, the consumption benefits from local sales of milk under the DDP project did appear to reach poorer and more nutritionally vulnerable households. The production benefits of the project might spread further with milk production technology that is labour- rather than capital-intensive, but the absence of an adequate science of small scale dairying renders such technology difficult to develop. However, decentralized co-operative marketing of milk appears easier to experiment with under present circumstances (though Zimbabwe's Dairy Act is not encouraging), and should both attract more milk and diffuse more lactic nutrition. The DDP has many difficult questions to resolve in its policy of creating communal resources, even with the innovative concept of group milking sheds.

In the *Honde Valley*, where fieldwork covered a sample of 11 households from a list of 147, there appeared to be less socio-economic differentiation, whether due to overall trends in the area, or some bias in the DDP's membership or in the sample itself. The area seemed to stand at a dairy development threshold behind *Chikwaka*, since household herds had not yet recovered from the ravages of war. Thus there were few milkers in the sample, and no sellers of milk. The DDP has decided on a zero-grazing policy, which might appear injudicious given the favourable conditions for arable agriculture in Natural Region I, but which can be revalidated with reference to various constraints faced by households in the production and marketing of crops. However, the fieldwork report queried the adequacy of pasture development as a sufficient herd rehabilitation policy for the Valley, and suggested that DDP should consider interventions in animal health and breeding as well. The DDP approach also appeared less broad based here than in *Chikwaka*, more focussed on developing pasture than rural society, and closer in approach to other official agencies. Further, in the *Honde Valley* project, the DDP had experimented with aiding individuals as well as the community. Although the individuals concerned had shown interest in fodder cultivation, they did not appear to be particularly needy.

If the *Honde Valley* stood at a dairy development threshold behind *Chikwaka*, *Marirangwe* stood at one ahead, with only one non-owner in the sample of 16, the others all being sellers or suppliers. Eleven suppliers out of the current figure of 20 were chosen, and 5 who for various reasons did not supply milk to the collection centre. The suppliers could be further categorized into entrepreneurs, diversifiers and farmers, the first group resembling large scale commercial farmers in their operations, and the third being closer to cultivators in the communal areas. However, this classification was applicable also to *Chikwaka*, which had entrepreneurs and diversifiers as well, even if fewer, so that households in the *Marirangwe* sample could be interspersed with those in the upper and middle ranges of the *Chikwaka* sample. This overlap renders the location of a DDP project in *Marirangwe* less questionable. Another justification is the need to co-ordinate dairy development in the small scale and communal areas, for the long term requirement of a unified organization. The most cogent argument, however, is the milk that the project would provide for marketing in the neighbouring communal areas. If instead of supplying the DMB, the collection centre were to set up a decentralized network similar to that suggested for *Chikwaka*, this would not only make more milk available locally, but would facilitate supply by those who at present face problems of transport, e.g. some of the non-suppliers in the sample.

Just as the three areas studied can be presented as at different thresholds of dairy development, so can the 56 households in the total sample, ranging from the widow in *Chikwaka* who cultivates 1.5 acres to the urban entrepreneur who has purchased an 8000 acre farm near *Marirangwe*. In between these extremes are a series of non-owners, non-milkers, milkers, sellers and suppliers, all pursuing various



strategies, to prevent slipping back over whichever threshold it is that they have managed to cross, and to enable them to pass the next threshold. The DDP has then to consider on which thresholds, activities and households it is going to focus its developmental efforts.

At the same time there are questions about its own identity and role for the DDP to work on, such as how to act through communities without reinforcing their hierarchies, how to attain greater developmental impetus in areas other than Chikwaka, and how to combine dairy development with broader forms of development. The answers to these questions will be significant not only for Zimbabwe, but for other parts of Africa and Asia as well.

## CONCLUSIONS ON DDP

From its initial base in Chikwaka, DDP is now operating in 10 project sites throughout the country and is investigating further possibilities in Matabeleland South and Masvingo. Expansion is taking place within the comprehensive Perspective Plan which DDP has produced. The DDP staff complement has recently been expanded to cope with the increased level of activities and a two department structure has been set up (Services and Operations). In the context of the mature dairy industry which exists in Zimbabwe, DDP is also well supported by specialist Government and private agencies. Similar support is available in the other areas which DDP is tackling in its broad-based approach; the interventions are in any event at a scale and level of technology which is well suited to the needs and capabilities of the communities involved. To broaden the skills base, DDP has recently acquired a training centre near Harare, and will be giving courses there as well as in project areas.

Although the paucity of hard data that is so far available makes it difficult to make cost-benefit calculations, the indications are that the programme is viable at all three levels (the farmer, the rural milk collection centres and the programme itself) provided appropriate strategies are followed in respect of choice of animal, breeding, fodder production and feeding regime, and certain minimum targets are met. The viability calculations are useful in identifying the key parameters and are the precursor to a programme of on-going monitoring and evaluation which DDP has now established.

Looking at the objectives and achievements of the programme from the viewpoint of the overall objectives of Norwegian Development Assistance, it would be difficult to identify a more suitable programme for Norwegian funding than DDP. In particular, the programme is strongly oriented to making the best use of natural resources in different environmental situations and of improving health and living conditions for the poorest, particularly women and children. Its broad-based approach seeks to ensure the sustainability of the programme, from an environmental, management and sociological point of view.

The fieldwork did, however, clearly demonstrate that it is not straightforward to ensure that the benefits of the programme will reach the poorest, particularly poor women. As Norway has a strong orientation to programme rather than project funding, it is suggested that Norway agree to provide basic core funding for the programme, including its training activities, while at the same time making a special allocation to be used by DDP to explore ways of ensuring that the benefits of the programme do reach those most in need.

As long as the programme continues to operate at a sustainable pace determined by the absorptive capacity of the communities themselves, Norwegian assistance should be limited to providing finance. The exact amount of funding required to implement DDP's plans is uncertain, pending the outcome of negotiations over the generation of counterpart funds. It is imperative that the position be clarified as soon as possible, as capital expenditure is presently halted and, if not resumed soon, the momentum built up in certain communities will be lost, setting the programme back to a considerable degree.

It is recommended that Norway press for a speedy resolution, but agree to release a first tranche of funds to the programme as soon as the rentals on the tanks from the second consignment have been raised to a satisfactory level, whether or not the other matters have at that stage been resolved. Over



the three years 1988/89-1990/91, the difference between the DDP budget estimate and the income projected from the counterpart fund with only the rentals on the second consignment tanks being at commercial levels is estimated to be \$4,0 million. This is within the \$4,4 million equivalent at present exchange rates of the NOK 15 million which has been earmarked by Norway for dairy development. The actual requirement depends both on the pace of implementation and on the outcome of discussions about the counterpart funds; it is recommended that disbursement in future years be made in tranches, so that the level can be adjusted as appropriate.

It has been made clear that Norway's intention in future support to the dairy sector is to give the funds directly to DDP. The study conclusions point, however, to the importance of DDP continuing to be given the "breathing space" that the existence of the commercial dairy sector in Zimbabwe allows. It is not possible for the peasant sector to replace the production of the commercial sector, and not desirable for it to do so. This is partly because community involvement is a time consuming process that would preclude rapid increases in milk production, and partly because projections indicate that both sectors will be needed to supply currently unsatisfied milk demand and to meet sharp rises in demand over the next two decades. If the commercial sector were to be allowed to decline due to shortage of foreign currency, pressure on DDP is likely to be applied to emphasize the production of milk for urban consumption. This could lead to the various negative consequences of such pressures reported in India's Operation Flood.

In order to bring the complementarity home to the commercial producers, the provision of foreign exchange could be linked to their actively assisting the emergent producers. One specific area where a formal, institutionalized role is proposed is in respect of the small-scale commercial farming areas. This would allow DDP to concentrate its efforts exclusively on peasant producers in the communal and resettlement areas, a situation which would be preferable to both Norway and DDP.



# **PART I**

# **BACKGROUND**

TARTI

BACKGROUND



# CHAPTER 1: THE EVALUATION

## 1.1 PREAMBLE

Norway has been, through its assistance since 1982, the major supporter of dairy development in Zimbabwe.

In 1988 the Norwegian Ministry of Development Co-operation (MDC) commissioned an evaluation of Norway's role in this sector. The evaluation has been carried out as an integral part of the Zimbabwe Country Study by a joint HIFAB International (Oslo) – Zimconsult (Harare) team.

The study team was made up of Shanti George, Terry McCabe, Klaus Endresen and Peter Robinson. Shanti George was responsible for Part III of the study — the fieldwork and evaluation of the Dairy Development Programme (DDP), drawing on her extensive experience in connection with Operation Flood in India. Terry McCabe was largely responsible for the bulk milk tank evaluation in Part II, but also contributed to the technical and institutional issues elsewhere in the report. Klaus Endresen was responsible for the Norwegian end of the study, particularly in relation to the bulk tank acquisitions. Peter Robinson provided the economic inputs and, as team leader, was responsible for putting together the report. The evaluation was guided by a Reference Group which, in addition to the members of the evaluation team itself, included Sam Moyo of the Zimbabwe Institute of Development Studies and Frances Chinemana, both of them with extensive rural development experience in Zimbabwe.

This experiment in co-operative writing was bound to have its positive and negative aspects. On the positive side, all members benefitted enormously from the interaction involved in arriving at a common approach to the report. On the other hand no attempt was made to meld the work on the bulk milk scheme and the DDP into a single structure. The introductory Chapter 2 is intended to give overall coherence to the subsequent chapters but is a reflection of the study as a whole in that different sections have been written by different authors, resulting in changes in pace and style. Parts II and III basically stand alone as self-contained evaluations, in accordance with the TOR and the discussions held at the inception seminar in Oslo.

The layout of the report is as follows. In the final section of this chapter, the introductory material in Chapter 2 is flagged to respond to the concerns raised at the inception seminar about the dairy sector as a whole. Part II (Chapters 3 and 4) then deals with the bulk tank scheme, its effects on the commercial farmers and on the dairy industry as a whole. Part III (Chapters 5–8) presents the report on the fieldwork carried out in Chikwaka, Honde Valley and Marirangwe. The fieldwork conclusions relate both to the objective of evaluating expenditure of the counterpart funds to date and to assessing future directions for the Dairy Development Programme (DDP). Finally, in Part IV, a broad assessment of the DDP is made, the descriptive material and past performance being covered in Chapter 9, while the institutional structure and future perspectives, particularly as they relate to NDA, are covered in Chapters 10 and 11.

## 1.2 NDA TO THE DAIRY SECTOR AND TOR FOR THE STUDY

Norwegian support to Zimbabwe's dairy sector has taken two different forms:

- grant funds for the provision of bulk milk tanks, facilitating a transfer from cans to bulk milk collection in the commercial farming sector;
- utilization by the Dairy Development Programme of the counterpart funds generated from the rentals paid by commercial farmers for the bulk tanks.

The TOR (Appendix 1) specify three objectives for the study:

- (1) to assess the impact of the introduction of the bulk milk tanks on the dairy industry as



a whole, both with regard to its viability and to the price and quality of the milk sold to the consumers;

- (2) to assess the way in which the counterpart funds have been utilized and the role they have played in furthering the aims of the Dairy Development Programme;
- (3) on the basis of the experiences gained from the DDP so far, to assess the programme's potential for providing support for the development of dairy production amongst peasant and smallholder households, in relation to the objectives of the Dairy Development Strategy of the Ministry of Agriculture. Of special importance in this context is the effect developments in the large-scale commercial dairy sector have on peasant/smallholder production.

Although described elsewhere as a "pre-study", the TOR for the dairy sector refers to an "evaluation". This is an appropriate term for the bulk tanks aspect, but in the case of peasant production the evaluation has necessarily to be forward-looking due to the inherently long-term nature of the Dairy Development Programme. After discussion at the inception report stage, it was agreed that the consultants should examine the past structure of DDP and expenditure of the counterpart funds generated to date, carry out fieldwork *inter alia* to establish how the programme is viewed by the beneficiaries, and finally assess its future potential through examining the emerging institutional structure and forward planning of DDP.

### 1.3 PRELIMINARY OBSERVATIONS

The TOR require that the relationship between the large-scale commercial and the peasant/smallholder dairy sectors be explained and analysed. This aspect was emphasized at the inception seminar, where certain questions, containing some specific but debatable premises, were posed:

- Is the system of milk production dependent on a few hundred large-scale farmers desirable vis-à-vis "the known suitability" of small-scale production in the dairy sector, given its labour intensity and income-generation potential? Does the present system not preclude the involvement of small farmers?
- Is the Bulk Milk Tank programme in particular, and the Dairy Marketing Board context of its operations in general, justifiable given the levels of subsidies involved? To what extent does this affect the promotion of dairying among small farmers?

The reason why a rather long introduction has been given in Chapter 2 is to provide, in sufficient detail, the context for the rest of the study, but also to provide a response to the above concerns. In short, the two systems of production are complementary from an agricultural, natural resources and technical viewpoint and both are needed to work towards the objective of satisfying the high demand for dairy products amongst both urban and rural communities.

The existence of a productive large-scale commercial sector can even be seen as a pre-condition for the successful implementation of DDP. The ability of the commercial sector's bulk milk collection scheme to satisfactorily meet urban demand, leaves the DDP free to develop milk potential in rural areas for the satisfaction of demands in those areas. At present, the peasant and smallholder sectors are grossly underdeveloped, but progress in redressing this situation has necessarily to be slow if sustainability is to be ensured. At the same time, the DDP approach is such that the communities will benefit in a number of other ways even before milk is produced in marketable quantities. Development, rather than milk, is the objective.

In respect of the links between the two dairy sectors, the TOR emphasize that "though the supply of bulk milk tanks started as commodity import assistance, it was from the very beginning linked to utilizing the counterpart funds for development activities among peasants/small holders. Thus, all the Norwegian involvement in the dairy sector has been justified through its implications for small-scale, communal and resettlement farmers."



The implications of this statement would seem to be that there is a degree of concern that what are described as the "direct" beneficiaries of NDA were the privileged commercial farmers, while the target group consonant with NDA objectives only came in as "indirect" beneficiaries. In the light of Chapter 2 and the above discussion, it should be clear that the consultants' view is that having small-scale, communal and resettlement farmers as a target group is by no means incompatible with channelling assistance through a commodity import programme in the first instance.

Provided the commercial farmers are required to pay an economic rental for the bulk tanks that results in the proper transfer of resources to DDP to fund its operations, the intervention will have had a complementary and mutually reinforcing effect on the dairy sector as a whole. In fact, the system of calculating and transferring counterpart funds to DDP has been found to be unsatisfactory in this case (see Chapters 4 and 11). It would be wrong to conclude from this outcome, however, that the original concept was flawed; the problem could readily have been obviated by a slightly more careful formulation of the original agreement or by NORAD implementing more rigorously the terms of the agreement signed in the light of Norway's objectives in the sector.

Nonetheless, the TOR state "it has (already) been decided that future assistance to the dairy sector will be earmarked for direct financial contributions to the Dairy Development Programme". In that case, the foreign exchange benefit will accrue to the country as a whole, leaving it for the Government to decide how best to put this to use. The dairy sector may not then receive priority, or if it did, Norwegian equipment would not necessarily be purchased, but there will be adherence to the strong NDA principle of decision-making resting with the recipient country. For the dairy sector, the implication will be that the large-scale commercial farmers, together with the Dairy Marketing Board, will have to compete, perhaps unsuccessfully, with all the other deserving sectors of the economy for foreign exchange allocations for the maintenance of an efficient milk production, collection, processing and marketing system. This could well turn out to run counter to the successful implementation of the dairy development programme. Urban shortages might, as has been the experience with Operation Flood in India, lead to pressures on peasant dairy potential which would distort the broad-based development in prospect in DDP and undermine the long-term sustainability of the peasant sector projects.



## CHAPTER 2: DAIRYING IN ZIMBABWE

### 2.1 AGRICULTURE IN ZIMBABWE

Amongst the countries of Africa, Zimbabwe has in the 1980s earned a high reputation for its agricultural productivity and diversity. At Independence, the new Government placed considerable emphasis on agriculture, offering an incentive price for the staple, maize, which with a favourable climatic season produced a record crop of over 2 million tonnes in 1980/81. This fuelled a general boom in the economy which produced real GDP growth rates of 10,7% and 9,7% in 1980 and 1981 respectively. The country then experienced three years of sustained drought, which severely reduced crop output and depleted the national cattle herd.

Good seasons in 1984/85 and 1987/88 once again allowed agriculture to show its capabilities; the volume of sales of the major crops and livestock products to the official marketing authorities for 1986/87 is shown in Table 2.1.

TABLE 2.1: VOLUME OF SALES TO MARKETING AUTHORITIES

<i>Product</i>	<i>Amount</i>
Maize	1594,3 thousand tonnes
Groundnuts	18,9 thousand tonnes
Sorghum	73,6 thousand tonnes
Soya beans	83,4 thousand tonnes
Coffee	13,5 thousand tonnes
Wheat	248,3 thousand tonnes
Cotton	252,7 thousand tonnes
Tobacco	116,9 thousand tonnes
Sunflower	19,8 thousand tonnes
Cattle	383,2 thousand head
Sheep	40,5 thousand head
Pigs	154,3 thousand head
Milk	218,7 thousand tonnes

*Source: CSO, Quarterly Digest of Statistics*

Production is such that the country is not only self-sufficient in food but the sector is a critical earner of foreign exchange with direct agricultural exports typically accounting for around one third of total exports. Other dimensions of agriculture's national contribution are about 16% GDP, 25% of formal employment, together with a subsistence livelihood for approximately 4,3 million people, representing 57% of total population.

The production systems of the commercial and the peasant subsectors of agriculture are markedly different. The so-called "large-scale commercial farming areas" (LSCFA) are generally characterized by mechanized, synthetic chemical, intensive production and sophisticated marketing, the high risks taken resulting in high yields and substantial financial returns. While some communal farmers have started following the same path, in the majority of "communal lands" (CAs), farming is for subsistence on plots that are allocated within each community. Ploughing is by means of draught power, so that those owning cattle are also in a privileged position in respect of arable activities; cattle are grazed communally. Since roughly half the communal households do not own cattle, much hand cultivation is also practised. Financial returns are meagre (a per capita average of the order of \$100 pa) and most households require to be supplemented by remittances or other outside incomes.

Between the extremes of LSCFA and CA lie the "small-scale commercial farming areas" (SSCFA), and the resettlement areas which are planned according to four different models. Prior to independence, the SSCFA were known as "African Purchase Areas" — having been established by the settler government as an opportunity for a selected group of black farmers to enter capitalist agriculture on a small and very restricted (in terms of overall land allocation) basis.



It is important to note that Zimbabwe's much heralded agricultural success is based on a limited number of producers. In the LSCFAs, there are only 5000 units, while the impressive increases in deliveries of maize and cotton from the peasant sector since Independence has really only been from approximately 20% of the communal farmers. The apparent success of commercial and peasant agriculture operating in parallel has on the one hand disguised the fact that 80% of peasant households are living in areas not suited for cropping, in conditions of marginal incomes and accelerating environmental degradation, while on the other has provided a justification for not extending the resettlement process as far and as fast as might be thought necessary on grounds of equity.

Government's response to the growing crisis in the majority of the communal lands has been to emphasize improving and diversifying production by peasant households. This would be essential even if a widespread land reform programme was also being implemented, a point that is put into context in Chapter 6 of the Country Study. What is important here is Government's undoubted commitment to peasant sector agriculture, evidenced in part by the improved extension, credit and marketing facilities which have enabled those 20% of households to significantly improve their production and incomes since Independence. At the same time, ways of diversifying the peasant production base have been sought, with dairying having a promising role to play in this regard.

The dualistic character of agriculture in Zimbabwe is particularly pronounced in the case of dairying. In the peasant and small-scale commercial farming areas, dairying is extremely underdeveloped. While some small-scale farmers have significant cattle holdings, including exotic dairy cows, they have never been involved in commercial dairying. In communal areas almost all dairy activity has consisted of the milking of indigenous, multi-purpose cattle for home consumption, although in a few areas some households have been able to market small surpluses to neighbours. The Dairy Development Programme's interventions since Independence constitute the first time that dairying as a distinct activity has been promoted in the communal areas.

Commercial dairy production on large-scale commercial farms stands in marked contrast to this as is described in detail in the next section.

## 2.2 MILK PRODUCTION

### *Commercial Herd Yields*

At the present time there are approximately 540 large-scale commercial milk producers in Zimbabwe who own some 118 000 exotic dairy animals of which about 65 000 cows complete annual lactations and produce  $\pm$  240 million litres of milk, most of which is sold to the Dairy Marketing Board.

Over and above this there are about a dozen small-scale dairy schemes in varying stages of development, from the three already producing, to those in the initial planning stage. The schemes cover small-scale commercial, communal and resettlement areas. The main market for milk produced is within the local area; however, some already deliver milk to the DMB as well as retailing locally.

The distribution pattern of commercial dairy producers is related directly to the road network and distance from processing plants, as well as to the governing natural and climatic factors. Figure 2.1 illustrates the fluctuations in the quantity of milk delivered to the DMB throughout each year since Zimbabwe's independence. The general potential of the exotic dairy animals is summarized in Table 2.2.

A Milk Recording Scheme is run by Dairy Services, Department of Research and Specialist Services, MLARR with  $\pm$  20% of the large scale commercial herds being members. These herds account for  $\pm$  22% of the national dairy herd, so form a representative sample of the dairy farming community. With the assistance of the National Association of Dairy Farmers (NADF) — the association of the large-scale commercial farmers — programmes have been set up to performance test dairy progeny and carry out sire evaluation as well as produce cow genetic indices annually after publication of the Herd Averages.



TABLE 2.2: HERD YIELD AVERAGES IN KG BY BREED AND FOR ALL BREEDS

Years	1980	1981	1982	1983	1984	1985	1986	1987
	Yield in kilograms							
Ayrshire	3798	3368	3424	3864	3904	3846	4426	4979
Fries/Holstein	4617	4457	4546	4887	4887	4901	5202	5586
Guernsey	3320	2797	3350	3191	3690	3502	3939	3926
Jersey	2816	3347	3019	3531	3579	3504	3361	3488
Crossbreeds	3849	3837	4001	4505	4289	4358	4334	4426
Average Yield	4363	4238	4299	4615	4580	4601	4853	5242
No. Lactat	8581	8827	9154	8754	9781	10306	11289	12962
No. Herds	88	88	94	104	105	95	101	104
Average Bf%	3,76	3,76	3,65	3,69	3,67	3,67	3,57	3,50
Average No of Lactations/herd	98	100	97	84	93	108	112	125

Source: Dairy Services, DR & SS, Milk Recording Scheme.

The average yield for a 300-day lactation for all the cows on the Milk Recording Scheme was 5242 kg in 1987. The top herd in 1987 produced an average of 8 532 kg per lactation over 140 lactations with butterfat of 3,57%, whilst the highest individual lactation on record is 14 105 kg with butterfat of 3,49%. It is reliably estimated that the average, however, for all commercial herds is closer to 4000 kg. By way of comparison:

USA	6048 kg
UK	4823 kg
West Germany	4795 kg
New Zealand	3580 kg

There is considerable room for yield increases and with it increased margins and profitability. The NADF's Management Bureau Scheme has also highlighted that the efficiency of dairying can be increased, especially in the area of feed utilization.

There is a wide variety of dairy production systems of varying efficiency in Zimbabwe. These range from zero grazing types to complex mixtures of concentrates, pastures and conserved forages and devising a general picture of the economics of production is difficult. Comparisons with milk production systems in other countries are not drawn for this reason. However, the general economics of commercial dairying in Zimbabwe, based on information returned to the NADF from active dairy farmers, are shown in Appendix 2.

### *Trends in Milk Production*

The national trends in milk production growth are the result of an increase in the number of registered dairy producers, an increase in the number of cows and improvements in milk yield (Table 2.3).

These increases have come about for a number of reasons:

- Initially (1980), the introduction of an incentive price to boost production
- Dairy farmers subsequently increased production in direct response to an erosion of profitability (costs rising faster than prices)
- The arrangement whereby dairy farmers could purchase maize (at the disincentive price) directly for stockfeed which made the use of maize for stockfeed more attractive than selling it to GMB.



FIGURE 2.1

### Monthly Milk Intake Dairy Marketing Board, Zimbabwe

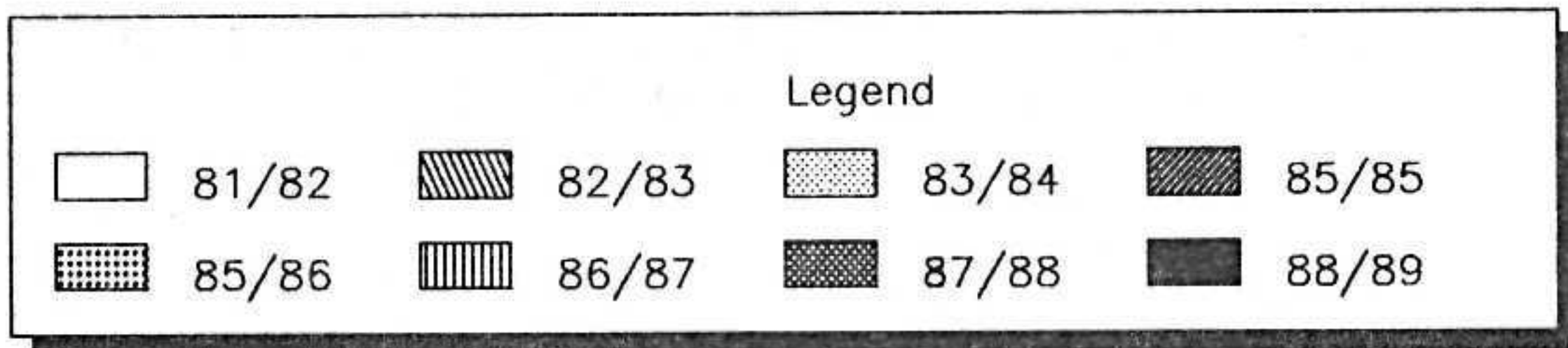
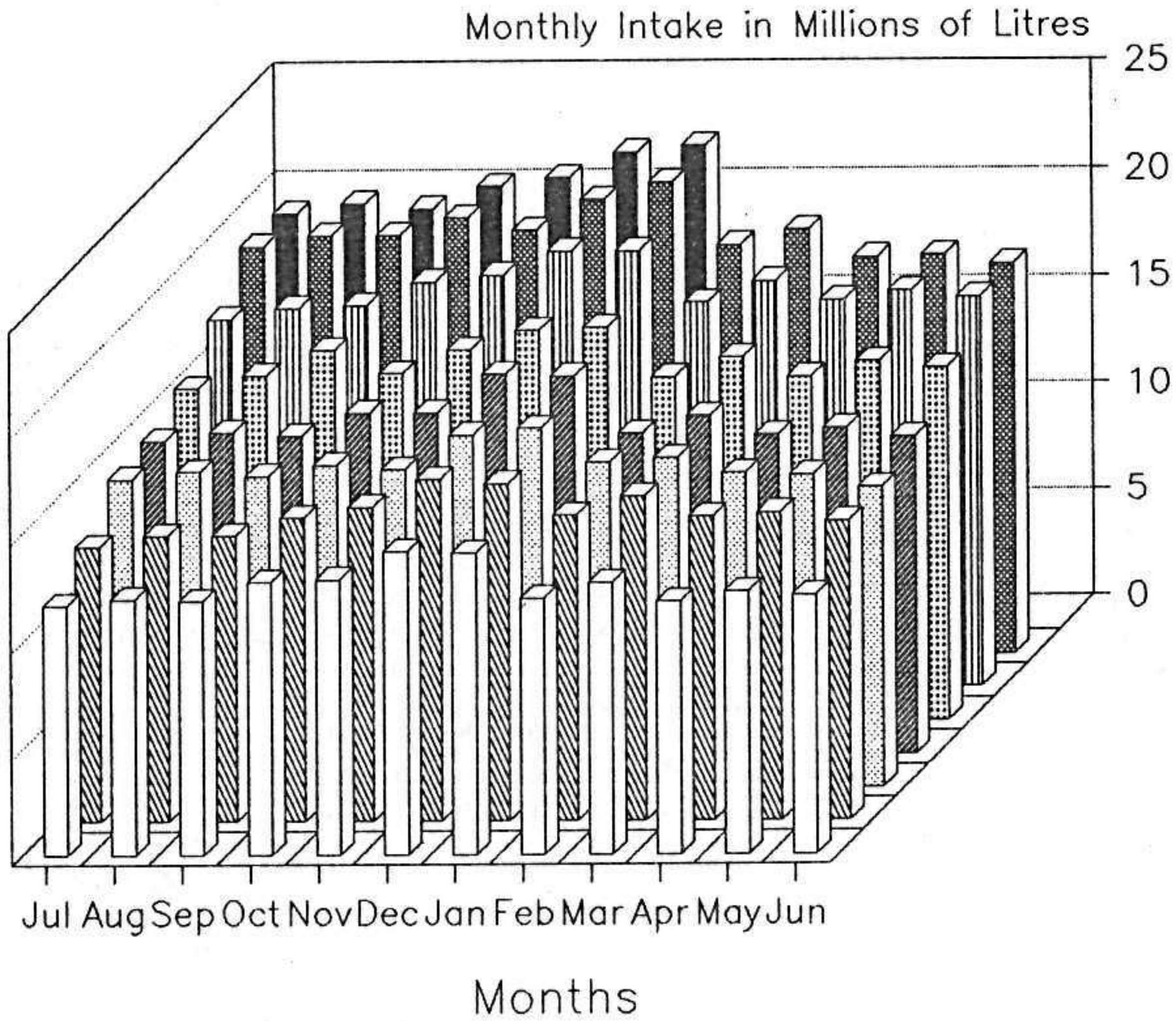




TABLE 2.3: THE NUMBER OF DAIRY ANIMALS AND HERDS IN RELATION TO DMB MILK INTAKE

Year	No. of dairy animals	No. of registered milk producers	Raw milk intake (Litres × 10 <sup>6</sup> )
1982	93 350	472	150,5
1983	93 999	495	172,5
1984	104 464	521	181,1
1985	103 837	520	187,9
1986	116 527	538	202,1
1987	118 000 <sup>†</sup>	561	223,9
1988	—	540	236,2

<sup>†</sup> Estimated

### *Production Inputs*

The livestock industry in Zimbabwe is served satisfactorily by feed companies, suppliers of animal health requisites, dairy detergents and chemicals as well as milking and other equipment. The major problem as far as inputs are concerned is that those that depend upon imported components are in short supply. The lack of foreign currency also seriously constrains the transportation of raw milk, processed product and feedstuffs as all depend on heavy vehicles which are difficult to maintain in a serviceable condition in the face of the shortage of imported spares.

### *Potential Yields from Indigenous Cows & Crossbreeds*

The potential of the indigenous cows and their crossbreeds has as yet not been thoroughly recorded and researched. However studies carried out by the Dairy Development Programme, and Makaholi and Henderson Research Stations, have provided some data which gives a rough indication of yield. Indigenous cows have yielded approximately 1,5 to 2 litres of milk per day over a 180 day lactation, whilst their crossbreeds have yielded an average of 4,5 to 5 litres per day over 250 day lactations. Taking the generally agreed calving rate of 35% from the cows at present in communal, small-scale farming and resettlement areas, there is a **potential** for the production of 250 million litres of milk per year in these areas if the problems associated with the feeding and fertility of these animals can be overcome. A note of caution in respect of this potential is, however, to be sounded: milk must be linked to available feed resources or the communal areas will have to start importing compounded feeds, with the negative results observed in other developing countries from such a strategy.

The fieldwork report in Part III stresses the need for development of dairy production systems suited to Zimbabwe's diverse communal areas. DDP's "start with the animals you've got" approach is well conceived but must in time be elaborated into a system, or series of systems, appropriate to the potential and needs of the communities expressing interest in milk production.

## 2.3 DAIRY DEVELOPMENT RATIONALE

Many countries have embarked on a resource conscious dairy development programme aimed at import substitution, satisfying local demand for milk and milk products and raising rural employment and incomes, as well as diversifying, intensifying and stabilizing agricultural production. Such policies aim to exploit the complementary components of animal and plant conversion cycles in order to improve the efficiency of small, mixed farming systems. Within such systems (Figures 2.2 & 2.3) dairying has specific characteristics which make it the most favoured of the ruminant enterprises. These include the fact that it absorbs more labour than other ruminant enterprises, it provides a regular income and source of protein for the household, and gives the highest financial returns in most circumstances.



In Zimbabwe, many of the traditional reasons used to justify a stimulation of the production of milk do not apply, and dairying development devolves to the specific characteristics of dairying *per se* as noted above, rather than to the "national" goals of import substitution and satisfaction of urban demand. This relieves Zimbabwe (unlike many other developing countries) of replacing a previous dependence on imported milk products with a dependence on imported compound feeds, which typically leads to the replacement of traditional feeds and labour, by concentrates and capital. This in turn, through undermining self-reliance, has had severe negative social and foreign exchange consequences in other countries.

The constraints to expanded smallholder production in many other developing countries generally include the following:

- Too low a capacity of multiplication centres, if they exist.
- Inadequate animal health services.
- Inadequate or inefficient artificial insemination services.
- Low conception rates.
- Inadequate feed resources.
- Lack of integration of crop and livestock enterprises.
- Ineffective extension.
- Too many intervention agencies.

#### 2.4 DAIRY POLICY — COMPLEMENTARITY OF PRODUCTION SYSTEMS

In Zimbabwe large-scale and smallholder dairying should not be seen as antagonistic; they are in many respects complementary. The presence of a mature industry in Zimbabwe will ensure that the constraints outlined in 2.3 above are addressed effectively, drawing on national resources. The continued ability of the large-scale sector to meet the urban demand for milk will give the small-scale sector the time it needs to place milk production on a sound base within the mixed farm system. It also means that a spectrum of support services and production inputs (see *Production Inputs* in Section 2.2) is already in place for the large-scale farmer, some of which are relevant to small-scale production systems. These are the indirect ways in which the sub-sectors are complementary; in addition, DDP reports that NADF has supported the dairy development programme with advice, training support and donations of breeding stock (see Chapter 9)

The policy statements of the Ministry of Lands, Agriculture and Rural Resettlement (MLARR) on the production of milk within the small-scale sector, place special emphasis on the complementarity of the two production bases.

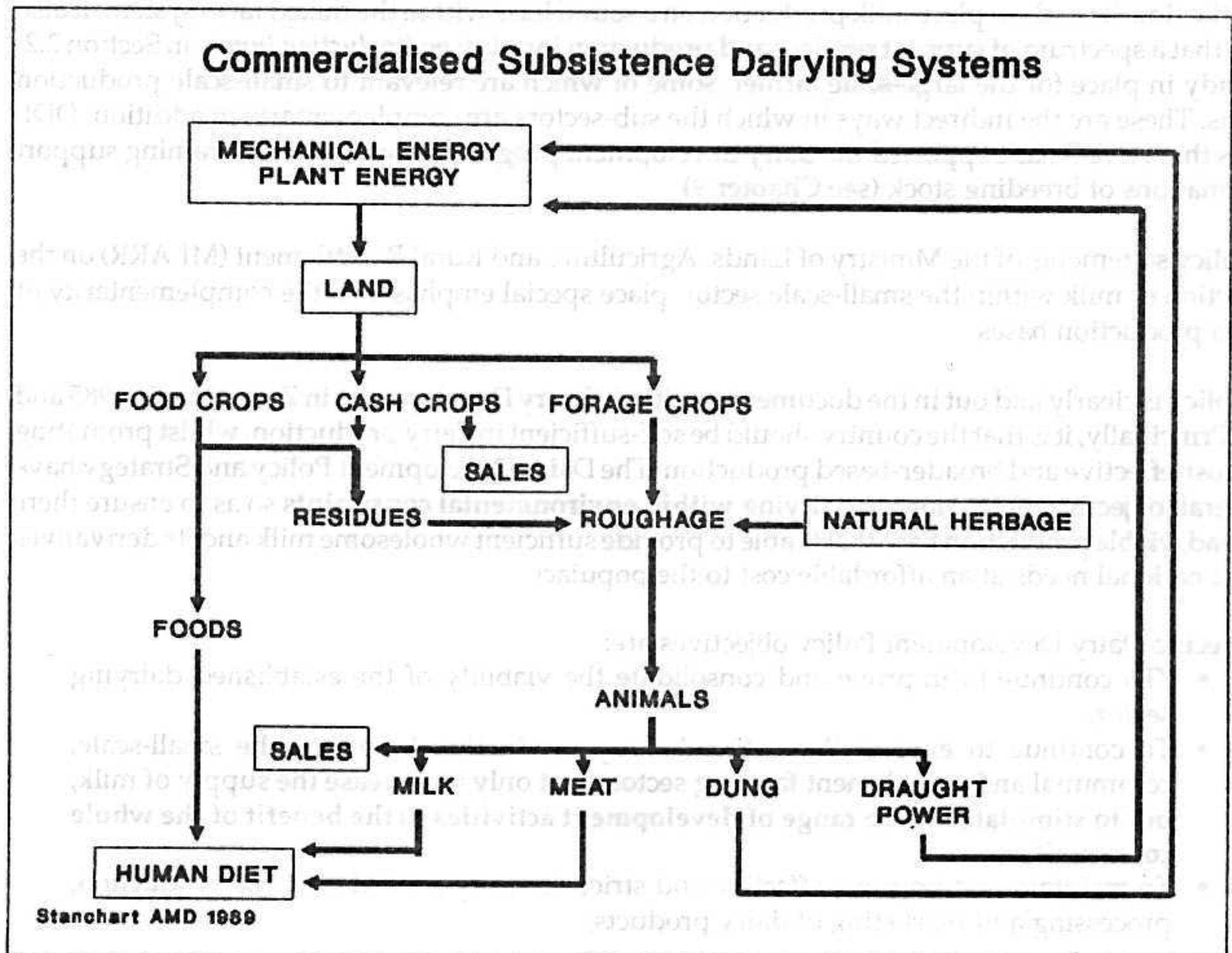
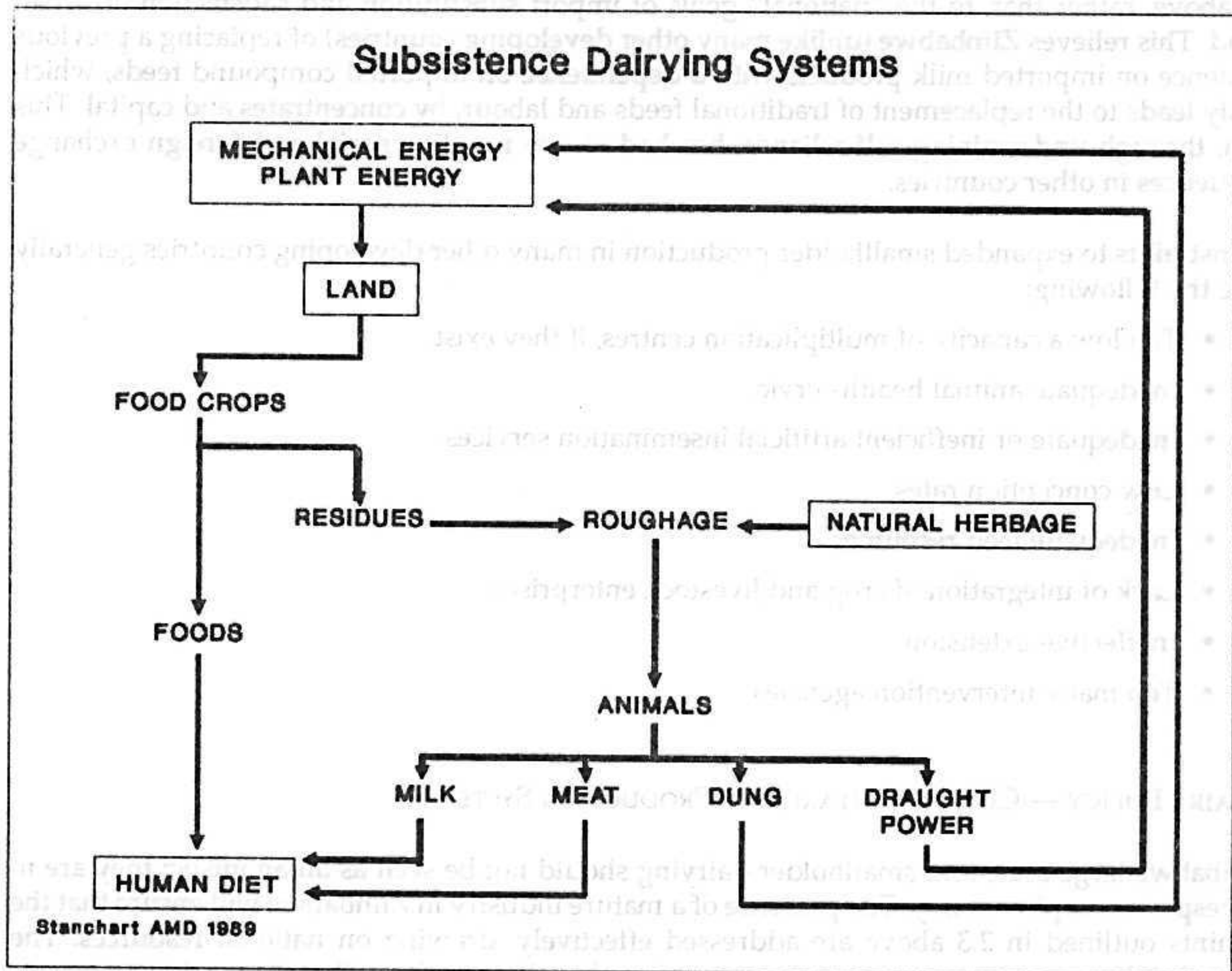
This policy is clearly laid out in the documents entitled "Dairy Development in Zimbabwe" (1985 and 1987). Principally, it is that the country should be self-sufficient in dairy production, whilst promoting more cost-effective and broader-based production. The Dairy Development Policy and Strategy have the overall objective of developing dairying **within environmental constraints** so as to ensure there is a broad, viable production base that is able to provide sufficient wholesome milk and its derivatives to meet national needs at an affordable cost to the populace.

The specific Dairy Development Policy objectives are:

- "To continue to improve and consolidate the viability of the established dairying sector;
- To continue to expand the national dairy production base into the small-scale, communal and resettlement farming sectors, not only to increase the supply of milk, **but to stimulate a wide range of development activities to the benefit of the whole community;**
- To maintain and improve effective and strict statutory control over the production, processing and marketing of dairy products;



FIGURES 2.2 AND 2.3





- To promote increased consumption of milk and dairy products amongst all sectors of the population". (p 11)

## 2.5 ENVIRONMENTAL CONSTRAINTS TO DAIRYING

The objectives of the National Dairy Strategy are closely linked to the environmental constraints to milk production in Zimbabwe. As will be explained, Zimbabwe is not suited naturally to commercial milk production and the milk that is produced is the result of particular and special approaches to production, based on the conservation of fodder and compound feeds.

### *Land Base*

On the basis of physical and climatic factors Zimbabwe has been divided into five Natural Regions, of which only the first three are generally favourable for milk production. Of Zimbabwe's 390 759 km<sup>2</sup>, only the central plateau and other regions at altitudes above about 1 000 m are considered suitable for dairy production from cattle. The other natural limitation on dairying is the amount and distribution of rainfall. Additionally, the development of commercial or larger scale production is conditional upon existing transport routes and proximity to processing plants.

### *Climate*

Although Zimbabwe lies wholly within the Tropics, the normal tropical continental climate is modified considerably by altitude, especially on the central plateau where temperatures are lower and diurnal changes greater than at sea level at the same latitude.

The year falls roughly into three seasons:

- a dry winter, covering the months from April to August, with cool temperatures, especially at night when frost is sometimes experienced;
- a hot season with temperatures building up to a maximum in October or early November; and
- a wet season in which the main rains usually come around mid-November and continue until March.

The main rains are associated with the Inter-Tropical Convergence Zone (ITCZ). The ITCZ, where the northerly and southerly air masses meet, follows the seasonal movements of the overhead sun north and south of the Equator, hence the occurrence of the Zimbabwean wet season during the southern summer. In those parts of Natural Regions IV and V, which are at a low altitude, it is both too hot and too dry to maintain exotic dairy animals without in some way offsetting the natural conditions, for example by irrigation or by feeding purchased feeds. A low level of seasonal dairy production under natural conditions is possible if the hardy indigenous breeds are used in such areas.

Only in Natural Region I is rainfall expected to fall in most months of the year. In all other regions the rainfall is markedly seasonal. Although the rainy season is considered to extend from November to April it is on occasion, for all practical purposes, restricted to only three months. The whole country is susceptible to drought both between seasons and intra-season. These factors combine to make commercial dairying without large amounts of conserved fodder and concentrates impossible and, in many other cases, uneconomic.

### *Natural Nutrition*

Systems of dairy production in Zimbabwe are constrained by the climatic factors discussed above. Growth of pasture (both natural and reinforced) is characterized by extremely rapid growth of grasses



during the early rains which are also attended by high environmental temperatures. Within approximately six weeks of the onset of growth, rapid lignification of plant tissues takes place. Digestibility of fibre declines rapidly and with the translocation of nutrients to the roots, the protein and metabolisable energy content declines swiftly. This decline is accentuated by the concomitant decline in the digestibility of the protein.

The implication of this for the dairy industry is that production based on rain-fed pastures is possible for only six weeks to two months of the year. For the remainder of the year, rain-fed pastures barely provide for the maintenance requirements of dairy cows let alone the production of milk. Production of milk is therefore dependent upon the availability of crop products grown specifically for feeding to dairy cows or upon irrigated pastures. In the context of the smallholder and communal farmer, this means that production of food for dairy cows might have to take place on land which could otherwise be used directly for the production of human food. Since the efficiency of conversion of dietary energy into milk is, at most, approximately 30%, where land and the ability to use it is a constraint, it is more efficient in terms of subsistence provision of food for people to produce crop products directly for human consumption than to process it through dairy cows.

DDP maintains that this conflict is minimised in areas where marginal lands can be used for fodder production and where improved crop residue use can significantly contribute to animal nutrition. The objective of DDP's interventions in the first instance is to improve the utilization of existing resources, including existing cattle holdings and production systems. It is only at a later stage that the above conflict might emerge, and a balance would then have to be struck between subsistence and the revenue generated from milk production. Decisions on the most appropriate mix of activities can thus only be made at a micro level, taking fully into account local environmental potential and constraints.

### *Irrigation Potential*

It is obvious that irrigation can play a significant role in the production of various crops, fodder and pastures in Zimbabwe, and there is considerable potential still for the development and expansion of this technology. By irrigating fodder crops and pasture, it is possible to produce milk from exotic and crossbred dairy animals in otherwise hostile environments, as well as extend the growing season in more favourable environments. DDP is presently exploring the possibility of starting a project on a resettlement irrigation scheme in Masvingo Province.

## 2.6 DAIRY MARKETING BOARD

The Dairy Marketing Board (DMB) is a parastatal organization set up in 1952 to purchase all milk of adequate standard offered for sale by registered farmers. It is charged with processing, packaging, distributing and marketing the resulting products. Map 2.1 shows the spread of its factories and depots in Zimbabwe.

Prior to this state intervention, the dairy sector in its early days had followed very much the same lines as are now envisaged for the re-entry of small-scale producers. The following quotation illustrates the point:

The early development of commercial dairying in Zimbabwe was confined to the sale of milk directly from farmers to consumers. Between 1912 and 1930 small creameries were established at local growth points and the 1930's saw the formation of a number of producer co-operative societies which provided for milk distribution and the manufacture of dairy products in most of the main centres of Zimbabwe. Most of these co-operatives were unable to cope with the expansion which took place after the Second World War and this culminated in the formation, in 1949, of a Milk Marketing Committee, the objective of which was to purchase milk from producers for resale to the existing dairies. The Committee was the forerunner of the Dairy Marketing Board which was formed on 1 October 1952, to consolidate and provide for the orderly



development of the dairy industry in Zimbabwe in accordance with the above objectives.

The Dairy Act was only enacted in 1932 (and elaborated in 1977), by which time the structure of commercial dairying in Zimbabwe had changed and was on the road to becoming the sophisticated industry which exists today. The provisions of the Act are regarded as extremely rigid by any standards and certainly not conducive to the encouragement of small-scale producers. It is an emotive area of debate, with upholders of the Act tending to paint scenarios of rampant milk-borne disease epidemics, while others have maintained that the requisite standards of dairy hygiene can be safeguarded by more flexible and appropriate legislation. This is one of the themes taken up in Part III in the report on the fieldwork.

It is notable that throughout the period from 1912 to the present day, the commercial dairy farmers have received significant Government assistance in the form of training, research and extension, subsidized credit, provision of handling and marketing facilities and finally a consumer subsidy to keep the consumer price down while paying an incentive price to the producer.

The situation in the dairy industry at Independence in 1980 was one in which the relative consumer price of milk was low, while real wages were increased sharply with the implementation of the minimum wage policy. At the same time, the parastatals were being required to play a much more "social" role than they had in the past. DMB had only moved into marketing milk to the urban African communities when faced with a surplus of skim milk in the early 1960s. The challenge thrown out by the new Government in 1980 was for the Board to extend its marketing not only throughout the urban areas, but to make dairy products available in rural stores as well.

In trying to meet expanded demand and extend supply to rural areas, DMB quickly found itself in a situation of chronic undersupply of milk. Four main policy measures were taken to address this shortfall:

- (1) a sharp rise in the producer price of milk, while keeping the consumer price fixed;
- (2) the implementation of the Norwegian and Dutch funded bulkmilk collection scheme, to improve the efficiency of supply of milk to the Board;
- (3) the acceptance of a donation of milk powder and butter fat offered by the European Economic Community for reconstitution and sale on a counterpart basis by the Board;
- (4) the initiation of the peasant sector development programme (later the "Dairy Development Programme DDP), to be funded by the counterpart funds from the bulk tank rentals and sales of dairy products made from the reconstituted milk powder and butterfat.

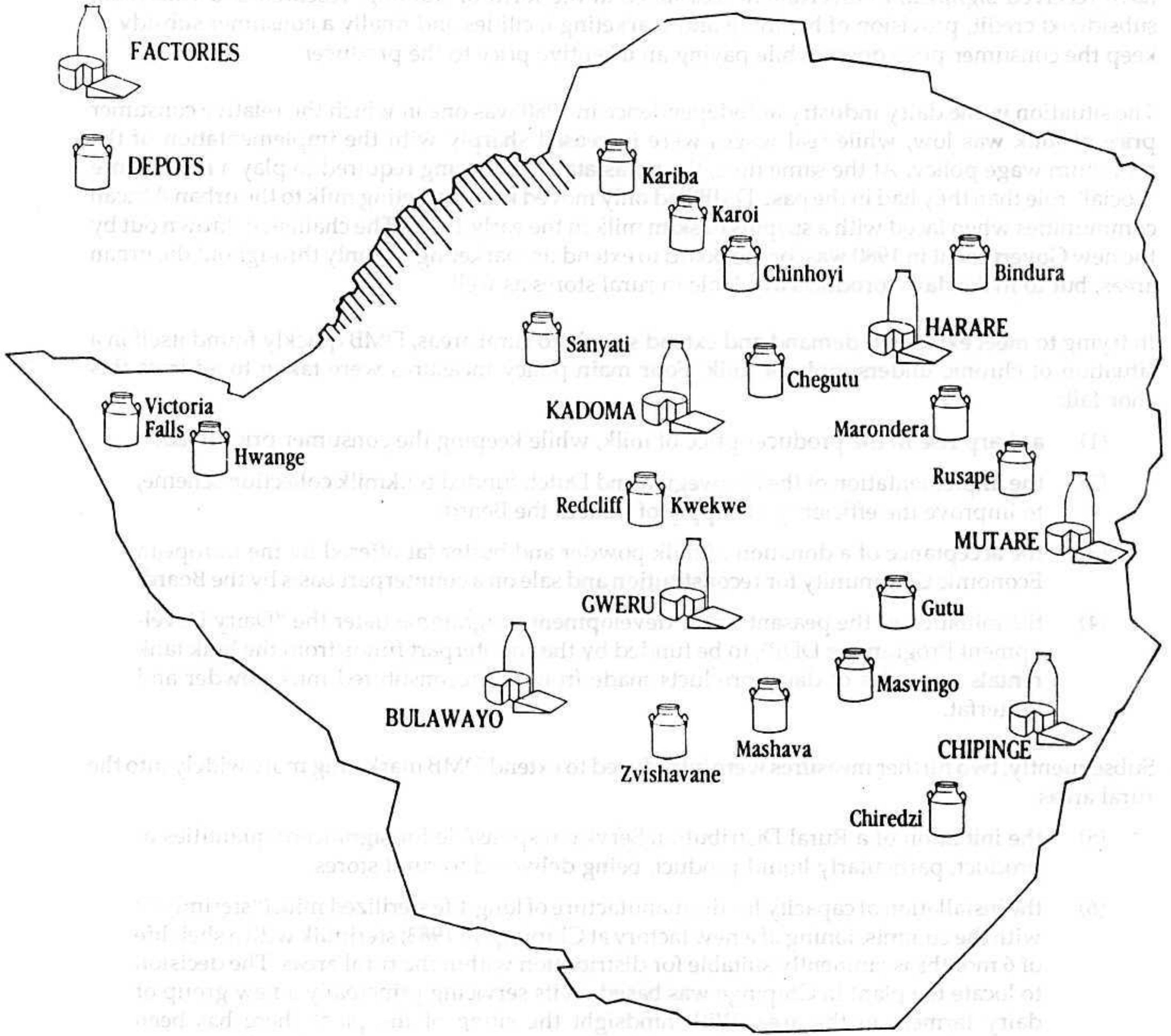
Subsequently, two further measures were introduced to extend DMB marketing more widely into the rural areas:

- (5) the initiation of a Rural Distribution Service responsible for significant quantities of product, particularly liquid product, being delivered to rural stores;
- (6) the installation of capacity for the manufacture of long-life sterilized milk ("sterimilk") with the commissioning of a new factory at Chipinge in 1983; sterimilk with a shelf life of 6 months is eminently suitable for distribution within the rural areas. The decision to locate the plant in Chipinge was based on its servicing principally a new group of dairy farmers in the area. With hindsight the siting of the plant there has been criticized, not least because of the additional transport costs incurred in distributing the product from Chipinge, which is on the border with Mozambique. Production in the area is rising and is estimated to go from the current 9 million litres to full capacity of 17 million litres by 1994.

These initiatives were not independent of one another. The increased producer price and the bulk milk scheme brought very quick and very positive increases in production. When the consumer price of milk was raised by 40% in September 1983, cutting back demand very sharply, the supply shortfall



# Dairibord Factories and Depots in Zimbabwe



The Dairibord Act was passed in 1932 (and re-enacted in 1971) by which time the structure of the dairy industry had changed and was on the verge of becoming a state-owned enterprise. The Act provided for the establishment of a state-owned dairy board, which was to be responsible for the regulation of the dairy industry and for the promotion of its development. The Act also provided for the establishment of a Dairy Board, which was to be responsible for the regulation of the dairy industry and for the promotion of its development. The Act also provided for the establishment of a Dairy Board, which was to be responsible for the regulation of the dairy industry and for the promotion of its development.



to DMB overnight became a "surplus" which DMB had somehow to handle. The obvious solution was to ship the surplus out to the rural areas, and it was in this situation that the Rural Distribution Service came into being. RDS has thus to be characterized as an ad hoc arrangement to resolve an immediate problem rather than the unfolding of a carefully formulated strategy to serve rural as well as urban consumers. Nonetheless, although the RDS is an expensive and inappropriate way for Zimbabwe to try to meet rural demand in the longer term, its short-term effect has been positive.

The "surplus" which emerged in the wake of the change in relative prices in 1983 made redundant the importation of further powder and butterfat from the EEC. It is important to note that the significant consumer price rise and very modest increases to the producer price after the initial increase, were not sufficient to eliminate the financial deficit of the DMB. At a time when there was rising concern over Government's overall fiscal deficit, and thus pressure on parastatals to reduce their subsidy requirements, there was only muted concern about the fact that the policy had also reduced per capita consumption of milk, particularly amongst the poorest segments of the population. Use of the term "surplus" is thus rather misleading; it was a "surplus" only in relation to the demand that could be realized by households having lower real incomes than they did in 1980, faced in 1983 with a sharp rise in the price of milk.

The myth of Zimbabwe having a surplus of milk is totally destroyed when the argument is extended to consider unsatisfied demand in the rural areas, which in the next section is identified to be of the order of 160 million litres pa.

## 2.7 ESTIMATE OF DEMAND FOR DAIRY PRODUCTS

In this section and in the discussion of world trends in Part II, the case will be made that the need for milk and milk products is far greater than present production and that expanded milk production based on commercial and smallholder producers is in the best interests of the country as a whole.

Table 2.4 illustrates how raw milk supply is utilized by DMB, in response to the market demand. "Lacto" is an acidified milk product with a high solids content (from added skim milk powder), used as a relish in place of meat or vegetables with the staple food, sadza (a maize meal porridge). A glance at sterimilk and UHT milk uptake data and projections (during those periods when these products were fully available) provides convincing evidence of potential market gains for DMB in products with a longer shelf life (see Figure 2.4).

As the greater portion of DMB's production is marketed and consumed within the urban and peri-urban zones, there are much higher consumption levels in these areas than in the rural areas. The major reason for this discrepancy in supply is the combination of the DMB having insufficient and

TABLE 2.4: DAIRY MARKETING BOARD MILK UTILIZATION (MILLIONS OF LITRES)

Year	1982/83	%	1983/84	%	1984/85	%	1985/86	%	1986/87	%	1987/88	%
Intake	172,5		181,1		187,9		202,0		223,9		236,2	
Market Milk	112,0	65	107,0	59	92,7	49	85,5	42	82,7	37	90,5	38
Lacto	5,4	3	22,3	12	32,7	17	39,1	19	39,1	17	42,7	18
Sterilized Milk	7,9	4	10,1	6	13,7	7	17,3	9	11,5	5	16,9	7
Other Liquid Products <sup>†</sup>	2,9	2	2,3	1	2,8	2	3,2	2	4,1	2	4,0	2
<b>Total Liquid Products</b>	<b>128,2</b>	<b>74</b>	<b>141,7</b>	<b>78</b>	<b>141,9</b>	<b>7</b>	<b>145,1</b>	<b>72</b>	<b>137,4</b>	<b>61</b>	<b>154,1</b>	<b>65</b>
Cheese	15,2	9	13,8	8	14,3	8	11,6	6	13,3	6	15,9	7
Milk Powder	0	0	4,6	2	11,8	6	22,0	11	57,3	26	42,8	18
Industrial Milk <sup>#</sup>	29,1	17	21,0	12	19,9	11	23,6	11	16,1	7	23,0	10

<sup>†</sup> Includes flavoured milk, yoghurt, ice cream, liquid skim and cream.

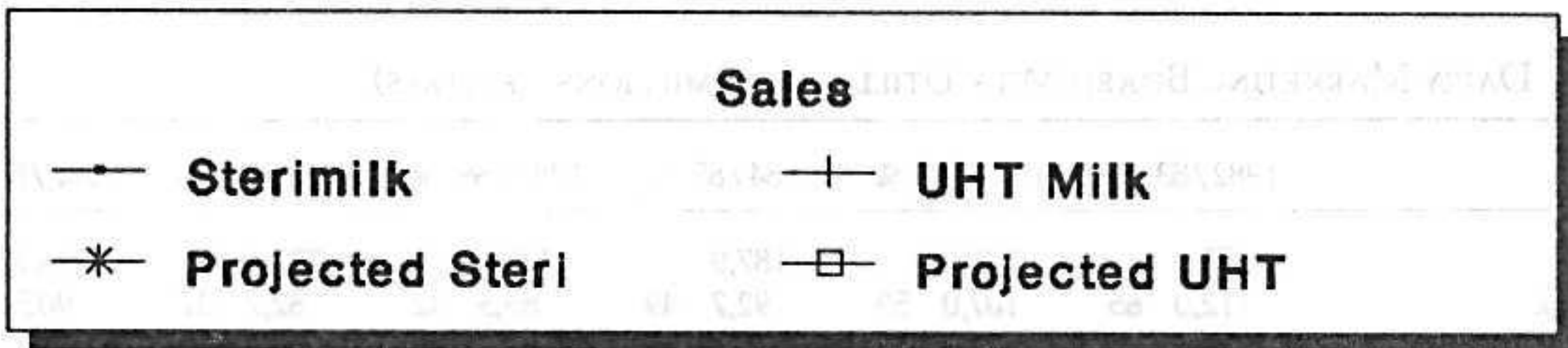
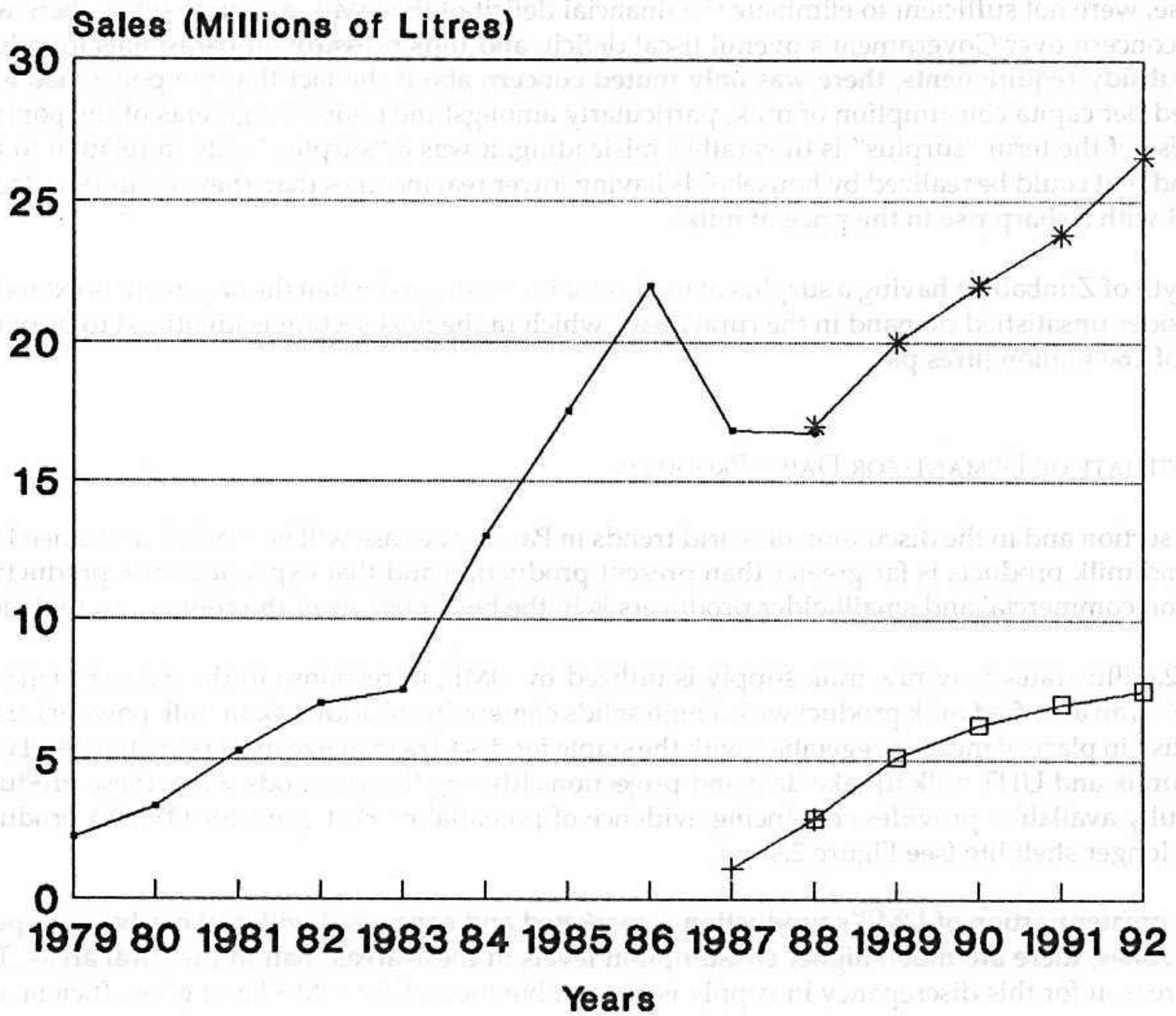
<sup>#</sup> Includes liquid skimmed milk.



FIGURE 2.4

## STERI-MILK AND UHT SALES

### Past Sales and Projections



Stanchart AMD 1988

Source: DMB, Harare



unsuitable transport for rural distribution, as well as inappropriate products for such markets, with the caveat that marketing over vast distances in rural areas may be uneconomic for DMB in any circumstances. As it appears that there is the potential to produce as much milk through small-scale dairying as is currently processed by DMB, it is logical to seek to redistribute this milk in the areas in which it is produced. It is therefore necessary to establish how best to process and distribute the milk collected from smallholder dairy farmers in an appropriate and cost effective manner to serve the enormous potential market for milk and milk products in the rural areas.

Whole milk is sold at a statutorily controlled price in the urban areas (presently 78 cents per litre), but if available at all in the rural areas, the price is frequently much higher than this. The inequality of this situation is to be condemned, but consideration of the DMB subsidy has to take into account the fact that it no longer only services the urban rich. In post-Independence Zimbabwe it also benefits substantial numbers of the working people, the unemployed and other elements of the urban poor. Proposals to target the subsidy more narrowly to those groups, reducing the benefit to the well-off, have not been found practicable.

The sterimilk price falls under the Ministry of Trade and Commerce but a higher price than whole milk is permitted due to higher production costs and transport. By the time sterimilk reaches the rural stores, the prices are often very much higher. Despite these prices and the much lower levels of disposable income in rural areas, observations and formal studies have pointed towards a large unsatisfied demand for milk and other dairy products in the rural areas. It is notable in this regard that the people are buying carbonated soft drinks not only under the pressure of the associated advertising, but because the bottlers have a non-perishable product and an efficient transport system which ensures that their drinks are available at even the most remote rural store.

In a 1984 market study, it was estimated that rural (suppressed) demand may be taken to be of the order of 45 litres per capita pa, as compared with urban consumption of 68 litres per capita pa. Of the 45 litres, approximately 6 litres pa was being supplied directly or indirectly by DMB and an average of 10–16 litres pa from home production, depending on whether climatic conditions gave rise to a drought or a normal agricultural season. This implied a shortfall averaging 23–29 litres per capita in the rural areas.

In absolute terms, the above figures are equivalent to communal area milk production from the indigenous herd of 3 million cattle of 60–100 million litres pa, and a demand shortfall of approximately 160 million litres pa. Despite the fact that calculations of this kind have to be treated with caution as they ignore fundamental factors such as seasonality, diverse conditions for dairying through the country, and the unequal distribution of cattle within communities, it is useful to have some estimate of likely global shortfall for planning purposes.

There has been debate in Zimbabwe as to whether at this stage Government should seek to provide for greater consumption of dairy products by the poorer sections of the population. On a cost per cent basis, other foods are higher in protein and fat, and the conversion of dietary energy into milk is relative inefficient as was discussed in Section 2.5. Lactose intolerance is relatively significant among African populations although milk products, particularly soured milk, form an important part of the traditional diet. Whatever the merits of these arguments, the Zimbabwe Government adheres to the view that increased consumption of dairy products will improve health and nutrition, and considers the elimination of the above demand shortfall as a valid objective to pursue. However, the pattern of agricultural products being transported to the cities for processing and packaging and then re-transported to the rural areas for sale is clearly inappropriate. Even if economies of scale can be shown to be substantial, the perishable nature of the product is a decisive factor. It is in this context that the potential role of the peasant sector in milk production comes into focus. From the above 1984 estimates, it appeared:

- (1) that the peasant sector was already producing approximately 60–100 million litres of milk for household consumption, equivalent to a third to a half of commercial production;
- (2) that by increasing yields per cow from the less than 1 litre per cow per lactating day assumed in the calculations (on 180 lactation days pa) to a still modest 2,4 litres per cow



per day, total production from this sector would rise to 250 million litres and the shortfall would be eliminated for the communal areas as a whole, though seasonal and regional differences would imply a continuance of local shortfalls.

Although research results have so far been based on consistent feeding of previously well-nourished animals, livestock specialists consider targets in excess of 2,5 litres per cow per day for indigenous and 4,5–5 for crossbred cows (on a 180–200 day lactation) to be feasible with proper management. It is anticipated that breeding programmes, based on careful selection of Mashona cows, will in due course provide hardy indigenous animals with yields at a level to permit economic exploitation. The possibility then of peasant production “directly meeting rural demand through local sales of milk, cutting out the expensive and foreign-exchange intensive transport–processing–packaging–transport cycle, appears to be a very attractive one.

By the year 2000, with static urban and rural per capita demand, population growth alone is projected to increase demand to over 800 million litres pa, an impossible target to meet without a substantial contribution from the peasant sector. Experience with RDS for supplying fresh products to the rural areas clearly shows the costs of DMB directly trying to meet unsatisfied rural demand to be prohibitive and the organizational and transport difficulties for the Board to be immense. It is perhaps ironical that this cumbersome procedure of rural deliveries, being clearly marketing, was a DMB cost apparently accepted by the parent ministry (MLARR); however, the meeting of the same rural demand more appropriately by stimulating local production has been considered an activity in which DMB should not be engaged.

## 2.8 THE DAIRY DEVELOPMENT PROGRAMME

Although the Dairy Development Programme has always acknowledged its role in increasing the availability of dairy products in areas never adequately served by DMB, the initial emphasis has been on generally improving incomes and living standards amongst peasant communities. The programme has not been initially based on milk production, but has aimed to respond to any opportunity to further overall community development. The interface between these two objectives is discussed in detail in Part III, the fieldwork report.

The implication is that the actual production of milk may be slow to materialize, but the communities will in the interim be deriving benefit from improved water supply and sanitation, improved methods of animal husbandry, better planning of productive activities etc, all of which are, in turn, prerequisites for the hygienic production and orderly marketing of milk.

This approach anyway tends to spread benefits more equitably through the community than a simple milk intervention which is bound to benefit primarily the owners of cattle. From the start, DDP has sought to avoid “exacerbating income differentials within communities by marginalising those already disadvantaged through lack of access to the means of production (in this case, cattle)” (Chikwaka Report, p 3).

A strong element of the DDP approach is the commitment to work closely with communities to ensure that the programme is responding to real needs and is doing so in a way which will become self-sustaining. There is the belief that community experience in making decisions, managing grazing schemes and marketing co-operatively will have development benefits in other spheres of activity. An emphasis on community involvement will thus have long-term payoffs, and the programme does not wish to force the pace of the more limited and short-term objective of increased milk production. This clearly presents problems for conventional evaluation and it could be argued that the process of evaluation itself could unintentionally distort the development process it seeks to support by introducing a “result orientation” and time frame defined from outside.

The Dairy Development Programme was set up in 1982 within the DMB. The programme started by conducting primarily sociological research in Chikwaka communal area, chosen as a pilot area close to Harare. The rationale given for a sociological bias is that while the milk potential of the indigenous



herd is the key factor in determining milk production in the communal areas of Zimbabwe, "any innovations established by long-term herd research would be more likely to be profitably applied if the community perceived their interests to be involved and were informed of the rationale for each step along the way. Technical solutions without popular understanding and acceptance, and the necessary grassroots organizational support, would be virtually impossible to implement".

Following the above study, DDP has implemented a number of measures in Chikwaka, including assistance in the construction of improved water and sanitation facilities, the establishment of a 10 ha demonstration plot for training and legume trials and deployment there of a full time development officer, and the building of a milk collection centre (MCC) which was officially opened by President Mugabe in January 1988. The locally employed liaison workers have assisted scheme members in the building of milking sheds and a dip, and in the broader task of mobilizing the community for participation in grazing schemes, of which three have so far been implemented. By the beginning of 1988, milk was being produced in sufficient quantities for the Milk Centre to commence dairy related operations. Prior to that time it had been used, as designed, for a variety of other community purposes.

In 1984 a second pilot project was set up in the Marirangwe small-scale commercial farming area. This led far more rapidly to the production and marketing of milk. At first, milk delivered to the centre was cooled in a refrigerator; later an immersion cooler was introduced, then a 1200 litre bulk tank which was subsequently replaced by a 3500 litre tank as deliveries to the centre steadily increased. Milk sales were initially all local, but a progressively high proportion of the milk is now sent to the Harare Dairy. Production and gross income grew from 63 000 litres and \$24 000 in 1985 to 242 000 litres and \$98 000 in 1987. Some eight other projects have been investigated and are at different stages of implementation (see Chapter 9).

While receiving co-operation at operational levels from the various branches of MLARR involved in dairying, the programme has been dogged from the start by a lack of overall support from the parent Ministry. It would appear that there were doubts about DDP which was seen as being mainly production oriented, being located within a marketing parastatal (DMB). Despite this, the National Dairy Development Strategy (NDDS), which was drawn up in 1987 by the Dairy Programme Co-ordinating Committee set up by the Ministry, endorsed that role.

For close on 6 years DDP was left within DMB but without the official sanction to ensure smooth running of essential bureaucratic operations such as budget approval, staff recruitment etc. From the outside, it could be supposed that this inertia was induced by pressure from the commercial dairy farmers who could be thought to regard the peasant sector programme as a threat to their longer-term future. There is, however, no evidence of such a threat being perceived or pressure being brought to bear. On the contrary, in discussions over the period with officials from the National Association of Dairy Farmers, the impression was gained that a more far-sighted view was being adopted, at least by the leadership of NADF, recognizing that without changes in the industry consonant with the new government's priorities, the industry as whole would find it more difficult to make its case in matters such as producer price increases and obtaining sufficient foreign exchange for its operations. Even in areas where the two sectors might start to compete (eg for the acquisition of bulk tanks), the modest size of DDP's operations and plans in relation to the huge unsatisfied and rapidly growing market for milk (discussed in Section 2.7) could not have been a significant cause of concern.

At the time of the evaluation, the bureaucratic impasse had led to a situation of financial crisis for DDP. The budget that DDP submitted for Ministry approval in May 1988 had still not been authorized by January 1989, DMB meeting the costs of operating DDP in the interim on a loan basis. With the decision made to move the Programme to the Agricultural and Rural Development Authority, another parastatal falling under MLARR, such an *ad hoc* arrangement is no longer viable.

A detailed description of ARDA and analysis of the revised institutional structure for dairy development is given in Chapter 10 in Part IV. It is to be hoped that the transfer of DDP signals a commitment on the part of MLARR to resolve the difficulties that have faced DDP, in particular the financial crisis mentioned above.



## 2.9 DDP'S APPROACH CONTRASTED WITH OPERATION FLOOD

Due primarily to its deriving its initial impetus in conditions of milk deficit from counterpart funds generated from an EEC donation of milk powder and butterfat, DDP has always tended to be looked at as an aspiring mini Operation Flood. In reality by the time the financial procedures for disbursement of the EEC counterpart funds were in place, a) the industry was no longer in milk deficit and b) the \$8 million EEC counterpart funds had been diverted elsewhere. DDP from the start sought to distance itself from the Operation Flood paradigm, having benefitted in the approach it adopted from the wisdom of hindsight in analysing India's programme. In order to clarify the unhelpfulness of this comparison, a more detailed description of the DDP-Operation Flood differences is given in this section.

India's Operation Flood, with the alternative title of "the white revolution", is certainly the world's largest dairy development programme, and its success has been widely acclaimed by its proponents. This "success" has by no means gone unchallenged, however. The programme's use of donated EEC surpluses, its transfer of western dairy production and marketing technology, its orientation towards carrying milk out of villages and into towns, have all been criticized, and allegations that the programme has exacerbated disparities between socio-economic groups, genders and regions have been levelled.

In India where large scale commercial producers are relatively few, small scale dairying has to meet a huge and growing urban demand. The perhaps inevitable result is that dairy development programmes tend to end up as dairy extraction programmes, in response to the needs of a vocal and politically influential urban population. Significantly, the DDP approach differs from that of Operation Flood precisely in those aspects which have led to the above criticisms. This is in no small measure because of the existence in Zimbabwe of a productive large-scale commercial sector so that there was no immediate pressure to extract milk from the DDP project areas. This allowed some elbow room for dairy-related activity that is more broadly developmental.

The specific points of difference analysed are as follows. The characteristics contrasted are not explicitly set out in a manifesto by either programme, but are fairly clear from their documents and approach, as could be demonstrated.

- a) Where Operation Flood is large in scale, the DDP's operational scope is small. At its very start, the Operation Flood programme covered 25 milksheds and later in its second phase expanded to spread over more than 150 milksheds. By contrast, the DDP at present operates in no more than 7 areas of Zimbabwe. Whereas Operation Flood talks of a "national milch herd" and "a national milk grid", the DDP works iteratively within individual communities.
- b) The Operation Flood programme embodies a high-speed approach to dairy development. The original time frame of the programme was just 5 years, within which period India was to become self-sufficient in milk, set up a viable and self-sustaining dairy industry, improve the diets of the urban poor, assist the rural poor to find employment and income . . . (This original 5 year plan has gradually spread over three phases and almost two decades.) By comparison, the DDP functions on a much more open and cautious time schedule. Over approximately a similar period of 5 years, the DDP was involved in research in 5 communal areas and 3 small scale commercial farming area, set up essentially 3 pilot projects, and started collecting milk at 2 of them.
- c) The capital investments under Operation Flood are substantial, with Rs. 1,166 million (Z\$150 million) disbursed during the first phase and Rs. 4,855 targeted for expenditure under the second phase. The results are clearly visible in the form of a network of chilling plants, feeder balancing dairies, bulk tankers and vending outlets, as well as artificial insemination centres and co-operative collection centres. Expenditure under the DDP amounted to some \$1,5 million; project capital expenses include a collection centre at Chikwaka, renovation of an existing building at Marirangwe to serve as a collection centre there, fencing of three grazing schemes at Chikwaka and about a hundred small pasture plots at Honde Valley, a couple of demonstration plots and model milk sheds at both places. . . . negligible in comparison with Operation Flood. It



should be mentioned that even though slow, capital disbursement is consonant with the overall development strategy adopted by DDP, the extremely slow rate of capital commitment is due as much to insecure budgetary commitment to the programme.

- d) While the white revolution is specifically oriented towards dairying, the DDP (despite its initials) attempted — at least in Chikwaka — a more diffuse approach which dealt with water, sanitation, health, wood fuel availability and so on in addition to dairying. (It is true that Operation Flood now extends to the marketing of oilseeds and, on a smaller scale, of fruit and vegetables, but this is an extension of marketing activity rather than attention to more local and basic needs. The projects on human nutrition, health and female employment, carried out for example by the Tribhovandas Patel Foundation which is associated with Operation Flood's model area at Anand, are icing on the cake rather than any basic ingredient of it, and in any case are few in number.)
- e) Even in their approach to dairy development itself, the two programmes differ significantly. Operation Flood, as its subtitle suggests, attempts a "revolutionary" restructuring of dairy production and marketing in India, mainly through the introduction of borrowed technology. The DDP on the other hand works in more incremental terms — e.g. "start with the animals that you have" — and aims at more "evolutionary" progress.
- f) Operation Flood has a strong marketing thrust and appears sometimes to judge its success in a village by the amount of milk procured there. In contrast, the DDP did not begin procuring milk in Chikwaka until December 1987, some 5 years after initial contacts had been established. Similarly, the DDP now spends its time in Honde Valley establishing pasture, as a prelude to enhancing livestock, in preparation for increasing milk production, as a step before dairy marketing ... A related and important difference between the programmes is the emphasis that the DDP places on local sale of milk in communal areas, whereas Operation Flood's focus is on transfer of rural milk to urban areas.
- g) The kind of community orientation that the DDP has attempted in Chikwaka is quite different from the operating style of Operation Flood. The latter programme appears to work on the principle that, apart from baseline data on local cattle and their yields, it does not require wider research on the community (least of all sociological research), and that there is no necessity to discover what local people want when properly qualified technocrats and managers already know what they need, namely a milk cooperative, dairy processing facilities, upgraded bovines and improved animal nutrition. The DDP does attempt a partnership approach rather than a paternalistic one (although to what extent the DDP succeeds in this, and to what extent any intervention from outside and above can avoid paternalism, is an important question and one that Part III of this report will attempt to address).
- h) Again, the DDP emphasises that its approach is an experimental one which feels its way around each project area, and that it is not formulating any single model for widespread replication. On the other hand, Operation Flood seems quite sure of the answers, sees most projects as operations rather than experiments, and has a prototype for replication which is on offer not only for all of India but to Asia and Africa in general.

Indeed, given these rather striking differences in approach, the DDP strategy might even be described as Operation Trickle, in contrast to Operation Flood, although the DDP itself may not accept such nomenclature given its eclectic and experimental style and its present desire not to be associated with any one approach.

The above paragraphs probably reveal a certain disenchantment with the Operation Flood programme's large scale, high speed, capital intensive, top down, technocentric approach to dairy development in newly independent countries. However, rethinking of the Operation Flood approach should not result in a pendulum swing towards an opposite position of wholesale and uncritical endorsement of the DDP. The position that the fieldwork report takes is that study of the DDP projects in Zimbabwe provides an opportunity to assess some of the strengths and weaknesses of an approach to dairy development that is small in scale, slow in tempo and diffuse in orientation.



The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that every entry should be supported by a valid receipt or invoice. The text also mentions the need for regular audits to ensure the integrity of the financial data. Furthermore, it highlights the role of the accounting department in providing timely and accurate information to management for decision-making purposes.

In addition, the document outlines the procedures for handling discrepancies and errors. It states that any identified errors should be investigated immediately and corrected as soon as possible. The text also notes that the accounting system should be updated regularly to reflect changes in accounting standards and regulations. Finally, it stresses the importance of maintaining confidentiality and security of all financial information.

The second part of the document provides a detailed overview of the company's financial performance over the past year. It includes a summary of the income statement, balance sheet, and cash flow statement. The text also discusses the company's key financial ratios and trends, such as the profit margin and return on assets. Furthermore, it highlights the company's strengths and areas for improvement, as well as its strategic goals for the future.

Overall, the document provides a comprehensive overview of the company's financial and operational performance. It serves as a valuable tool for management and stakeholders to understand the company's current status and future prospects. The information presented is based on reliable data and is intended to provide a clear and concise summary of the company's financial health.

The document also includes a section on the company's risk management strategy. It identifies the key risks facing the company, such as market volatility and operational challenges, and outlines the measures being taken to mitigate these risks. This section is intended to provide a clear understanding of the company's risk profile and the steps being taken to manage it effectively.

In conclusion, the document provides a detailed and comprehensive overview of the company's financial and operational performance. It highlights the company's strengths and areas for improvement, as well as its strategic goals for the future. The information presented is based on reliable data and is intended to provide a clear and concise summary of the company's financial health. The document is a valuable tool for management and stakeholders to understand the company's current status and future prospects.



## **PART II**

# **THE BULK MILK TANKS PROJECT**



## CHAPTER 3: BULK MILK HANDLING

The advantages of well-conceived bulk milk handling schemes have been clearly enunciated in numerous dairy technology texts. In the early 1980s, the Government and the industry decided it was important that Zimbabwe progress to this technology as soon as funds became available.

### 3.1 BULK HANDLING OF MILK

This method of collection was first used in California in 1938 and rapidly spread throughout the United States, Europe and Oceania. Bulk milk collection started in Scotland in 1953 and England in 1954.

An important part of bulk handling is the need for raw milk to be held at a near constant low temperature to prevent an increase in bacterial count. As the temperature rises, bacterial growth explodes exponentially and even small increases in temperature can have a marked detrimental effect. To the producer the main advantages of farm refrigeration (which most commercial farmers in Zimbabwe had in 1982) and bulk collection are less risk of rejection of milk due to bacterial deterioration, freedom from handling cans and reduced transportation costs over the long-term. To the buyer, the advantages are more reliable bacteriological quality and considerable savings in the costs of milk intake. The savings in transport costs can be marked — for example, a road tanker collecting from farms tanks can take about two to three times as much milk per load as a lorry collecting in cans.

It should be noted that the milk hauliers must be able to start milk collection early in the morning to enable collection routes to be rearranged easily when circumstances demand, and furthermore that milk will be available at all farms at much the same time in the morning. Therefore a high rate of heat extraction to cool the large morning yield in a short time is obviously a necessity. In the United Kingdom and Zimbabwe, for example, it is specified that the bulk tank should be capable of cooling a full morning load of milk, added to a full evening load in the tank, to the specified temperature (U.K. 4.4° C; Zimbabwe 4° C) within half an hour of the end of the milking period. Given such operational parameters, high specification tanks are required and this is particularly so in sub-tropical environments. In direct expansion milk cooling systems, the extraction of heat from the evaporator is used to cool the milk directly, normally because the evaporator is an integral part of the wall of the milk vessel. For direct expansion cooling the refrigeration unit obviously must be capable of extracting the full heat load during the allowed milk cooling period of 30 minutes. A specific advantage of direct expansion tanks is that temperature control is more straight forward than in ice-bank systems especially where the diurnal temperature range is great and the farm tank size large.

It is also important to note that where the average milking herd size is large (for example, Zimbabwe) and therefore extended milking times and large amounts of milk stored are the norm, direct expansion tanks are generally specified.

To summarize, the advantages of bulk milk handling are:

1. It eliminates the handling of cans on farms.
2. It reduces loss of milk through spillage.
3. It improves the morale of dairy workers on farms and in the plant.
4. Costs of handling, transport and can replacement are reduced.
5. Milk of low bacteria count can be produced.
6. Every other day pickup can be introduced.

The main disadvantages are:

1. It is not necessarily economical for single low-producing dairies.
2. It is not always satisfactory where roads are unimproved.
3. Refrigeration failure can result in high losses under certain circumstances.



### 3.2 THE COMMERCIAL CHARACTERISTICS OF MILK

It is perhaps instructive to reiterate the commercial characteristics of milk that place it apart from most other food commodities. Milk is a difficult product to produce and market, suffering as it does from four basic commercial characteristics that create the need for special organizational patterns. Milk is:

- Heavy
- Liquid
- Perishable
- Supplied by many producers

It is **heavy** and therefore, costly to transport. The distance milk can be carried to market is limited accordingly. It is **liquid** and thus needs special containers. It can also be easily adulterated by the addition of water. Additionally, it is highly **perishable** and deteriorates from the moment of extraction from the udder; without treatment and refrigeration the time span between the point of production and sale is a few hours. This also limits the distance milk can be transported. Perhaps more importantly it also restricts the possibility of a search for alternative marketing outlets which puts the seller in a weak bargaining position and this circumstance is often made more difficult by the large number of **small producers** involved.

These four commercial characteristics have led to a special need for:

- a guarantee of a secure market and a reliable collection system, and
- an assurance of a satisfactory price.

These constitute the first two requirements that need to be met in the organization of any dairy development project. Without them, there can be no incentive for production.

It must also be noted that, within smallholder milk production systems, some form of central organization is required for the assembly of supplies (natural and purchased) and the joint marketing of the product. In this context viable smallholder production may only be possible by means of joint marketing initiatives, which means in turn bulk operation at some central point. The basic commercial characteristics of milk given above are such that farmers have, throughout the world, found it necessary to deal with the marketing of this difficult product themselves. By this means, they can ensure that the first requirements of satisfactory dairy development — a secure outlet and a sound collection system — are achieved. Within such a system it may be important to isolate the small-scale operation from the national market in order to secure the basis of an equitable price.

### 3.3 WORLD MILK

Milk production in Zimbabwe will in the future be influenced to a greater extent than before by trends in world milk prices. The world output of milk was slightly higher in 1988 than in the preceding year and in the EEC marketing quotas were again lowered in the 1988/89 dairy year. At approximately 99 million tons, the collection of cow milk by the EEC dairy plants in 1988 is estimated to have been about 3 percent less than in the previous year and nearly 10 percent less than in 1983, the year prior to the introduction of marketing quotas. Production also decreased further in most other countries of western Europe. In the 1987/88 dairy year, output also increased in New Zealand, where it had been sharply reduced by drought in 1986/87. Favourable weather led to a production recovery in India and other countries in southern Asia.

In the EEC, the decline in milk output again caused a sharp reduction in the manufacture of butter and skim milk powder as consumption of liquid milk and fresh milk products rose and output of cheese and whole milk powder continued to expand. In this circumstance purchasing by the intervention agencies has virtually ceased, subsidies on exports and domestic surplus disposal have been reduced, and public stocks of butter and skim milk powder had fallen to exceedingly low levels by the end of 1988.



The current world prices of skim milk powder are well above the GATT's minimum export price, which was raised twice in 1988 (Figure 3.1). Market prices of other milk products also increased, but for products with a high butter fat content the rise was much less than for skim milk powder and casein. Developing countries remained the principal buyers of cheese, milk powder and condensed milk. Their imports of whole milk powder reached a record level in 1988 and this product has become the most important item in international dairy products trade in recent years. Overall, the developing countries have imported dairy products amounting to approximately 20 million tons of milk equivalent in 1988, about the same as in the preceding years though significantly more in value terms. Thus, the developing countries again accounted for nearly two-thirds of world imports of dairy products, which levelled off at somewhat over 30 million tons of milk equivalent.

With world stocks now low and likely to remain so, the volume of international trade in dairy products is likely to decrease in 1989, with a drastic reduction in shipments under food aid programmes and other special transactions. There could be some further rise in prices in international trade in 1989, but world prices will probably remain significantly lower than domestic market prices in major producing and exporting countries in the northern hemisphere. The future for Zimbabwe under these circumstances, with a capacity for expanded commercial and smallholder production within a region chronically short of milk products, could be most favorable.

3.2 World Milk

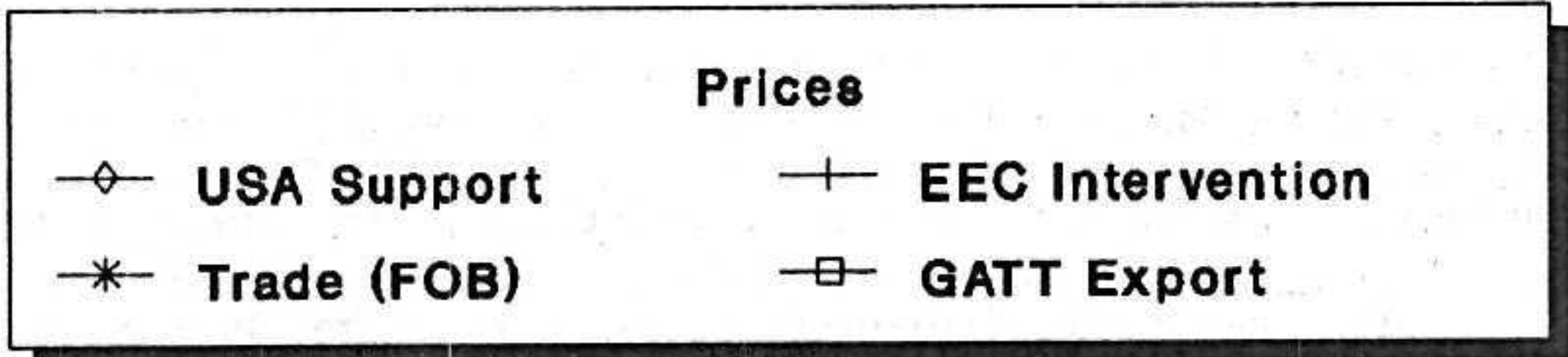
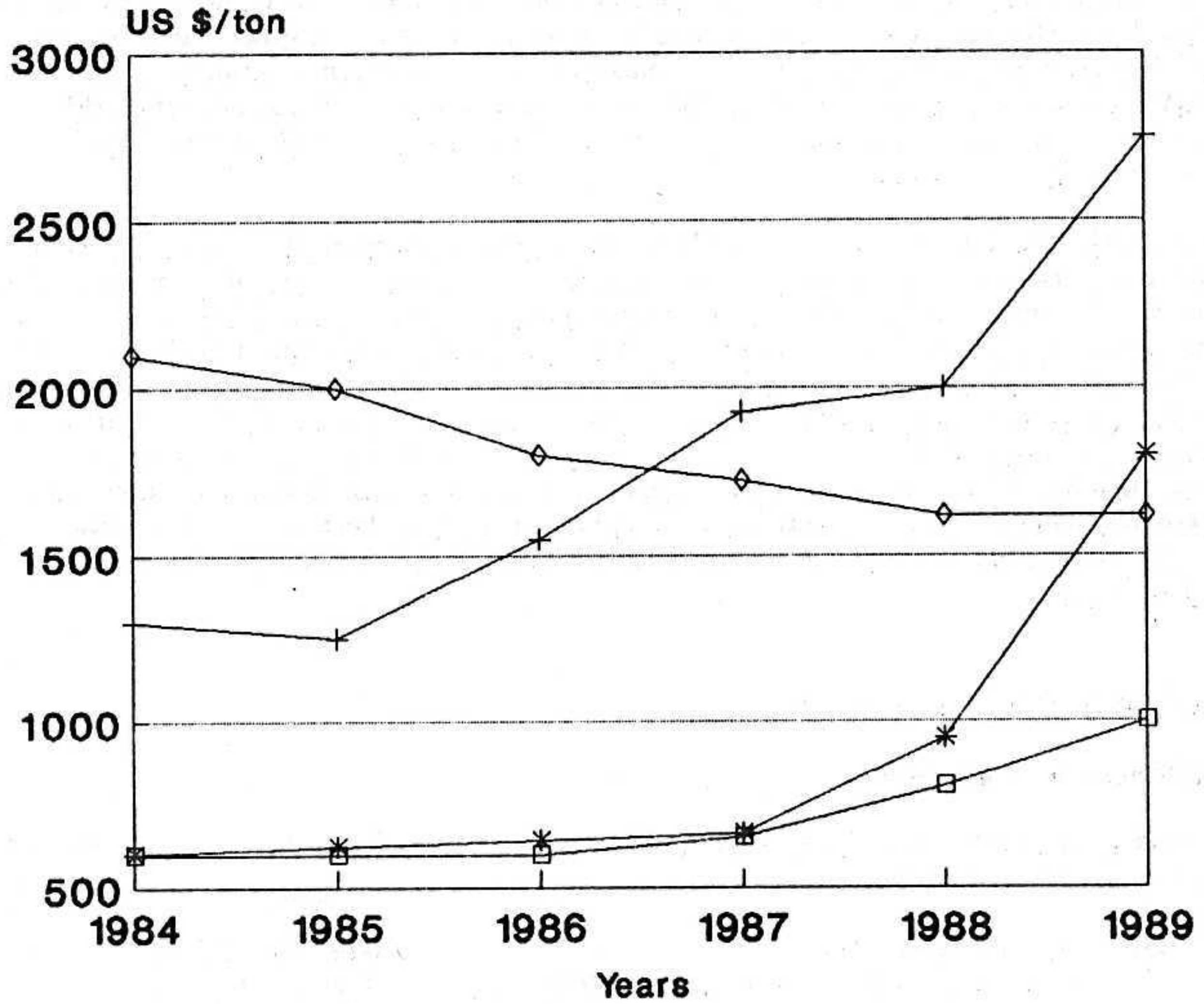
Milk production in Zimbabwe rose to the level of 1.8 million tons in 1988, up from 1.7 million tons in 1987. The increase in production was largely due to a rise in the output of milk powder from 1.6 million tons in 1987 to 1.7 million tons in 1988. This increase was due to a rise in the output of milk powder from 1.6 million tons in 1987 to 1.7 million tons in 1988. This increase was due to a rise in the output of milk powder from 1.6 million tons in 1987 to 1.7 million tons in 1988.

In the RRF, the decline in milk output was a sharp reduction in the output of milk powder from 1.6 million tons in 1987 to 1.7 million tons in 1988. This increase was due to a rise in the output of milk powder from 1.6 million tons in 1987 to 1.7 million tons in 1988.



FIGURE 3.1

## SKIM MILK POWDER PRICES International Trends



Stanchart AMD 1988.

Source: GATT Trade Centre



## CHAPTER 4: THE BULK MILK COLLECTION SCHEME

### 4.1 INTRODUCTION

The Bulk Milk Collection Scheme was conceived within Zimbabwe in 1981 because the then collection system based on milk churns had become ungainly, cumbersome and costly. Projections, made in the early 80s, of the milk production levels expected in the 1990s suggested that milk intake to the Dairy Marketing Board would more than double from the then level of about 140 × 10<sup>6</sup> litres per annum. Such a scenario cast doubts on the capacity of the transport system to handle this increase using cans alone, or of the DMB factories to handle such an intake without installing new equipment. The ensuing steady increase in milk production bears out, to a degree, these predictions and fears. Additionally, producers, buyers and Government alike believed that milk quality standards could not be upheld with the continued use of cans.

The Bulk Milk Scheme is operated by the Dairy Marketing Board on behalf of a national committee formed by farmer representatives, DMB executives and Dairy Officers. The scheme was made possible in terms of commodity assistance programmes with Norway (on-farm tanks) and the Netherlands (road tankers for milk collection). In the Norwegian case, discussions between Norway and Zimbabwe led to a decision whereby the funds generated by the rental of the tanks to the farmers would be used to develop small-scale dairying. The rationale behind this approach was that not only would the peasant and smallholder dairy farmer benefit from the aid, but considerable good could also be done in terms of maintaining milk supplies to the urban areas. As has been explained earlier, the complementarity that exists between the different elements of the dairy industry is important in ensuring that the development process takes place in a supportive environment rather than in a highly acquisitive one.

### 4.2 THE BULK MILK TANK SCHEME

#### *Aid Component of the Scheme*

In 1982 a grant was made to the Zimbabwe Government of NOK 34 million by the Government of Norway to be used as follows:

a)	Purchase of farm tanks	NOK 30 million
b)	Purchase of spares, accessories and refrigerant	NOK 3 million
c)	Purchase of capacitive starters for pump motors	NOK 1 million

This grant resulted in the purchase of 361 bulk tanks from Landteknikk A/L of Norway. Competing quotations from alternative suppliers were lower, but the 100% grant aspect of the Norwegian assistance gave the Norwegian offer the edge from Zimbabwe's point of view. An additional loan of DFL 10 million came from the Netherlands to finance the purchase of the road tankers and other capital requirements. Subsequently, a second agreement with Norway was signed in 1986 for NOK 20 million for the supply of a further 200 tanks from the same source. From 1988, Norway has allocated a further NOK 2,5 million to assist in bulk tank maintenance.

#### *Installation, Leasing Arrangements and Bulk Charges*

The on-farm expenses connected with installation of the tanks were for the farmers' account; these usually included the upgrading of power supplies, the refurbishing or rebuilding of the milk room to approved standards, realignment of roads and retraining of the milk room staff. The direct tank installation charges and import tax on the tanks (later waived in terms of the agreement with Norway) were met by DMB, with recovery from the farmers through one of the components of the monthly charges levied on the farmers.



Prior to the installation of the tanks the user farmers have been required to sign a lease agreement for a period of 15 years to recover the capital cost and installation cost of the tanks. A fixed interest charge of 7,5% on the capital costs was set as the basis of generating the counterpart funds for dairy development, while the DMB loan for installation charges was recovered at an interest rate 9,75%. It was intended that at the end of a 15 year period the rental on the tanks would accrue to DMB rather than to the counterpart fund, the tanks being in terms of the agreement the property of the Government of Zimbabwe as represented by the Dairy Marketing Board. The spares and starters were given as a grant to DMB and no peasant sector counterpart funds have been generated thereby.

The basis on which these charges were set is most unsatisfactory from the viewpoint of Norway's objectives with respect to peasant sector development. This is the most serious problem identified in the course of the evaluation and is analysed in detail in the next section and in Appendix 4.

As mentioned above, Norwegian bulk tank support was extended in 1986 to provide a further 200 bulk tanks, which would enable the majority of producers to deliver milk to the DMB in bulk. The higher cost of the Norwegian tanks was carefully considered at the time of the signing of the second agreement, but at that stage the need for standardization and the rather negative experience of Zimbabwe with the competing Dutch company, led to the decision to continue with Landteknikk. Rentals are to be levied and collected as in the initial instance except that the agreement stipulates that the Zimbabwe Government should ensure that the rental would be based on "a minimum 9,75%" interest rate which would be "adjusted from time-to-time to obtain conformity with the prevailing market level in Zimbabwe". This has not as yet been done on the 100 tanks so far installed from this consignment. This issue is also discussed and analysed in the next section.

Transport of the milk by tanker is organized by the bulk collection committee, but is for the farmers' account. As a result of the above arrangements, the Bulk Delivery Charges as they are referred to by DMB consist of four elements:

- (1) Lease charges (for tanks and related equipment) are based on the size of the equipment. The monthly rental charge is that specified in the agreement between the DMB and the producer and is a recovery of the capital and interest for the tanks and installation costs over a 15 year period. The capital cost (at an interest rate of 7,5%), amounting to some 70% of the lease charge, goes to the counterpart fund. The balance (at a rate of 9,75%) forms a repayment to DMB for its initial outlay on import duties and installation.
- (2) An annual insurance premium is payable for insurance against loss or damage to bulk milk collection equipment. This charge goes to the DMB Insurance Account.
- (3) A quarterly charge for repairs and maintenance to the bulk milk equipment is payable and accrues to the Repairs and Maintenance Account.
- (4) The collection charge per litre of milk is based on the distance and the volume of milk delivered. A notional distance between the farm and the DMB depot is calculated by the DMB on the basis of the type of roads covered by the road tanker. The charge per litre relating to this notional distance and volume of milk delivered per month is read off a collection charge chart. Copies of this are available from the DMB. This accrues to the Bulk Milk Collection Operating Account.

#### *Bulk Milk Collection Operating Account*

All costs incurred through the operation of the Bulk Milk Collection Scheme are accounted for within this DMB Operating Account. The schedule of charges is adjusted in such a way as to ensure that the scheme is self-financing. There is no subsidy involved in this part of the operation. This account pays all the salaries and wages of the staff of the scheme together with all fixed costs and the variable costs associated with the administration and operation of the scheme. During the 1987/88 financial year fixed costs were 27% of total costs, operations 64% and administration 9%.



### *Current Costs to the Farmer*

At present 78% of DMB's intake is delivered in bulk, the remainder being delivered in churns. Once the latest supply of tanks has been installed, about 96% or more of the deliveries will be in bulk. It is the intention of the DMB to dispense with can handling equipment wherever possible; as will be pointed out later bulk handling will serve all sectors of production. The bulk scheme has already resulted in considerable savings within the industry. Further economies to the producer in overall operating cost could be effected if pre-cooling and heat recovery systems were to be incorporated and improvements in the efficiency of the transport system for collection achieved.

The current cost of bulk handling to the commercial dairy farmer averages out at about 3,8 cents per litre, 11% of total variable expenditure in the "average" dairy undertaking (see Appendix 2) and 9,1% of producer price. The average cost to the farmer for repairs and maintenance is very small; 0,06 cents (Zim) per litre of milk or Z\$254.63 per annum; these costs represent less than 1% of the "average" farmer's bulk milk costs. By contrast, 2,2 cents are taken up by haulage, or 5,3% of the producer price. By way of comparison, in the United Kingdom the estimated average total milk haulage cost was, for the year ended November 1988, 0,720 pence per litre or 4,8% of the producer price.

Of greater significance for the evaluation is the finding that, at the current rental levels, the counterpart fund element represents less than 0,5% of the farmers' total annual costs (details are given in Appendix 4). A doubling of this counterpart fund contribution would thus not materially change the cost structure or viability for the commercial farmers, while making a very significant difference to the finances available for dairy development (see next section).

### *Management of the Scheme*

The scheme is in all major respects managed by the National Advisory Committee which is responsible for:

- (1) Allocating farm tanks in such a manner as to optimize the bulk milk scheme operation;
- (2) Appointment of private contractors for service and maintenance of farm tanks;
- (3) Monitoring the financial performance of the Scheme;
- (4) Determining the collection charges.

The operational management of the scheme is undertaken on behalf of the National Advisory Committee by the DMB. The scheme comes under a Senior Executive who advises the National Advisory Committee on all matters affecting the scheme and implements the decisions of the Committee. The Senior Executive operates through six regional Bulk Milk Managers (Harare, Bulawayo, Gweru, Kadoma, Mutare and Chipinge) who are responsible for day-to-day operations. The Bulk Milk Managers are also expected to liaise closely with the regional representatives of the National Advisory Committee on the planning of routes, the maintenance and repairs of farm tanks and road tankers, co-ordination of milk collection and accessibility of farms. Annual capital requirements of the scheme are assessed by the Senior Executive and after approval by the Committee submitted to the General Manager of the DMB.

### *Parameters of the Scheme*

The parameters of the Scheme as of August 1988 are provided in Table 4.1.

It is immediately obvious that the majority of producers are to be found in the region around Harare, that is, in the higher altitude and rainfall areas suited to dairy production. Dairy production has increased in the Gweru region primarily because the farms are of insufficient size for use in extensive cattle ranching and the environment too harsh for consistently successful cropping. Dairying is therefore an attractive diversification option.



Figure 4.1 is based on data provided by the DMB. A simple linear regression has been fitted to the data to indicate the past trend in production. This trend line is extended to show the predicted growth based on the past trend. In addition three other trend lines are included; these represent simple growth progressions, unweighted for regional differences. The predictions of the DMB (from 1985) would now appear over-optimistic as a growth trend of some 4% to 6% would seem more likely in the future. The DMB's more recent estimates are closer to 7%; capital expansion is based on a predicted 8% growth per annum.

TABLE 4.1: PARAMETERS OF THE BULK MILK COLLECTION SCHEME

	HARARE	BULAWAYO	KADOMA	GWERU	CHIPINGE	MUTARE
No. of producers	248	88	44	118	20	20
Producers with tanks	170	52	36	68	20	12
Total tanks in region	196	61	37	83	24	20
Monthly intake (litres × 10 <sup>3</sup> )	9 468	2 200	1 370	4 530	982	920
% Bulk	75%	70%	79%	69%	100%	92%
Monthly bulk volume (litres × 10 <sup>3</sup> )	7 087	1 500	1 100	3 130	982	848
No. of trucks	17	5	3	6	2	3
No. of trailers	14	2	2	4	1	1
Average off-road	9	1	1	2	0	0

Note: Figures as of August 1988.

It is most important that production is closely related to processing capacity; the size of the summer flush of milk effectively governs the size of the DMB operation and the requirements of the Bulk Milk Tank Scheme. The monthly milk intakes are illustrated in Figure 2.1. The agreement reached on prices and level of deliveries between the DMB and the NADF in February 1988 is intended to ensure that the growth of production is maintained within attainable limits. Details of the DMB-NADF agreement are to be found in Appendix 3. The agreement has not, at this stage, been implemented as milk intakes have been lower than predicted.

The above assessment of moderate growth is supported by the data available for the number of in-calf heifers in the national herd as a percentage of the total number of cows. This percentage has risen from 14% in 1983 to 20% by the end of 1987. This bodes well for a steady increase in milk production over the next four years.

### 4.3 BENEFITS TO AND IMPACT ON THE INDUSTRY

The benefits, detailed in Chapters 3 & 4, to be realized from the bulk handling of milk have, in the main, been realized by the Bulk Milk Tank Scheme in Zimbabwe. This applies equally to the dairy producer and the Dairy Marketing Board. This view was expressed by all the parties interviewed. The irrevocable change from cans to tanks was made on the basis of sound recommendations and proven experience which is as valid today as it was in 1981/82. Specific benefits mentioned are:

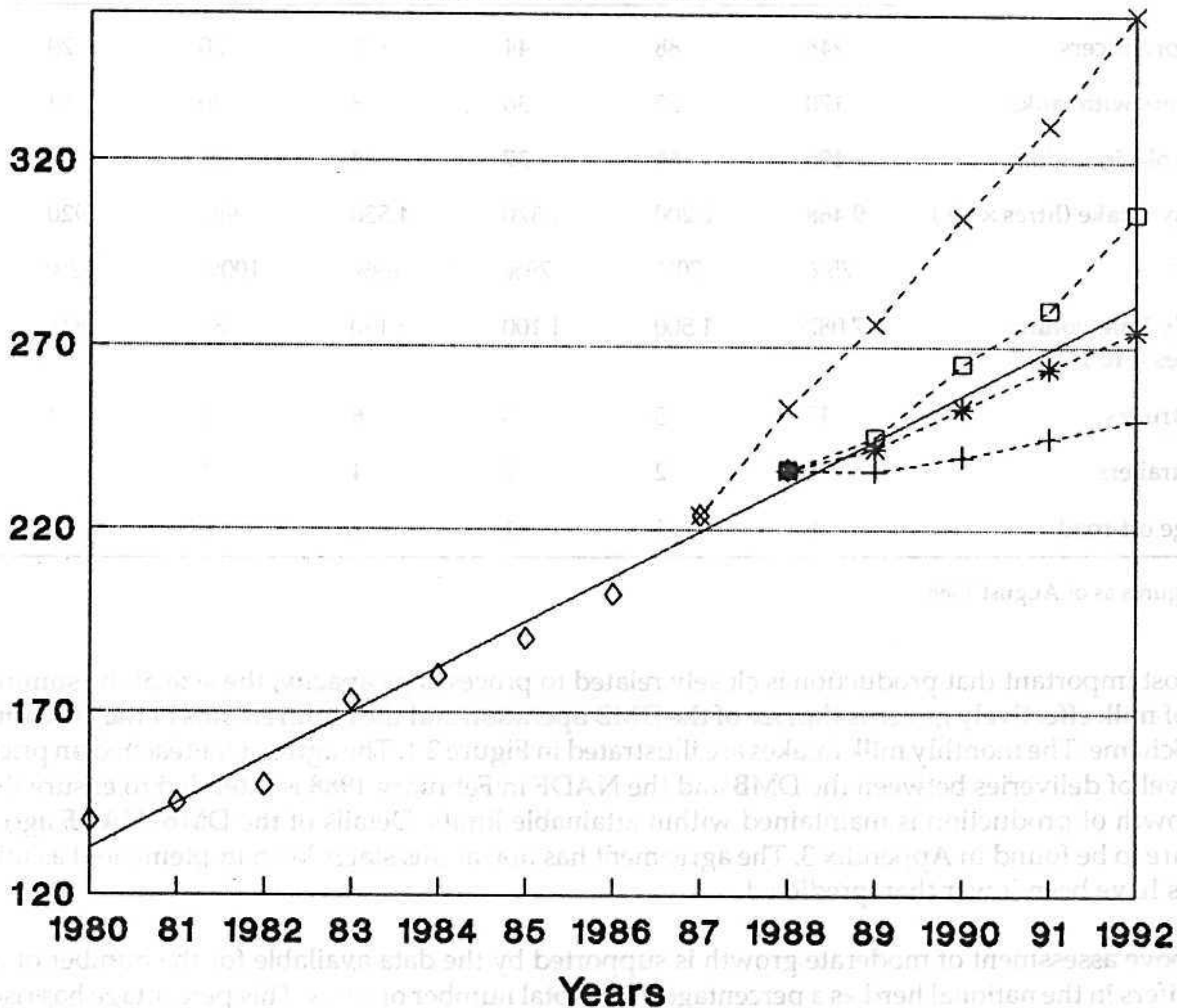
1. Less wear and tear on the roads.
2. Less fuel, tyres and other consumable usage.
3. High degree of convenience for the producer and buyer alike.
4. Reduction in costs in the move away from cans and producer's own or contracted transport.



FIGURE 4.1

## Milk Intake Past Trend and Projections

Intake per Year (Millions of Litres)



**Intake and Growth**

—◇—	<b>Milk Actual</b>	—+—	<b>2-3%</b>	—*—	<b>4-5%</b>
—□—	<b>6-8%</b>	—x—	<b>DMB Projection</b>		

Stanchart AMD 1988

Source: Dairy Marketing Board



5. A significant improvement in milk quality, related directly to bulk transport and improved milk room design and hygiene.
6. The scheme is seen by producers as an incentive to go into production.

From the viewpoint of the National Advisory Committee, the most significant problem which has arisen is the current crisis in tanker capacity, due to a shortage of foreign currency to purchase spare parts and more importantly replacement and additional vehicles for the fleet. This is discussed in more detail in Section 4.5 below, but the point to be noted here is that the situation reflects the general economic bottle-neck in Zimbabwe of a shortage of foreign currency, and is not fundamentally a problem with the bulk scheme itself. It does, however, highlight that although at the time it really was not an option to continue and expand the can collection system, going over to bulk was a decision which implicitly increased the vulnerability of the industry to foreign exchange problems.

#### 4.4 SHORTFALL IN COUNTERPART FUNDS FOR DAIRY DEVELOPMENT

As mentioned in Section 4.2, the basis on which the counterpart funds from the rental of the bulk tanks to farmers have been generated has been found to be highly unsatisfactory. This situation has arisen because of a lack of clarity about the project in its formulation stage, resulting in a loosely worded agreement between Norway and Zimbabwe which did not specify the level at which rentals for the tanks were to be set. Subsequently, the Norwegian Embassy and later the NORAD representation in Zimbabwe did not feel it necessary to insist on the provision made in the agreement for reports on the generation of counterpart funds. An enquiry was made from Oslo to the Norwegian Embassy in Harare in December 1984 about the interest rate being charged, but evidently no significance was attached to the (correct) reply of 7,5%.

The second agreement was somewhat more precise, requiring a market rate of interest to be charged (subject to a minimum of 9,75%). In response to the findings of the evaluation that the first 100 of the new tanks are still being charged at the old rental schedule, NORAD has requested clarification of the situation during the March 1989 Country Programme Discussions and is requiring satisfactory implementation of the agreements before acceding to the formal request for additional financing for DDP.

The importance of this issue has warranted a rather detailed investigation, which is documented in Appendix 4. In essence, the Zimbabwe side, while talking about "normal commercial principles" being applied "to recover capital and interest in full", in practice set *both* a low capital base for the calculation of rentals and an interest rate of 7,5%, as compared with commercial rates of 12–20%. The capital cost figures used for the first 161 tanks to be installed (Phase 1 in DMB nomenclature) were the prices quoted by the lowest tenderer and were not related to the actual Landteknikk prices, which were apparently about 30% higher. The capital costs of the remaining 100 tanks from the first agreement (Phase 2) were set at a level approximately 5% higher than Phase 1, even though price rises and devaluation equivalent to over 18% had occurred in the interim. Rental on the first 100 tanks from the second agreement (Phase 3) has temporarily been set according to the Phase 2 schedule, but farmers have signed a letter acknowledging that a higher rental will be established in due course and arrears will become due for payment. Installation of the final 100 tanks (Phase 4) has been suspended pending provision of adequate road tanker capacity.

There are three main issues to be resolved to bring the counterpart fund position to a state consistent with what would be warranted in terms of Norway's objectives in giving the assistance to Zimbabwe. In what follows, without seeking to prejudice negotiations between the parties involved, calculations of what would accrue under "commercial" repayment conditions assume capital values based on average exchange rates at the time of installation of the tanks and an interest rate charge of 13% over a period of 15 years. With respect to the choice of interest rate, it is to be noted that the present loan rate of the Agricultural Finance Corporation for capital acquisitions is 13%; that rate has also been the bank base rate throughout the life of the bulk tanks project. Full details of the calculations lying behind the figures given below are given in Appendix 4.



- (1) **Increase the rentals on Phase 3 tanks to commercial levels.**  
Under current arrangements whereby the Phase 2 rental schedule is being used, the monthly amount being generated for the counterpart fund is approximately \$10 000. At a capital base calculated using the end 1988 exchange rate of NOK 3,4 to the Zimbabwe dollar and an interest rate of 13%, the monthly contribution to the counterpart fund should be \$37 000. Although this would represent a substantial rise in funds available for dairy development, the implication for the farmer of the higher rental would be an increase of less than 1% to his total costs.
- (2) **Increase the rentals on Phase 1 & 2 tanks to commercial levels.**  
Under current Phase 1 and Phase 2 schedules, the monthly amount being generated for the counterpart fund is approximately \$29 000. At a capital base calculated using the mid-1984 exchange rate of NOK 6,349 to the Zimbabwe dollar and an interest rate of 13%, the monthly contribution to the counterpart fund should be \$57 000. Again, although this would represent a substantial rise in funds available for dairy development, the implication for the farmer of the higher rental would be an increase in this case of less than 0,5% to his total costs.
- (3) **Make good the accumulated shortfall.**  
Projecting to the end of June 1989, the accumulated shortfall between what was in principle generated for the counterpart fund (not all of which has actually reached DDP) and what should have accrued if a commercial repayment basis had been used from the start of the project is calculated to be \$2,25 million. Of this amount, the average which would be due per farmer holding tanks issued in Phases 1 and 2 would amount to approximately \$5 250.

The first step of increasing the rentals on the Phase 3 tanks is straightforward, as provision has been made for this in the temporary arrangements made with the farmers. To implement steps 2 and 3 is intrinsically more difficult as the farmers are covered by legally constituted agreements which clearly stipulate the rentals currently being paid and do not allow DMB to terminate the agreements except in exceptional circumstances.

The implications of the above analysis for the finances of DDP and the recommendations arising therefrom are given in Chapter 11 in Part IV.

#### 4.5 OTHER PROBLEMS RELATED TO THE BULK MILK SCHEME

##### *General Operating Constraints of DMB*

The growth in milk supply since Independence has placed considerable pressure on the DMB both in terms of processing and marketing. The most visible problem was the shortage of packaging materials as a result of foreign exchange limitations; these problems are generic to the processing and packaging industry. Inter-factory transfers of milk during this period were high in order to convert raw milk into storable products. The factory at Chipinge produces a single product, sterilized milk, and shortages of plastic granules and aluminium foil resulted in close down for most of 1986/87. Sales of Lacto, pasteurized milk and UHT milk were also badly affected during this period. Over and above these problems were (and still are) the availability of spares for vehicle and plant maintenance and the loss of skilled personnel to the private sector or other countries.

During this period the trading deficit has grown from Z\$4.1 million in 1980 to Z\$47 million in 1987/88. During 1988 the position improved in that steady supplies of packaging material became available through the Board's own resources, fueled in part by the export of milk products, especially skim milk powder and butter sold at a loss, but at a price higher than the then international FOB price. Additional vehicles have been obtained, though many more are needed; the DMB estimate the need to be some 65 vehicles (apart from the Bulk Tank Scheme) over the next three years.



The Bulk Milk Collection Scheme itself has suffered series of problems (not unrelated to the general problems of the DMB) of an institutional and organizational nature, particularly in the following ancillary services:

1) **Hygienic Quality**

The assessment of hygienic quality of milk collected in bulk, is for technical reasons, different from that used in can collection systems. The tests used for can milk (dye reduction tests) correlate poorly with the total bacterial counts and bulk tank milk very seldom fails these tests even when the milk is heavily contaminated. The most commonly used system is total bacterial count using standard microbiological plate culture techniques. This technology, though not complex, is moderately costly to install and operate because of the large number of samples to be processed rapidly. Until such equipment is made available to the Chief Dairy Officer at the National Dairy Institute and its regional offices it is unlikely that truly effective hygiene management can be instituted.

2) **Transport Undertaking**

*Management Arrangements*

The transport undertaking is jointly managed at this time by the National Advisory Committee to the Bulk Tank Scheme and the Dairy Marketing Board. In the main, the DMB is responsible for the day-to-day operations and the Committee for policy and liaison. A recent NORAD consultancy study on 'Management and Maintenance of Bulk Milk Collection Scheme in Zimbabwe' provides much of the base data for the following comments.

Contrary to the recommendations made in the NORAD Study, there appears to be little merit in the proposal that the 'stewardship' of the transport undertaking remain as it is. There is little to be gained by the participation of both the Dairy Marketing Board and the NADF (neither of whom are hauliers) in the road transport undertaking and it is contended that a more effective system would result from the scheme being managed in all respects solely by the NADF on a non-profit basis. Within such a private framework there would be room for independent hauliers to participate, though it should be realized that the commercial characteristics of milk require a high degree of responsibility on the part of the haulier.

When bulk collection replaces can collection or delivery, one of the effects is that the point of sale is transferred from the receiving dairy to the farm. This means the driver of the road tanker has the considerable responsibility of accepting the milk on inspection and measuring its quantity. The driver is at present an employee of the DMB, but any move to independent hauliers takes with it the responsibility.

The magnitude of the transport undertaking illustrated in Table 4.2 has resulted in numerous problems for the Committee and the Dairy Marketing Board. The transport business is not simple, as the DMB and NADF have found. This is not a criticism of the DMB's normal distribution undertaking, but bulk milk collection is a speciality operation and requires a high level of management skills and co-ordination. Experience in the U.S.A. and the United Kingdom has shown that efficiency and economies can be stimulated by using combinations of independent, buyer and producer transport under varied and often imaginative contractual arrangements to suit the circumstances. There may be sound reasons to split the Harare region operation into two more manageable components.

The Scottish Milk Marketing Board, for example, undertook a major rationalization programme in 1979. At that time, some 133 tankers operated by 42 private contractors were in operation along with the Board's own fleet of 39 tankers. The private contractors carried around 80 per cent of milk produced and the Board fleet 20 per cent.



On completion of the exercise, the number of private contractors was reduced to 15 hauling 60 per cent of the milk produced, and the Board the rest. The Scottish Milk Marketing Board states quite categorically that constant vigilance is needed to keep the costs of transportation below the rate of general price inflation.

#### *Repairs and Maintenance*

It is well appreciated, by all parties, that the initial fleet of vehicles is too sophisticated for the Zimbabwe environment and it is recommended that simpler, more easily serviced vehicles be purchased, preferably of the same make and series (though not model) as the original fleet.

Table 4.2 illustrates clearly that vehicle down time is unacceptable. This is the result of a shortage of foreign exchange for the purchase of spares, the present age of the tankers, and inadequate control of service and maintenance, especially in the Harare region. Maintenance control problems appear to be linked to a poor working relation between the DAF agents and the Regional Bulk Milk Management. In other regions the standard of workmanship of the contractors and their relation with the DMB appears to be satisfactory. The fleet is over five years old and replacement will become increasingly urgent.

The earlier NORAD Study noted that the maintenance of the fleet should improve with the recent importation of spares using non-aid funds. Negotiations, which were well advanced with donors for the provision of new road tankers, have not been fruitful, precipitating an impending crisis if the situation is not resolved early in 1989. As it is, the installation of the second allocation of Norwegian bulk tanks has been suspended by the National Bulk Milk Advisory Committee until it can be assured that there will be sufficient tanker capacity to serve the additional bulk tanks.

### 3) **Farm Tank Maintenance**

The original installation of farm tanks by contractors and the DMB was, with few exceptions well above average. The tanks have proved easy to operate and clean; farmers have maintained a high standard of milk room hygiene and all tanks have remained in excellent condition. As far as can be ascertained mechanical breakdowns have been few and only small losses of milk have ensued. Attention must be given to planned maintenance programmes and training of service personnel. The shortage of spare parts for repair and preventative maintenance is a cause of concern. Additionally, the contract service personnel must be trained specifically in farm tank refrigeration maintenance and repair.

### 4) **Miscellaneous**

The requirement to reduce the milk temperature to the specified level within 30 minutes of the end of milking calls for heavy refrigerator units (on the direct expansion tanks) with high current draw downs which preclude the use of a tractor driven alternator during power failures to maintain the milk temperature. However, after the power is restored the milk temperature can be brought down to 40 within 30 minutes. Reported losses have not been significant. There have however been significant (to the farmer) losses associated with tanker breakdowns; the cost of these losses has been borne from the DMB Operating Account.

The financial and operating statistics associated with the bulk handling scheme in Zimbabwe are illustrated in Table 4.2. It is apparent that operational economies could be achieved in certain collection districts when inter-area comparisons of costs and other parameters are made. Tables 4.1 and 4.2 make it clear that the management of the scheme in the Harare region is inadequate. This is probably related more to the size of the regional undertaking than to the personnel involved.

There is no truly rational basis on which these costs may be compared to those in other parts of the world. The comparison above with the UK costs of haulage was purely indicative.



TABLE 4.2: FINANCIAL AND OPERATING STATISTICS 1987/88<sup>†</sup>

	HARARE	BULAWAYO	GWERU	KADOMA	MUTARE	CHIPINGE	NATIONAL
<i>Road tankers and trailers</i>							
Cost per litre (cents)	2.4	2.3	1.24	1.37	2.4	1.4	2.2
Cost per km (\$)	2.34	2.24	1.70	1.71	1.63	1.71	2.13
Litres per km (August '88)	96	99	138.5	107	114	198.9	108.8
Farm tanks per road tanker	11.2	11.0	11.7	12	5.7	11.5	10.9
Average annual distance per	50 291	36 494	71 767	52 056	40 365	46 307	51 052
Volume per tanker	4 821 802	3 478 868	5 941 373	4 156 380	2 790 425	5 630 037	4 642 036
<i>Farm milk tanks</i>							
Average annual repair and maintenance cost per litre (cents)	0.07	0.03	0.06	0.07	0.07	0.08	0.06
Average annual repairs and maintenance cost per tank (\$)	298.87	103.48	163.02	217.29	333.50	383.09	254.63

<sup>†</sup> Consultancy Study on Management and Maintenance of Bulk Milk Collection Scheme in Zimbabwe September 1988.

#### 4.6 CONCLUSIONS

The conclusions are presented to correspond to the five points identified in Section 2 of the TOR.

##### *Costs & Benefits to Producers and Industry*

In drawing conclusions as to the cost of this benefit to Zimbabwe it is important to again state the irrevocable nature of the transition to bulk milk collection. Within this perception there is little advantage in drawing a cost-benefit analysis as the result, appraised over many years, must justify the cost. This is a similar scenario to that of brucellosis eradication in the United Kingdom (and hopefully in Zimbabwe) where the cost was, within reason, fully justified by the result; the disappearance of contagious abortion in cattle and man. Likewise, the unquantifiable benefits to Zimbabwe will certainly outweigh the Norwegian contribution and the costs to the DMB and the producers in implementing the scheme. That the average dairy farmer was willing to spend considerable amounts of money on buildings, roads, power supplies and retraining is indicative of perceived necessity and future economy of the scheme.

The Bulk Milk Tank Scheme, established with the support of the Government's of Norway and Holland, has in all respects achieved its objectives. The benefits to Zimbabwe, to the Dairy Marketing Board, to the individual producer and to the consumer have all been realized. The dairy sector would certainly not be in the position it is today if it were not for the scheme; there is of course no retreat from bulk collection of milk.



As has been made clear, the Bulk Milk Collection Scheme has a number of organizational problems, aggravated by a national shortage of foreign exchange. Within the Zimbabwe business environment the shortage of imported spares can be ameliorated to a degree, however there comes a time when cannibalization and other measures are insufficient to maintain efficiency and profit. The erosion of the capital base of industry is a serious cause of concern and in this sense the sustainability of the scheme is suspect. The economic fortunes of Zimbabwe and Government's discernment of priorities will determine the final sustainability of the scheme. In a less global perspective the technology chosen for the scheme at the time of its inception is appropriate and sustainable, with the caveat that the original choice of road tanker was too sophisticated for the Zimbabwe environment. This problem has now been identified and partially remedied.

#### *Determination of Charges*

The basis on which charges were calculated for the rental of the tanks was such that the farmers have benefitted at the expense of the counterpart fund to be used for the development of the small-scale sector. Both the capital values of the tanks and the interest rate of 7,5% were undervalued in the schedule of charges which have been applied since the start of the scheme. By the end of June 1989, the accumulated amount measured in relation to a more commercial basis of capital values calculated using actual exchange rates and an interest rate of 13%, has been estimated to be a *shortfall* \$2,25 million (as against a *total* actually generated of about \$1,75 million). Recommendations about improving the level of current collections and of recovering the past shortfall are given in Chapter 11 below.

The rentals have been collected effectively by the Dairy Marketing Board, though disbursement through MLARR to the Dairy Development Programme has been very tardy. It might also be questioned why counterpart funds for the Norwegian allocations for spare parts did not stipulate that the funds should go to the Dairy Development Programme, rather than to general DMB operations.

#### *Implications for Different Categories of Producers*

The impact for the large-scale commercial producer has been positive, apart from certain reservations concerning the suitability of direct expansion tanks in areas prone to power failure. The access to such tanks has been carefully programmed (after some early anomalies) by the National Advisory Committee. Some loss of business has been noted in relation to back haul contracts of cans; this was inevitable, but it is unlikely to cause any serious financial stress to producer or independent hauliers. Overall, given the extreme transport constraints in Zimbabwe, the country is better off using the bulk tankers than having producers each using their own transport to move milk and cans on a daily basis.

The small-scale dairy sector will, if it intends to prosper, have to form associations of one form or another to market their produce. This joint marketing approach can only be supported by the use of bulk collection methods. Having the technology already well-entrenched in Zimbabwe can only be of benefit to small, co-operative producers. Tanks to suit this purpose have already been placed in two smallholder schemes in Marirangwe Small Scale Farming Area and Chikwaka Communal Land. The proposed acquisition of small ice bank tanks from Northern Ireland should meet the recently generated demand for tanks by smallholder organizations in other areas.

#### *Sustainability of the Tank Maintenance Programme*

The programme for the maintenance of the milk tanks is appropriate to the needs of the industry and the low annual costs of maintenance and repair of farm tanks indicate a substantial level of reliability. However the overall sustainability of the programme relies to a large extent on the importation of spares and as such is vulnerable, as are most other industrial sectors, to the shortage of foreign currency. Ultimately foreign exchange will also be needed for replacement. While this is a long-term issue for the tanks, of immediate and urgent concern is the state of the road tanker fleet and the impasse with the donor who had been expected to supply new vehicles. There have already been cases of farmers having to dump milk due to the tankers failing to arrive to collect it; if the tanker problem



TABLE 4.2: FINANCIAL AND OPERATING STATISTICS 1987/88<sup>†</sup>

	HARARE	BULAWAYO	GWERU	KADOMA	MUTARE	CHIPINGE	NATIONAL
<i>Road tankers and trailers</i>							
Cost per litre (cents)	2.4	2.3	1.24	1.37	2.4	1.4	2.2
Cost per km (\$)	2.34	2.24	1.70	1.71	1.63	1.71	2.13
Litres per km (August '88)	96	99	138.5	107	114	198.9	108.8
Farm tanks per road tanker	11.2	11.0	11.7	12	5.7	11.5	10.9
Average annual distance per	50 291	36 494	71 767	52 056	40 365	46 307	51 052
Volume per tanker	4 821 802	3 478 868	5 941 373	4 156 380	2 790 425	5 630 037	4 642 036
<i>Farm milk tanks</i>							
Average annual repair and maintenance cost per litre (cents)	0.07	0.03	0.06	0.07	0.07	0.08	0.06
Average annual repairs and maintenance cost per tank (\$)	298.87	103.48	163.02	217.29	333.50	383.09	254.63

<sup>†</sup> Consultancy Study on Management and Maintenance of Bulk Milk Collection Scheme in Zimbabwe September 1988.

#### 4.6 CONCLUSIONS

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is not solved rapidly, the whole bulk tank scheme, and hence effectively the whole industry, will come under threat.

In view of the importance of the commercial sector in giving a "breathing space" for the development of the small-scale producers, and of the need for both sectors to meet the enormous demand projections discussed in Chapter 2, there is a case to be made for Norwegian support to continue to be linked to both sectors. The evaluation team suggested that the commercial dairy sector be given access to foreign exchange through tying the foreign exchange component of the support to the dairy development programme to the import needs of the established dairy industry, thereby ensuring its sustainability. This suggestion, although rejected by both the Norwegian and Zimbabwe governments provoked a useful discussion on the dual (foreign-local currency) aspect of all aid flows and of the inter-dependence of the two dairy subsectors in Zimbabwe. If the proposed formal tying is not to take place, it is essential that the Zimbabwe authorities ensure that adequate provision is made for the import needs of the dairy industry through the general foreign exchange allocation process.



is not solved rapidly, the whole fish tank scheme, and hence effectively the whole industry, will come under threat.

In view of the importance of the environmental sector in giving a "breakthrough" for the development of the small-scale producer, and in the need for both sectors to "lead" the economic development programme discussed in Chapter 2, there is a case to be made for Norwegian support to continue to be linked to both sectors. The restriction to the suggested that the manner in which a sector be given access to foreign exchange through the fish export licence system in the support of the dairy development programme in the import needs of the established dairy industry, thereby ensuring the sustainability. This suggestion, although rejected by both the Norwegian and Swedish governments, provoked a useful discussion on the dual (foreign-local) currency aspect of trade flows and of the inter-dependence of the two dairy sides. It is proposed to trial this aspect in the next phase of the study. It is suggested that the support to the dairy industry through the generation of exchangeable fish export licences.



**PART III**  
**FIELDWORK REPORT**



## CHAPTER 5: FIELDWORK INTRODUCTION

### 5.1 QUESTIONS BEING ADDRESSED

To introduce this section, let us spell out the main questions that are of interest with regard to dairy development in Zimbabwe, and also indicate the extent to which this field report can contribute to the slow piecing together of answers. Inevitably, as a field report, our answers are geared more to the later and more specific questions than to the earlier more general ones.

- (1) Within Zimbabwe, what is the relationship between the various levels at which dairying is undertaken, viz. large scale commercial, small scale commercial and peasant production? In what ways are these three levels different from each other, but also in what ways do they interact? Clearly, a field report cannot directly deal with policy issues relating to the three sectors. Further, as our fieldwork did not cover any large scale commercial dairy farms, the report will focus on small scale commercial and communal situations. Yet the sphere of influence of large scale commercial dairying is such that it makes its presence felt in the other two sectors, and thus also in this report, if at a distance.
- (2) The various small scale commercial areas and communal areas within the country differ from each other in ecological setting and techno-economic potential, as well as in social and cultural organization. What are the implications of these differences for dairy development? Our fieldwork covered only one small scale commercial farming area, viz. Marirangwe, so we are not in a position to draw comparisons with others. However, we were able to visit two communal areas, in Chikwaka and the Honde Valley, and shall compare them. There were some sharp differences in agricultural ecology between the two, but as both were Shona sub-cultures, the socio-cultural comparisons may not be as interesting as when juxtaposing a Shona with a Ndebele setting. Even with regard to agro-climate, the three study areas are all located within Natural Regions I and II, and thus not widely representative.
- (3) Dairying should be viewed within the context of other productive activities, and in the case of peasant dairying with special reference to the agricultural base. How are various production systems interrelated within each area, and across various kinds of households in an area? How are crop production and animal husbandry related? Within the latter, what is the relationship between the production of milk and other animal products and services, e.g. draught power, manure, meat? How are cattle combined with smaller stock, pigs, goats and poultry? Further, what are the wider productive activities in which rural households are engaged, such as off-farm employment or household processing of agricultural produce, and in what way is dairying complementary or competitive with these? Although we cannot fully answer these questions, we were careful to collect information about dairying with reference to other productive activities within households.
- (4) Thus far our questions have focused on situational differences between areas and households within an area. Now we must consider the variations in the developmental strategy brought to bear on these areas by the DDP. There were clear differences, many of them intentional, between the DDP's approach in Marirangwe and the communal areas studied, and also between the two communal areas studied. Of further interest is the fact that of the communal areas, Chikwaka was the earlier and more intensive project (the DDP's "first child") and Honde Valley the later one. How were these different approaches formulated? To what extent are they justified? What have been their consequences? We will endeavour to provide brief answers to these questions.
- (5) The DDP appears to derive its strategies from a community development approach, stressing community-oriented research, participation and decision making. However, a community is not a harmonious entity with homogeneous interests (although it may sometimes appear thus from outside and above) but is characterized by the more or less uneven distribution of assets, resources, power and influence between individuals,



households and areas, as a result of which some interests will conflict rather than coincide. A developmental programme cannot therefore assume that the introduction of innovations will be universally beneficial within a community, but has to take into account degrees of benefit and usually of non-benefit as well. What then have been the consequences for various sub-categories within the "community" of activities and innovations introduced under DDP projects? What lessons can be learnt from the DDP experience so far? Again, we shall attempt some tentative answers to these questions.

- (6) Further, it may be hard to marry the idea of development through community action, as propagated by the DDP, with the kind of external intervention that the DDP itself represents. How effective can an interventionist strategy be if it attempts to intervene only indirectly? If a development programme seeks to work through the structure and processes of the community, will it not become too deeply entwined in the status quo to allow any major restructuring of relationships and opportunities? Again, if it is offering facilities and inputs that are not otherwise available to members of the community, how is the community to have access to these once the programme withdraws, and will members come to treat the programme as a crutch without which they cannot manage? In the case of the DDP, which sees itself as playing only a catalytic role and aims to hand over its projects to the wider network of state agencies, additional questions arise, such as whether these agencies agree with the developmental premises and procedures of the DDP, and whether they have been suitably integrated into the present activity of the DDP as successor agencies. We shall try to answer some of these questions.
- (7) With its explicit orientation to "developing people, not cows", the DDP sets out to be both a dairy development programme and more than a dairy development programme. Is it possible to be both? If the focus is on human development in general, why tie the programme to milk instead of moving freely from one commodity to another depending on local needs? The situation is further complicated by the nature of cows (representing a capital investment that many cannot afford) and the nature of milk (as a commodity that is easily perishable and expensive to handle). Indeed, it can be questioned whether the most basic development which is concerned with fundamental needs and deprivations can be bound up with the costly business of acquiring cows and the delicate business of handling milk. On the other hand, the crucial role played by cattle in peasant production and the value of milk as a relatively cheap form of animal protein suggest fairly basic contributions that dairy development can make, by developing people through developing cows. How has the DDP been able to combine its dairy-specific role with the more diffuse developmental task that it has taken upon itself? Again, this report can contribute to answering these questions.

## 5.2 METHODOLOGY

Outlining our methodology will indicate the manner in which we set about trying to find answers to the questions set out above. It should also suggest why our answers are so tentative by underlining the limitations of our study, necessitated by time restrictions.

### *Choice of Areas*

We had first to make a selection from the seven or so areas of Zimbabwe where the DDP has established its projects (see Map 9.1). For purposes of comparison we decided on a minimum of three study areas, one that represented small scale commercial farming and two communal areas. This allowed us to compare the small scale situation with the communal, and also to make comparisons between communal areas, and was perhaps the minimal area sample structure that would allow comparative insights. As already mentioned, the small scale commercial farming area chosen was Marirangwe, and the two communal areas were Chikwaka and Honde Valley. These are the areas where the DDP has its longest established and more advanced pilot projects, and as such were the



most ripe for study. However, as noted earlier, two of the areas are in Natural Region II while one is in Natural Region I, and two are in Mashonaland and one in Manicaland, so that the basis for comparison is agro-ecologically and socio-culturally rather limited.

### *Unit of Analysis*

We had then to make a decision about our unit of focus within the areas studied. One alternative was to focus directly on the programme itself, its activities and achievements. We however opted to study the programme more obliquely, by choosing participating households as our unit of study and trying to construct how the programme appeared from the point of view of these households, not as a single category but differentiated according to their socio-economic position. To complement this perspective, we visited the local office of the programme and held discussions with the staff there. However, our approach was quite definitely to view the programme from the standpoint of the households rather than to consider the households from the perspective of the programme.

We describe below how households were selected for study in each of the three areas. Our interaction with each household took the form of a long focused interview. The content of the interview varied between study areas in accordance with the approach adopted locally by the DDP. In Marirangwe, where the DDP has focused very specifically on dairying, our questions pertained essentially to milk production and marketing. In Chikwaka, where the DDP has tried out its diffuse basic needs approach, we added questions on sanitation, water, domestic fuel, household nutrition and women's time to those asked in Marirangwe. At Honde Valley, since the DDP has centred its activity there around fodder development, we asked a series of related questions in addition to all those asked in Chikwaka. The duration of interviews thus varied from about an hour in Marirangwe, to an hour and a half in Chikwaka, to two hours in Honde Valley. The number of interviews held in a day also correspondingly declined as we moved on from Marirangwe!

### *Incorporating Gender Variables*

This study attempts to cover a wide range of questions about dairy development, planning and technology, stretching over three different agro-ecologies of Zimbabwe. Gender, as one of the important variables noted in the terms of reference, received particular attention, but was always placed within the broader development context.

To do this, our sample was structured to ensure representation of female participants and their concerns. As will become clear later, of the 56 persons (and their families) with whom we held long focused interviews, 27 were women who represented the acting or actual heads of households, ie, close to half the total number. The samples in the different areas studied contained some interesting variations. In Chikwaka the female headed households studied numbered 16, more than half the total there of 29, while the proportion rose to more than two-thirds in the Honde Valley with 8 such households out of the total of 11. On the other hand, in Marirangwe, these households dropped to 3 out of 16, given the smaller number of female headed households.

The actual female coverage is even higher than that represented by these figures. For example, we were interested in the position and views of women who were not heads of households and whose husbands were present in the home. We made a special effort to interview both husband and wife in such situations, although not always successfully. We pursued this approach in Marirangwe particularly, given the tiny proportion of female membership there, and the role of women in the informal sale of milk. In two cases in Chikwaka, we approached the wives of men who were resident and members of the milk centre, to obtain their perspective on a project in which they were not directly members. In Chikwaka again, we found a household where both man and wife considered themselves members of the dairy project.

As a result, we are fairly confident that the account of dairy development in three areas of Zimbabwe which follows in the next two chapters, incorporates the perspectives of both genders. In most of the



account, gender variables are implicit, except when the analysis needs to focus upon them, notably in 7.7, but also in 6.2–6.4, 7.2, 7.4–7.5, the figures and Table 7.1. However, the insights of this broad-based assessment of dairy development — where gender is only one of several variables — cannot substitute for a study which focuses mainly on gender and dairy development in Zimbabwe. A gender-focused study is one of the suggestions made in Section 5.4 below.

In the next section we provide a little background information on each of the study areas as well as a description of how households were selected for study there.

### 5.3 STUDY AREAS

#### Marirangwe

Marirangwe is a small scale commercial farming area in Mashonaland West, some 40 kilometres to the southwest of Harare. The area is part of Natural Region IIb, where the major crops are maize, groundnuts and sunflower. The DDP programme was set up in the area after some 30 farmers in the area made a request for involvement in a dairy marketing programme. As their scale of operations was too small to allow them to supply the Dairy Marketing Board (DMB) directly, they formed a dairy association which constituted a single supplier to the DMB. An existing building in the business centre was converted into a milk centre whose fittings included a bulk tank. Collection began in February 1985 with 5 members delivering milk. The overall progress has been quite impressive, as the table below indicates.

TABLE 5.1: MILK COLLECTION AT MARIRANGWE, 1985–87

<i>Year</i>	<i>No. of suppliers</i>	<i>Total milk delivered (litres)</i>	<i>Gross cash income (dollars)</i>
1985	11	63 172 17	24 132 59
1986	14	145 774 02	59 085 91
1987	17	291 996 72	97 886 67

*Source: Matinhira (1988)*

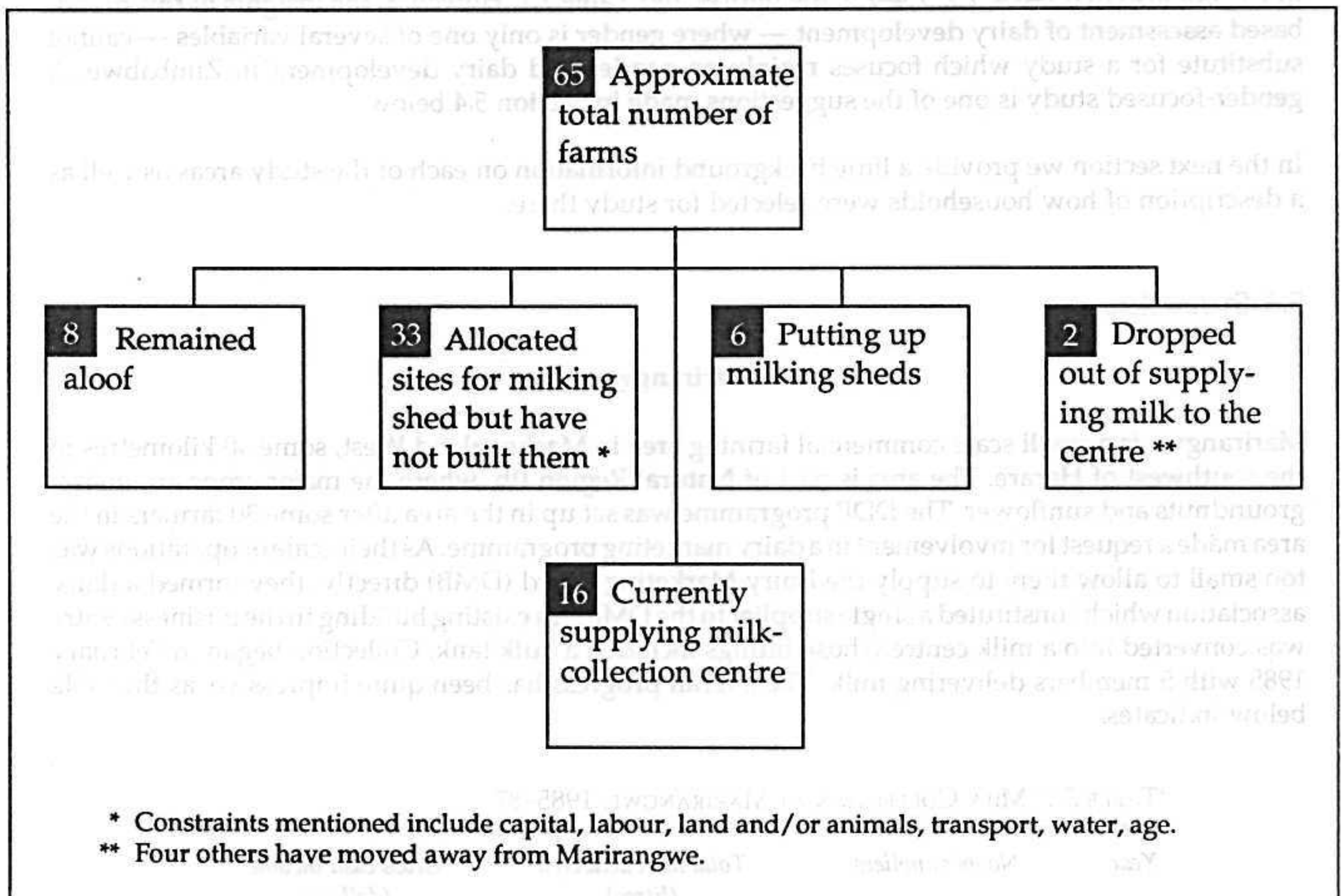
Our period of fieldwork in Marirangwe covered 3 days and consisted of interviews in 16 households. To locate these households in the wider context, we pieced together from DDP documents the picture that is depicted in Figure 5.1, of some 65 farmers divided between those who had remained aloof from the project, those who had committed themselves to the extent of having sites for milk sheds located on their farms, those who were in the process of constructing milk sheds, those who were actually supplying milk to the centre and those who had begun supplying but had then discontinued for various reasons.

For the actual selection of households, however, we used as our starting point a survey undertaken by the DDP in 1983/84 of 21 local farmers interested in a dairy marketing project. Among these, 8 had gone on to become regular suppliers of the milk centre, 3 had begun supplying but then stopped, and 10 had never supplied at all. Of the 16 farmers supplying the centre at the time of fieldwork, 8 had not been included in the original survey and presumably had not been among those showing the most interest in sale to the DMB. (In addition, some 3 farmers who had not been covered by the survey had supplied milk but then discontinued.) Figure 5.2 depicts this breakdown.

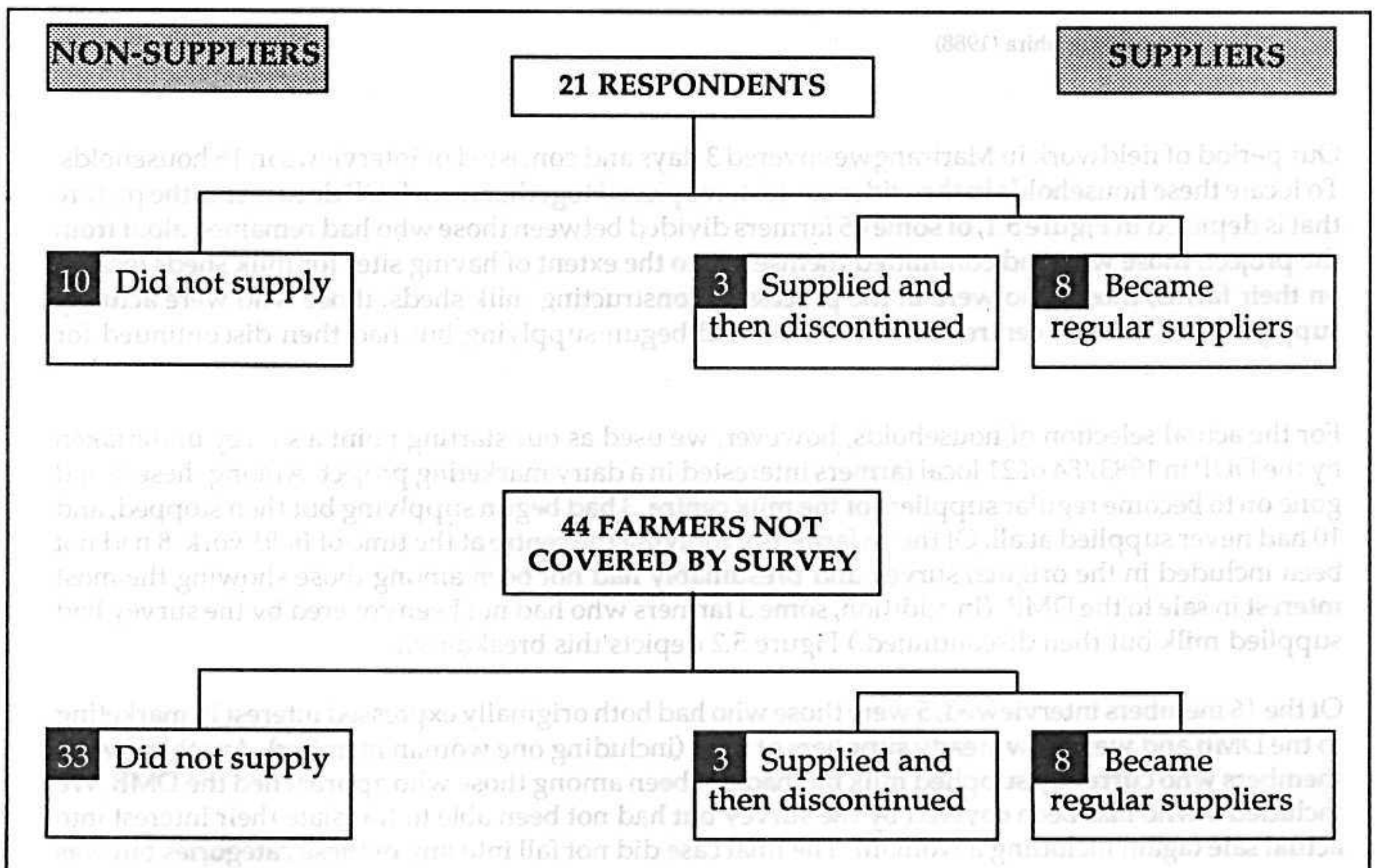
Of the 16 members interviewed, 5 were those who had both originally expressed interest in marketing to the DMB and were now steady suppliers of milk (including one woman member). Another 6 were members who currently supplied milk but had not been among those who approached the DMB. We included 4 who had been covered by the survey but had not been able to translate their interest into actual sale (again including a woman). The final case did not fall into any of these categories but was



**FIGURE 5.1: DAIRY DEVELOPMENT PROGRAMME — MARIRANGWE FARMERS**



**FIGURE 5.2: PRESENT STATUS OF RESPONDENTS TO THE DDP 1983 SURVEY IN MARIRANGWE**





chosen because she represented the less well off in the area, as a widow without cattle who made a living by selling vegetables. In all, therefore, we had 3 women respondents out of our total sample of 16.

When choosing the 16 households, we were also influenced by the grouping used by Matinhira in his (1988) study of milk suppliers at Marirangwe. He divided the suppliers into those who used large herds of 12 to 39 units composed mainly of dairy cows, those who had smaller herds of 2 to 7 units with both dairy and beef cows, and those who used beef cows for milk (the one female member fell into the second category). He suggested that the first category was rather close to large scale commercial dairy farming and the third category more similar to farmers in communal areas. We took care to include those in all 3 categories in our sample, so that of the 11 suppliers we interviewed, 4 were from the 6 that Matinhira had put in his first category, another 4 were from the 7 placed in his second category, and the remaining 3 were those put in his third category.

### Chikwaka

The Chikwaka communal lands lie some 50 kilometres north-east of Harare, in Mashonaland East. Situated in natural region IIa, the main crops are maize, groundnuts and vegetables. The DDP project in Chikwaka results from circumstances quite unlike Marirangwe's request to supply the DMB. Chikwaka was selected as a study area when the DMB decided to test the ground for a peasant sector dairy development programme with some preliminary research on communal areas. The research report was completed by May 1983. Having established a base in the area during its research (which was explicitly oriented towards community participation), the DDP stayed on to set up a pilot project there, building a milk centre and beginning collection in December 1987.

The long interval between the pre-project research and the first procurement of milk is justified by the DDP in terms of a broad-based development plan which gives attention to such community problems as fuel wood, sanitation and water, human and animal health, and consolidation of fodder base rather than milk production and collection alone. Thus 3 grazing schemes are in operation and others being set up, a cattle dip was located where need for one was expressed, some 57 wells were dug, and 42 or so latrines constructed in collaboration with the Ministry of Health. (All these activities involved a community contribution in terms of labour and local materials.) More specific to dairying, some 11 members have put up milking sheds and the sheds of 5 others are nearing completion. Five group milk sheds have been finished, 3 more are being built, and preparations are being made for another 9. (There is no DDP contribution to individual sheds and only the first 6 group sheds have received aid in the form of cement and roofing.)

A week was spent in fieldwork at Chikwaka, of which 6 days were used for 29 household interviews and the remaining day taken by discussions with project staff. The selection of households for study was clearly a more complex business at Chikwaka than at Marirangwe. The baseline data from the 1983 survey could not be availed of because the 310 questionnaires filled in during the Chikwaka survey (covering an area of approximately 90 square kilometres and the resident population of some 1270) were less amenable to quick retabulation than the 21 questionnaires from the Marirangwe survey. A random sample of questionnaires could not be selected since all the households studied had not joined the project.

Instead, we decided to select a sample from the current membership of the project. Some 200 farmers are said to be involved, of which about 161 have paid their dues for the current year. Among these, 16 are new and unfamiliar to the extension and liaison workers. We asked the project staff to give us some basic information on the remaining 145 with whom they were better acquainted. Of the 145, 64 or so are women. About 55 members do not own cattle, with 31 or so women in this category. Some 90 members are said to own cattle (33 of whom are women), of which 45 had animals in milk (including 16 women). Of these 45, 11 sell milk, 8 of whom supply the collection centre. (Four women sell milk, 3 supplying the centre and the other an ex-supplier who now sells privately.)

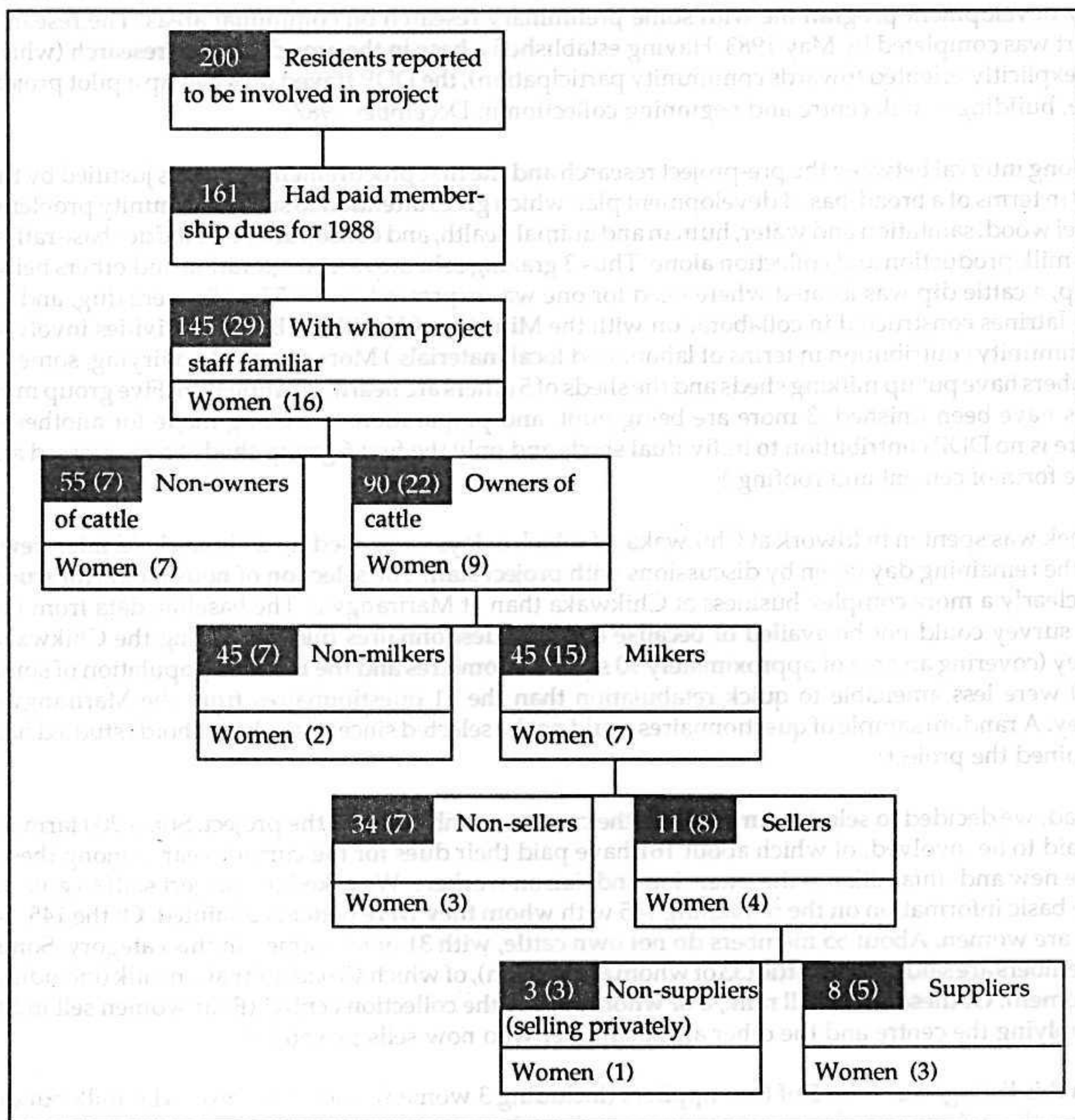
From this listing, we chose 5 of the suppliers (including 3 women), and 10 of those who milk but do not supply and among whom are some ex-suppliers. Ex-suppliers can be further divided into those



who have stopped supplying because their cows have ended lactation and who will resume supply with the next cycle, and those who have discontinued for such other reasons as transport problems and the death of calves. We included both types of ex-supplier in our sample. The 10 who milk but do not supply the centre included some who sell privately. (Four of the 10 are women.) We also selected 7 members who had cattle but did not milk them for various reasons (among whom were 2 women), and another 7 without cattle (all women).

Figure 5.3 presents the distribution of members across categories and shows the sample selected. In Marirangwe, given the small number of participants, it had proved possible to include some non-participants, but this category could not be investigated at all in Chikwaka. This unfortunately leaves an area of almost complete ignorance, about those who have chosen not to take part in the project. It can be said that we have not fully understood the project until we know a little more about who these people are and what are the various reasons for their lack of involvement. What makes the problem more interesting is that there appear to be not just two sharp categories of "participants" and "non-participants", but also intermediate categories of those who are in varying degrees interested in and associated with the project.

FIGURE 5.3: SAMPLE SELECTED IN CHIKWAKA FROM MAJOR CATEGORIES  
(Sample Number in Brackets)





## Honde Valley

The Honde Valley is in Manicaland and close to the Mozambique border. The areas here chosen for DDP activity are Hauna and Gatsi, some 60 kilometres north-east of Mutare. Within the category of Natural Region I, the major crops are maize, vegetables and fruit, and some cotton and coffee. The reasons for the DDP presence here are again different from both Marirangwe and Chikwaka, and relate to the location in Natural Region I with its agricultural potential, the DMB's difficulty in maintaining its rural milk deliveries to this more remote area, as well as a suggestion from the Secretary of Agriculture that conservation be encouraged in the area through pasture development.

The DDP's preliminary research in the area was completed by May 1985, and covered some 274 households (out of 901), again too many to retabulate in the short time available for this study. Since 1986, the DDP has attempted to introduce zero grazing in the area, given both the demographic density and the fertility of the soil. Earlier this year, some 105 members of the Honde Valley Dairy Association who had shown diligence in cultivating fodder grasses were supplied with materials through EEC aid for fencing their pasture plots. The fodder species propagated include grasses like guatemala, napier and stargrass as well as legumes. The DDP, which works closely with Agritex in the area, has 2 demonstration plots and a model dairy unit with 2 crossbred cows, but as yet no building of its own as in Marirangwe and Chikwaka. Lessons on pasture development are given to participants on the local weekly holiday, with impressive attendance. A number of group milking sheds have been sited, and one or two individual sheds built. DDP documents suggest that milk collection may begin in April 1989, though local cattle have been depleted in number and degraded in quality by the exposure of the area to past and present events along the north-eastern border of Zimbabwe.

During fieldwork, three and a half days were spent on 11 interviews with members of the DDP's project in Hauna and Gatsi. The selection of households for study proceeded in terms of a sub-categorization of members that was based on information from the liaison workers in the project. (We later found that this information was not always accurate, possibly because some of the project staff were recent recruits and insufficiently knowledgeable about member households.) Of the 147 members listed, 87 were from Hauna and 60 from Gatsi. Some 39 members at the former location were female, as were 25 at the latter). At Hauna, 11 members were without cattle, of whom 7 were women, and of the remaining 76, 32 were female. Some 53 members had cattle in milk, and 24 of these were women members. In Gatsi, 40 members did not own cattle (including 19 women). Of the 20 with cattle (of whom 6 were women), 12 had animals in milk among whom were 3 women. From our later investigations we consider that these estimates err towards optimism with regard to cattle in milk and towards pessimism in the matter of cattle ownership, since some of the households which we were told were milking turned out not to do so and some of those said to be without cattle appeared to own at least one bovine. We were also told that some members were selling milk from their homes. However, we came across no such cases, and indeed only heard the complaint that it was hard to buy fresh milk because it was too scarce a commodity to be sold.

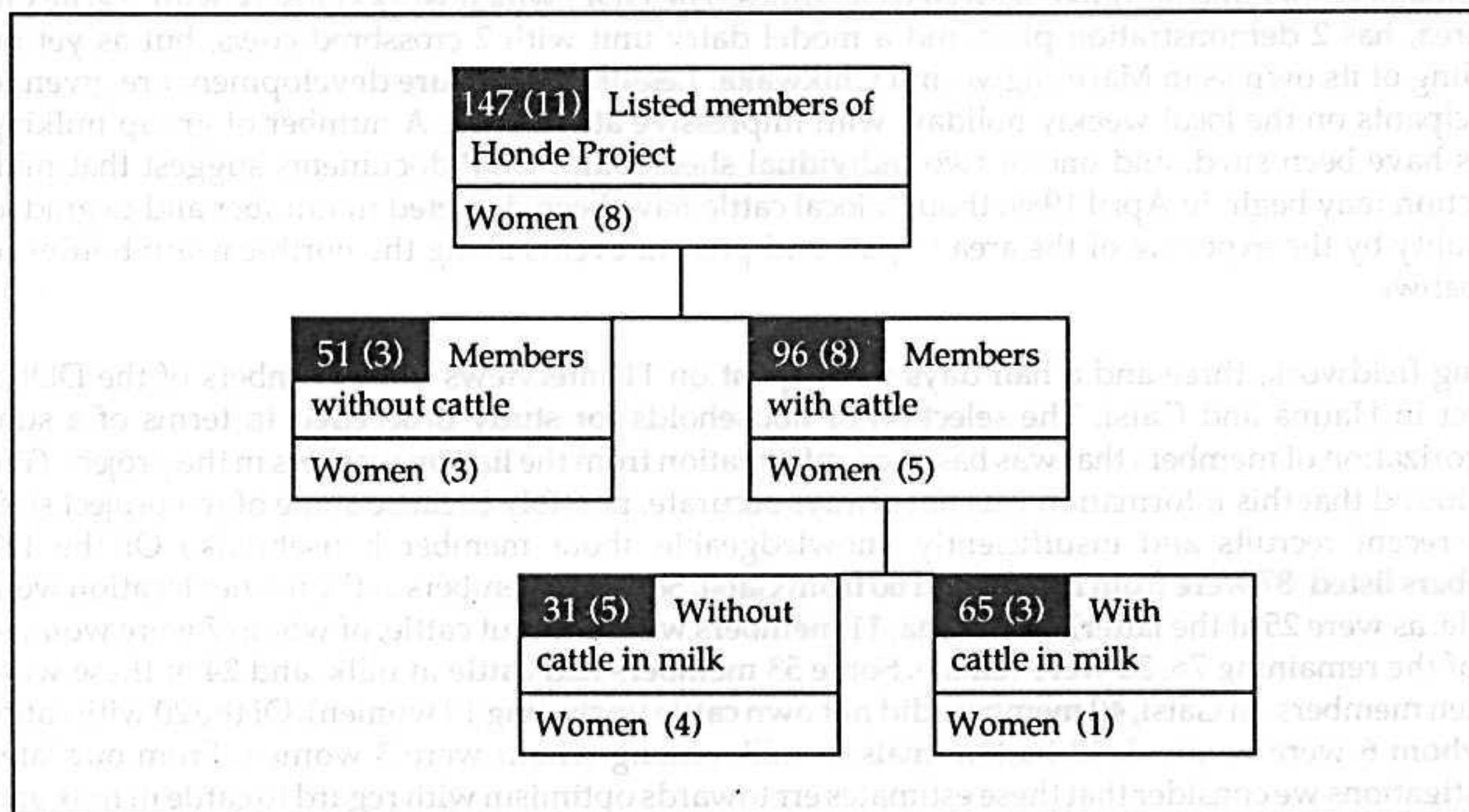
Of our sample of 11, 3 were without cattle (1 from Hauna and 2 from Gatsi), 5 had cattle but did not get any milk (3 from Hauna and 2 from Gatsi), and 3 milked their cattle but did not sell milk (all from Hauna). We thus had 7 households from Hauna and 4 from Gatsi, and in addition we attempted to cover at least one household from each of the 8 villages under the project, namely Bobve, Muwenge, Nyamahwani, Kubadakwezura and Mutorahuku in Hauna, and Chiumbe, Zvitsa and Tsaitsai in Gatsi. The only village we failed to reach was Muwenge because of its extremely remote location. This lacuna is unfortunate, because it is in Muwenge that we would have found the 7 or so members of the project who are hoping to combine dairying with coffee cultivation. However, we were lucky enough to find a household in Mutorahuku which attempts the same combination.

Among the 11 persons we interviewed, 8 were women including all 3 in the sample without cattle, 4 of those with cattle but without milk, and 1 who did get milk from her cattle. Of the 3 men interviewed, 1 owned cattle but did not milk, and the other 2 were milkers. All 3 men were from Hauna, so that of the 8 women, 4 were from Hauna and 4 from Gatsi.



Figure 5.4 depicts the distribution of members within the various categories as well as the sample selected. Again, as in Chikwaka, we regret that we were unable to interview households not participating in the project, and note that without such households the assessment we make of the project is an incomplete one. More widely, we must confess to a feeling of dissatisfaction with the representativeness of our sample in the Honde Valley that we did not feel in Marirangwe or Chikwaka. There are a number of reasons for this dissatisfaction. We were able to hold fewer interviews in Honde Valley than elsewhere, given the inaccessibility of many of the households selected and the time we spent getting to them. The division into villages which we followed when selecting households seemed new and not especially useful since the households themselves seemed unsure which village they belonged to. Further, two out of four project staff at Honde Valley were new and unable to provide us with all the information about households that we required in order to make our choice.

**FIGURE 5.4: SAMPLE SELECTED IN HONDE VALLEY FROM MAJOR CATEGORIES**  
(Sample Number in Brackets)



#### 5.4 FURTHER STUDIES

The present exercise, given its time constraints, could cover only a limited number of issues. Fortunately, NORAD and ARDA have agreed to consider sponsoring two supplementary field studies to fill some major gaps in the present one:

- (1) Time permitted this study to cover only one small-scale commercial farming area where the DDP is active, viz, Marirangwe. We feared that the findings there might not be generalisable to other small-scale commercial farming areas and have therefore suggested a supplementary study of Tsonzo, another such area in Manicaland. Tsonzo is one of the more advanced project areas of the DDP, after the three covered in the present report, and thus is logically the next for study. The findings from Tsonzo can be compared with those from Marirangwe in order to extend our understanding of dairy development in small-scale commercial farming. Further, Tsonzo and the Honde Valley can be usefully compared, located as both are in Manicaland. Thus, a study of Tsonzo will considerably widen the comparative potential of the present study.
- (2) In Chikwaka, which can be described as the DDP's most intensive developmental effort, the present study faced some important limitations. First, as noted in 5.3, it could



not extend to those who are not paid up members of the milk centre. Secondly, it did not focus on the constituent villages of Chikwaka, thus missing an important perspective since the village is a significant arena of interaction for such dairy development programmes as grazing schemes, group milking sheds and women's groups. A study of participants and non-participants in one village of the Chikwaka area was therefore suggested to supplement the present study. This suggestion was taken up by NORAD and ARDA, and the study was carried out in April 1989. The village chosen was Majuru, where there currently seems to be something of a crisis of participation in DDP projects. The study report is to be submitted in June 1989.

In addition to the above, in view of Norway's special concern with gender issues, it is suggested that a study which focuses specifically on gender issues be considered. Such a study might, for example, cover only the 64 female members of the Chikwaka milk centre identified in 5.3 above, whereas for our more general research we surveyed 56 households headed by either gender in three areas. A study which concentrated on the female membership of the project could provide the statistical profile that the present research, oriented in its terms of reference towards qualitative insights, has not. Another more gender-specific study might retabulate some of the data collected on female headed households in the Chikwaka survey of 1983 and then return to those households for a resurvey. The present study is intended as a preliminary assessment, on which other field investigations can build.



## CHAPTER 6: OVERVIEW OF FINDINGS BY AREA

### 6.1 INTRODUCTION

In this chapter we will briefly summarize our main impressions about dairy development in the three areas chosen for study. Once this is done, we can move in Chapter 7 across the three areas while discussing various aspects of the production and marketing of milk. Here we shall try to provide the overall dairy development picture from each area, as a framework within which the details given in the next section can be fitted. We shall plunge immediately into these issues when discussing each area, since in the last section a preliminary description has already been provided of each study area and the DDP activity there.

As our present focus is on major developmental issues, we shall begin our discussion with the case of Chikwaka, move on to Honde Valley, and then to Marirangwe, unlike in Chapter 5 where we followed the route of our fieldwork when describing the study areas. The re-ordering is because the DDP's main developmental thrust has been in Chikwaka and it thus seems logical to use it as the starting point of our analysis. The reason for relegating Marirangwe to the end is that, after visiting the two communal areas, the problems of Marirangwe seemed not to merit first priority.

Although we have attempted to summarize our main findings according to area, under separate headings, comparative discussion necessitated a certain amount of cross-reference, so that some additional details about one area may be given in the discussion of another. This is especially so with regard to Chikwaka, which we often used as a base for discussion.

### 6.2 CHIKWAKA

As described in 5.3, our fieldwork in Chikwaka was concerned with studying certain sub-groups among the members, namely (a) current suppliers of milk to the centre, (b) former suppliers, (c) those who milked their cattle but did not sell milk, (d) those with cattle who did not or could not get milk from them, and (e) members without cattle.

What was striking was that as we moved through these categories, we encountered differences between them which did not relate only to the narrow business of producing and selling milk but ranged across their entire way of life. Of course, the number of cases that we studied in each category was limited, and there were exceptions in each case, but the overall patterns were clear, if sharper at the extremes than in the middle ranges. Rather than place each category in a separate compartment, however, we would like to stress that the 29 households studied could be ranged on a continuum stretching from comparative affluence to relative poverty.

Thus suppliers were likely to employ permanent labourers, to hire out their oxen during the ploughing season for an income which ranged between \$100 and \$200, to sell their grain to the Grain Marketing Board (GMB), to use chemical fertilizer for their agriculture, and to eat meat at least twice a week if not every day.

Ex-suppliers were less likely to employ permanent labour, or to hire out oxen or to consume meat several times a week. They tended to use casual labour, and fuelwood supply was more likely to be mentioned as a problem than among suppliers.

Households which milked but did not sell tended to depend on family labour in agriculture and not to own any mode of transport.

Those who owned cattle but did not or could not milk them were less likely to sell their few bags of surplus grain to the GMB and more likely to patronize local registered buyers. They often hired in draught power during the agricultural season for want of their own oxen and sometimes were not able to cultivate all their land because of insufficient inputs. Meat consumption in these households dropped to once a week or less.



Those without cattle were unlikely to have surplus grain to sell to anyone. They too hired in oxen for ploughing, and often had neither organic manure nor chemical fertilizer to apply to their land.

What is interesting is that there are no stark differences in access to land distinguishing one category from another, for the number of acres held was 4 to 12 among suppliers, 6 to 12 among ex-suppliers, 3 to 12 among those who milked but did not supply, 5 to 10 among the households which had cattle but no milk, and 1.5 to 10 among those without cattle. The distinction seems to operate in terms of ability to use landholding effectively, and one of the many factors affecting this ability is cattle holding with its symbiotic relationship to agriculture. The variation in herd size thus becomes significant. Herd size among suppliers ranged from 21 to 47 units, among ex-suppliers between 7 to 32 units, among those who milked but did not supply from 3 to 17 units (although one household in this category had 32 cattle), and among households with cattle but not milk from 2 to 13 units, dropping of course to 0 for the bottommost category. Although we have emphasized herd numbers here, the importance of herd composition should not be forgotten, for smaller herds were often inadequate or incomplete.

The explanation for these differences in production and consumption status is clearly *not* that selling milk enabled suppliers to reach the upper end of the continuum, but that their already superior asset position allowed them to participate in one more productive activity, namely the sale of milk. Indeed, we can reveal the inner structure of differentiation between the categories by considering the range of benefits that households in each category received from cattle holding, a range that becomes narrower as we move down the categories and vanishes entirely when we reach those without cattle. (To do so adequately, however, we shall have to subdivide our categories further.)

Thus the range of benefits derived by suppliers from their cattle cover: holding those cattle as an asset in themselves; oxen power for use in traction and transport; income from hiring out oxen; manure for agriculture; milk for consumption; and income from sale of milk.

Those who sold milk locally and not to the collection centre enjoyed somewhat the same spread of benefits, but as we have seen were less likely to hire out oxen, and in the case of income from milk these households regretted that it did not come in a monthly lump sum from a guaranteed outlet as with the income that suppliers derived from the collection centre.

Households which produced milk but did not sell it seemed to benefit less broadly from their cattle, holding the animals as an asset, and their products of draught power, manure and milk for home use if not as a source of income.

The next category was somewhat similar, since it is composed of those whose cattle produced milk sometimes if not continuously, because this category had the security of cattle as an asset in addition to their own source of draught power and manure, and occasionally of milk, if not income from any of these products.

Those whose cattle never produced milk, as in households where only oxen were owned or female stock were immature, derived only three benefits, namely cattle as an asset, manure and draught power, and in some cases might forfeit the latter if their male stock too were immature.

Households without cattle, needless to say, enjoyed no benefits at all. Among the lower categories in fact we find not only the absence of one or more cattle products but the need to compensate, by hiring oxen or buying milk.

Although we have confined our description narrowly to cattle holdings and products, it is clear that the productivity of the cattle base of a household is closely related to the productivity of its land base, and to the general resource base of the household, contributing to its financial viability at the same time that it derives support from that viability. This explains the different standards of production and consumption that we found between the various categories, and how these differences are related to cattle base.



What is also clear is that with regard to production, the DDP project has benefited participants in proportion to their asset base. This is hardly surprising, since the programme never claimed that it would alter the present asset structure and has tried to work within this structure. But perhaps the DDP itself, and those who have given the DDP its mandate, would like to reconsider means and ends as part of the continuous process of learning and discovery that the DDP approach seems to endorse.

If we view the categories outlined above as poised at different thresholds of dairy development, future concerns become clearer. How can those now selling milk locally be aided to sell to the centre (which they want to do, local sales being a temporary expedient to overcome problems of transport)? How can those at present producing limited amounts of milk be helped to increase their productivity, both for home consumption and for sale (again, a desire that they themselves expressed)? How can those whose herds do not produce milk be assisted to become producers (as they wish to)? And how can those without cattle acquire some (for many, a keen ambition)? In other words, how can we help non-owners to become owners, non-milkers to become milkers, and non-suppliers to become suppliers, in order to spread more evenly the benefits of this dairy development programme?

The answer seems to lie in improved techniques of herd management, but techniques appropriate to the context of Chikwaka. Formal dairy science at present appears to be focused around Euro-American dairy technology, and to operate in terms of pure or crossbred dairy cattle, mill compounded cattle feed, and cultivated green fodder. Emphasis on this technological complex will only further bias the production benefits of DDP activity towards those with a secure asset base, for high yielding stock and concentrate feed require capital investments, and cultivated fodder needs as many inputs as any other crop. Those at the lowest levels of our categorization who cannot afford a local Mashona cow are unlikely to be able to invest in a crossbred, let alone a purebred, dairy cow. Since the agricultural inputs that they were able to muster sufficed only to produce enough grain to see them through to the next harvest, expecting them to grow a fodder crop is unrealistic. Capital intensive milk production technology is inappropriate not only at the extreme bottom but also in the middle ranges of our stratification where cash is extremely limited. Fortunately, the DDP both verbally and in its documents has expressed interest in more appropriate dairy production and marketing technology. Unfortunately though for the DDP, we do not as yet have a dairy science with an orientation that is small scale and labour intensive, which minimizes purchased inputs and risks, and optimizes production at the level of subsistence rather than commercial activities. Thus, there is a serious technological constraint in facilitating the passage of non-owners and non-milkers across thresholds.

In any case, non-owners must be considered separately from non-milkers, since their handicaps and disqualifications are greater in degree and different in kind. They start off further from the winning post of a full range of benefits from cattle, and indeed it is doubtful whether they even qualify for the starting line, given their critical difference from all other categories in their lack of cattle. One of the means proposed whereby non-owners can become owners is a revolving credit fund — possibly set up with the accumulated profits from sale of milk, possibly from some other source. Such a source of credit would undoubtedly be an improvement on the present situation where the main source of official loans is the Agricultural Finance Corporation (AFC) which requires levels of credit-worthiness difficult for many in communal areas to attain. However, even this mechanism may not be sufficient to take care of the poorest, who tend to be credit averse, since they resist taking on commitments of repayment which they may not be able to fulfil and they fear the consequences of default. Indeed, the poorest women whom we interviewed held back even from participation in group activity, as this required such contributions as a bag of maize and these women managed to cultivate barely enough maize to feed their households until the next harvest. Clearly there are no easy answers to their problems. Under our discussion below of dairy product manufacture, we do suggest employment possibilities for women without cattle.

Moving on to non-suppliers, their problems seem to require attention to marketing management. Lack of the milking shed prescribed under the Dairy Act, and absence of transport facilities or free labour to carry milk over what is often a long distance between household and collection centre, are sometimes the major factors inhibiting milkers from becoming suppliers. The concept of the group milk shed is one imaginative answer to the first problem, and where this has led to transport of a group milk can among members by rotation, a partial solution has been found to the second. (Group activity,



though, cannot be designed and controlled like some technological device. See 7.5 for a brief discussion of the varying dynamics within milk groups in Chikwaka.)

However, since milk so delivered to the centre is then taken out again on bicycles for local sale, perhaps a possible alternative is decentralized collection and sale through DDP booths located at strategic places. A number of points could be identified where milk from the vicinity can be delivered and sold, easing problems of transport both for supplier and customer. If the milk is sold fresh and raw, the need for refrigeration and other expensive infrastructure can be eliminated. There is a rather formidable constraint at the moment to any such alternative, namely the Dairy Act. If a decision is taken to amend this Act, the issue of milking sheds could also be re-examined, since the present standards laid down are too difficult and costly for most households in the communal areas to follow. Perhaps an alternative structure using cheaper indigenous materials could be designed, or alternative procedures to ensure the quality of milk sold could be considered. Of interest in this context is the quality control by the community that we were told is exercised at the Chirima group milk shed. There milk is despatched to the centre in a common can, and those milking in the shed are watched vigilantly by other group members to ensure that no careless or unhygienic handling of milk endangers the quality of the milk collected in the can.

Not only will more appropriate marketing technology and infrastructure enable non-suppliers to become suppliers, they should also allow non-consumers to become consumers. We noted above that with regard to production and income the DDP project in Chikwaka has tended to benefit participants in proportion to their asset base. However, there appear to have been significant consumption benefits from the local sales under the project, limited as they are at present, especially for households without milch cattle, cattle in milk or any cattle. Most such households that we interviewed appeared to buy milk quite regularly from the DDP vendors who move around on bicycles, and to give their children money to buy a glass of milk from the DDP milk programme in local schools. The consumer price of DDP milk was 15 cents for 250 millilitres, in contrast to the 25 cents or so that the same quantity cost within household transactions (see 7.5).

Many such consumer households were those where the consumption of meat was infrequent, so that a source of animal protein which was relatively cheaper than meat, more convenient to handle because it could be soured instead of cooked, and easier to divide over a family because of its liquid nature, was appreciated. Indeed one or two women members without cattle, who seemed to have relinquished hope of ever owning a cow and thus benefiting through productive activity from the DDP project, seemed instead to think of the project's future in terms of consumption benefits for themselves, suggesting that various milk products be manufactured and sold. If the DDP programme ever does have a problem of surplus milk, perhaps it can consider the local manufacture of products in a workshop situation that uses female labour rather than complex equipment, where women of the type just described might find employment as well as the milk products they seem to wish for.

Interestingly, despite the lower price of 49 cents per litre paid by the centre, those who sell locally would prefer to supply the centre because it provides a guaranteed market and pays a lump sum monthly (as stated earlier). Another reason why both seller and customer would prefer to deal through the centre rather than directly with each other is the local belief that a cow whose milk is sold can be injured, either inadvertently or deliberately, if the milk is allowed to spill over into the fire (whereupon, through a process of what anthropologists describe as homeopathic magic, the cow's udders will crack). We were explicitly told that if milk from many households were collected and mixed for sale, the possibility of injury to any one household's cattle would be minimized, relieving the seller's anxiety and the buyer's fear of accusation.

So far our discussion has centred on the present and potential effect of the DDP project on different kinds of households. We shall now consider three issues that affect the project at community level, beginning with its success in bringing and retaining under its umbrella both members with and without cattle. When questioned, nearly all members without cattle said that the project staff treated them as they did the cattle-owning members, and that neither did the members discriminate between themselves on those lines. Among the bonding strategies used by the DDP, we can note the presence of non-cattle-owners as well as cattle-owners on committees and sub-committees, and the holding of



the collection centre's profits from sale of milk in the name of all members, whether they have supplied milk or not. It is this accumulated sum that has been proposed as the basis of the revolving credit fund for purchase of cattle mentioned earlier.

Only at one level did we encounter a different perspective, and this was among the most commercially oriented of the present and prospective suppliers. They complained about the fact that many members who chaired or had seats on various committees attached to the project were people without cattle or not supplying milk, and alleged that as a result the affairs of the collection centre were not handled efficiently. "How can those without cattle understand the problems of those who have cows? Why should those who are not supplying the centre take an interest in running it properly?" They requested us to use any influence we or our report would have (!) to ensure a change in the leadership of the dairy association, so that more "progressive" and "effective" members could take over key positions. The frame of reference for these members was the milk collection centre at Marirangwe and indeed they seemed to be more similar in their lifestyle and orientation to the small scale commercial farmers there than to their neighbours in the communal areas. They clearly felt that the commercial approach by the Marirangwe milk centre was a far more sensible way to go about dairy development than their own milk centre's more diffuse focus.

There seems therefore to be some strain at the interface between commerce and development in the DDP's Chikwaka project. (In fact, discussions with the more senior project staff at Chikwaka suggest that the problem is not only limited to the perceptions of large suppliers, but that some loss of efficiency does result in a situation where many office bearers do not have an immediate stake in the efficient functioning of the milk centre.) This gains importance in the context of the suggestion to use profits from sale of milk to set up a revolving credit fund for those without cattle. Would suppliers and especially large suppliers agree to such a use? The case of Marirangwe is instructive, since large suppliers there seem increasingly concerned with the distribution of profits among suppliers rather than any accumulation for general purposes.

The second issue arises out of the DDP emphasis on community and group activity, as a result of which infrastructure set up under the programme belongs to the "community". However, processes of inclusion and exclusion seem inevitably to come into operation, especially since the community is not a single entity but made up of subgroups which have varying abilities to respond to opportunities.

For example, the DDP offered assistance in the form of cement and roofing to the first 6 groups to set up communal milk sheds. The groups then contributed bricks that they had either moulded themselves or purchased, sands and stones that they collected, and their labour to build the sheds. Members who did not participate in the construction of the sheds later asked for access to them. One group, that has completed its shed and is using it to milk in, has taken a decision to allow latecomers access to the shed on payment of a fee. This fee is computed in terms of the original contribution of \$7 made by each member of the group, plus \$1 for every day that the group worked on the shed. (The reasoning behind the latter calculation is that during construction of the shed, a fine of \$1 was charged per day that any member of the group did not participate.) The final figure amounted to \$60, a large sum for most households to muster.

A number of issues need to be worked out here if such strategies are to be used in DDP and other projects. True, those who participated in the construction of sheds made a contribution that others did not. On the other hand, DDP assistance presumably was to the "community", i.e. to potential users in the long as well as the short term, and not to the dozen or so persons who actually built the shed. There does not seem to be any obvious resolution of the issue. Had the group shed not been built, those who could not afford individual sheds would have been excluded from supplying the centre. Had the DDP provided the entire shed, it would certainly have been everyone's property, but at the same time it would have been nobody's property, with no in-built local commitment to maintenance, care and upkeep. At present however it is accessible to some households but not all, with a stiff entrance fee for latecomers.

The group members react emotionally to any suggestion of automatic extension of access to others. "When we built the shed, they were working in their fields and would not participate, while our fields



went untended. In fact, many of them mocked us for wasting our time. Others folded their hands and took a wait-and-see attitude. Why should we just let them in now?" There is undoubtedly some justification for this attitude, but it is hard to believe that all those who did not participate fit the descriptions given. One thinks especially of those for whom a contribution in cash or kind would have been difficult or even impossible to raise, and of women who depend heavily for their living on hawking vegetables and can thus not afford to take several weeks off from this occupation in order to build a shed. Of course, such women are unlikely to be among those at present requesting access to a group shed, since they may not own cattle. But if they were somehow to acquire a cow, they would also have to find \$60 in order to use the shed.

There is also the consideration that such groups are likely to build on pre-existing local social networks and thus that more subtle processes of inclusion and exclusion can operate. However, since time did not permit study of these social networks, we cannot do more here than suggest their importance as underlying structures in group formation.

To return to an earlier and wider point, the DDP's offer to aid the first 6 groups that constructed communal sheds, although possibly intended to stimulate a swift response, also implies a comparative disadvantage to groups that for whatever reason are slower to organize, in that they would then have to bear the heavy costs of cement and roofing. Further, under such circumstances, a group would be likely to be even more possessive about the shed and to levy an even higher entrance fee for latecomers than where the costs of more expensive materials have been met by the DDP. Again, shortages of cement have meant delays in the construction of some sheds, creating further disparity between various groups' ability to function.

These disparities are found not only between groups within an area but between areas within Chikwaka. Thus the Gutu ward, where DDP activity started and where the milk centre is located, seems to be further ahead with regard to dairy development than the Mwanza ward. Among other things, this illustrates the case of latecomers who fall into the category partly because the programme reached out to them later than it did to others — but nonetheless they have to pay the penalty.

Although we have focused on the example of group milk sheds, the same principle applies to some other common property resources created under the programme, such as grazing schemes. We were told of the resentment expressed by those who had contributed labour for the fencing of paddocks when others who had not done so sent their cattle into the paddocks. Indeed, these issues tie up with the general debate on the nature of communal resources. A small plantation, set up in one village with DDP assistance in response to a locally expressed concern over deforestation, appears to be controlled by the village headman who allocates timber from there for building. Quite apart from whether he allots timber impartially is the question whether common property resources which are created under development programmes should further bolster the existing power structure. Moving to a related issue, at least two members of the project have set up private paddocks on communal land. In one case, the local authorities seem to have been induced into turning a blind eye, but in the other a dispute with neighbouring households has ensued. Indeed, the second case was that of a supplier of milk to the centre, whose family told us that a possible use of income from milk would be to invest in fencing material to enlarge the private paddock!

Such issues become more complex because the DDP has chosen to work through the community, and not from above it. Given its choice of a catalytic role, in theory at least the DDP cannot intervene directly in community affairs but must instead try the indirect approach of influencing decision making and opinion.

All these questions increase in significance when we consider the sustainability of the DDP effort in Chikwaka, and the future of the project after the DDP withdraws. There is first of all the matter of the milk centre's financial future, with suggestions that a grinding mill be purchased with the profits from milk sale, so that the income engendered can provide for payment of staff's salaries. (This puts forward a use for the milk centre's profits that may be competitive with the idea mentioned earlier of setting up a revolving credit fund to enable members without cattle to acquire some.) Next there is the issue of the administrative future of the project. Is the community ready to take over administering



the milk centre? That apart, is some form of external supervision required, if only to provide the necessary "institutionalized suspicion"? Further, if the project is to be absorbed by the community, does this mean that it will reflect the present structure of assets and power within the community?

To move from the community to its wider setting, what of the government agencies that are supposed to take over from the DDP? At present, the interlinkage appears to depend more on personalities, that is whether a particular officer from Agritex or the Ministry of Health stationed in Chikwaka is in sympathy with the DDP approach and able to fit into a good working relationship, rather than any integrated inter-institutional network. One reason for the lack of integration is the apparently different development orientation of the DDP compared to these other agencies. (But see 6.3 on Honde Valley for a picture of a rather different relationship between the DDP and Agritex.)

Given these difficult questions and the many uncertainties, it is no wonder that the members of the Chikwaka project seem unprepared for the withdrawal of the DDP.

### 6.3 HONDE VALLEY

Section 5.3, in its description of the three study areas, suggested the focus of our research in Honde Valley by outlining how our sample covered households which both owned and milked cattle, households with cattle but without milk, and those without cattle. There is one striking difference in this regard from the situation in Chikwaka, namely the absence of those who sell milk, exemplifying the far more precarious state of livestock in Honde Valley (whose fortunate location in Natural Region I is eroded by its position near a border which both before and after independence has been problematic). In later paragraphs we shall discuss this in a little more detail.

In 5.3, too, we expressed some feeling of dissatisfaction with the representativeness of our sample, giving various reasons. We refer to this here in order to explain that a more adequate fieldwork exercise might have uncovered further and perhaps more important issues to be presented in this overview of findings. More narrowly, we wish to draw attention to the fact that only three of the households we interviewed were without cattle (compared to 7 in Chikwaka), an extremely limited base for discussion and comparison. We should add that it was not easy for us to locate households without cattle participating in the local DDP project, especially since the information on this score provided by project personnel was not always accurate. This ties up with a discussion later in this section about the apparent socio-economic position of participants in the DDP's Honde Valley project.

The DDP's attempt at an open and flexible approach has led in the Honde Valley to a decision to emphasize zero-grazing strategies in cattle maintenance. At first, this may appear a somewhat questionable choice in Natural Region I, which is so well suited to agricultural production that it may be asked why land should be diverted to fodder production under a zero-grazing policy. However, what may appear rational from the viewpoint of a region as such may not do so from the perspective of households located within the region. In the course of our fieldwork, we came across a number of factors which appear to revalidate the DDP's choice of strategy. For example, there appeared to be constraints on agriculture within the sample households both with reference to production and marketing. Many households seemed unable to cultivate the entire area of their holding for lack of inputs other than land. They also complained of problems in the marketing of both grain and vegetables/fruit. Only some sold grain to the GMB, others finding local sale more convenient for various reasons, notably that of transport.

That some residents of the Honde Valley are interested in using their land as a base to derive income from livestock rather than directly from agricultural production, is rather interestingly exemplified by the poultry raising projects that some of the sample households are involved in. These poultry projects are undertaken by the households themselves, for we saw no evidence of encouragement from any agency, official or otherwise. The incentive seemed to be greater profits from feeding maize to poultry as compared with the sale of maize. As we understood it, maize sold as such would realize by the sack \$18 if sold to the GMB, \$14.36 if sold to a local businessman, and \$24 if sold at \$4 per bucket when others' home stocks from the previous harvest were exhausted and their standing crops not yet ready (each sack containing 6 buckets).



On the other hand, the poultry projects worked as follows. Day old chicks would be purchased from places like Mutare at 74c each, usually in a lot of 100 chicks, costing \$74. Additional investment would be made in 4 sacks of broiler concentrate at \$38 each, totalling \$152. The grain fed to the 100 chickens would amount to some 10 sacks (worth \$180 at GMB rates, although some households used poor quality grain). After two months, the poultry would be ready for sale at \$7 or even \$7.50 each if sold singly. Thus, on an outlay of \$406 or so, gross returns (theoretically) could be \$700 or \$750, and net returns \$294 or \$344, if labour and transport costs were not computed. (Of course, some poultry was consumed within the household, and actual profits would be lower, one household putting these at between \$150 and \$200, although this household seemed to carry out their poultry project less rigorously.) The point that this is meant to illustrate is that local households are already experimenting with forms of livestock production on their land base, despite being located in Natural Region I. Further, the households diversifying their economies in this manner are those with sufficient capital for the fairly considerable initial outlay. Perhaps inevitably, these appeared to be households with one or more members engaged in non-agricultural and often salaried employment, or with a substantial agricultural base. Even these, however, admitted at times to not being able to muster the initial investment, and none seemed to carry out these projects more than three times a year.

Arguments in favour of a diversified farm economy which covers both agricultural and livestock production and does not maximize the area under cereal crops even if located in Natural Region I, can refer to the present depleted state of cattle in Honde Valley as well as to the constraints in agricultural production and marketing. A major difference between the Honde Valley and Chikwaka lies in the number and quality of cattle, subsuming that other difference already remarked on above, namely that we were not able to locate any household in Honde Valley which sells milk. Indeed, the DDP's report on the Valley stated that less than half the households owned cattle, and that less than one tenth milked their cows.

Within our own study, the present decline in the Valley's cattle is exemplified by the fact that in our sample of 11 households, the largest herd owned consisted of 12 units and the second largest herd of 5 units — compared to the largest herd of 47 units in the Chikwaka sample. Most households in Honde Valley have a dolorous tale of cattle lost over the last two decades as a direct or indirect result of the war that preceded independence, when cattle put in the pens of the protected village caught disease from each other, when dipping tanks did not operate under wartime conditions, when cattle escaped from the protected pens and headed back to the villages they had come from but owners were not allowed to follow and reclaim them, when grazing was disrupted and cattle grew thin and weak, when speeding military vehicles knocked cattle down, when "the comrades" took cattle away for meat . . .

Neither has this history come neatly to an end with the achievement of independence. (Indeed, the present tension along the border between Zimbabwe and Mozambique means a continuation of the war atmosphere.) Certainly the cattle lost in those years did not spring back to life with the signing of settlements. Instead, herds had to be rebuilt slowly and painfully. Disease lingers, so that one of our sample households, which had managed to retain some cattle through the war years, was rendered cattleless for the first time in October 1988 when three oxen and a cow were wiped out by disease picked up through careless herding. This case, in fact, illustrates some important points in addition to threat from cattle diseases. One is the breakdown of the *majana* system of communal herding with rotational duties, for *majana* has not been fully revived after independence, the reasons ranging from fear of infection to the shrinking of grazing area, through in-migration and the creation of a national park in the area. Households now often graze their cattle on some portion of their landholding, both in response to the squeeze on grazing ground and to combine the herding of cattle with their agricultural responsibilities, with some supplementary grazing on common ground. Cattle grazed away from the homestead are tended by family or hired labour, and operate in small units belonging to a single household or a few such.

Thus, when the DDP talks in terms of improving the grazing capacity of individual holdings, this can be viewed as an attempt to build upon present herding and grazing practices, rather than to force dairying into a Natural Region I farm economy centred on agriculture. Further, a weak and depleted cattle force leads to a wider erosion of the agricultural economy, for example through lack of draught



power and organic manure, which may or may not have something to do with the present underutilization of landholdings for crop cultivation. In this way, a strengthening of the Honde Valley's cattle base may indeed prove to stimulate agricultural production in the area rather than detract from it.

Local participation in the DDP's Honde Valley project appeared to us to stem not only from interest in additional income from milk — as in Chikwaka and Marirangwe — but more fundamentally from households' anxiety and concern over the present condition of their cattle, and from their willingness to support any scheme which promises to help nurture and consolidate cattle stocks. Households seemed to be at considerable pains to support their cattle, often feeding grain to strengthen them. One household carefully tended its sole surviving animal, a female calf left by a recently dead cow, in the hope that the calf might reach maturity and provide the nucleus for a new herd. From this point of view, it is the Valley rather than the other two areas which most needs a cattle development programme.

Problems of depleted stocks, disease and disrupted grazing have a further negative effect on breeding, and thus on livestock numbers. Complaints were heard during fieldwork about the shortage of bulls for breeding in the area. The current practice of grazing cattle around the farmstead rather than sending them to communal grazing grounds, or of separate herding within these grounds, also lessens the frequency whereby cows meet another household's bull. Households regret the consequent lowering of reproductive rates and thus of the rehabilitation of their herds. However, this situation does offer some promise for more controlled breeding, should this be attempted. Participants in the project were excited to hear from project personnel about artificial insemination, which they hoped would solve problems of breeding and which they conceptualized as some sort of "tinned bull". They crowded around with anticipation at a demonstration of artificial insemination equipment but found that it did not quite match up to their expectations. "When the tin was opened," one participant reported to us, "we saw no bull but just a lot of smoke [probably vapour from the liquid nitrogen used to freeze semen]. Ah, the wonders of the earth. Ah, these young extension workers."

The small, incomplete and fragile nature of herds in the Honde Valley is revealed in the dairy situation there. Section 5.3. noted that of the 8 cattle owning households in the sample of 11, only 3 derived milk from their cattle. Of these three, two took just enough milk from the cow to make tea, and one took a litre only on alternate days. The reason for this minimization was simply because the households felt that the cows did not produce much milk on their poor diet and that the calves' need for milk should be given priority. In other words, building up of household cattle stocks was rated more important than domestic consumption of milk. In a fourth household, in fact, milking of cows had been stopped when members felt that the calves were looking weak. This household was indeed in the ironical position of owning 5 cows but buying its milk requirements from the store. It was one of the 5 households in the sample with cattle but without milk, and the remaining 4 households had female stock which were either immature or had not calved.

If households rated survival of calves and consolidation of herds over domestic use of milk, this was not a casual waving aside of family needs but a fairly difficult decision between two important requirements, of which cattle wealth was judged to be of critical long term importance. Households with young children emphasized that one of their major motivations to join the local DDP project was to generate more milk for home consumption, and some even pointed to a particular child who they felt required more lactic nutrition (in one case a child with a skin infection and in another a slow developer). One respondent mentioned his wife's fondness for milky tea. All households without milk from their own animals purchased some kind of lactic food, with only one exception. Usually they invested in a tin of powdered milk, the contents of which were stretched over weeks, if not a month. Sterimilk was less widely used because of its price, although preferred for its fluid character. However, when a household did not have the lump sum necessary for investment in a tin of milk powder, they might occasionally buy a small bottle of Sterimilk at 55c until the larger sum was available. Condensed milk was also purchased, Valley residents noting however that a tin which cost 85c in Mutare was priced at \$1.40 locally. One respondent referred to sale of fresh milk in the shops, but the general complaint was that fresh milk was nowhere to be bought since few households had milk to spare.



Clearly, then, there is a need for cattle development in the Honde Valley to which the DDP has responded. Indeed, cattle development in the Valley has connotations of nurturance and rehabilitation that are far more pronounced than in Chikwaka, where the cattle base for dairy development is much stronger. We might therefore say that the Honde Valley as a whole stands at one dairy development threshold behind Chikwaka, the latter being in a position to market milk, unlike the former.

As described in 5.3, the DDP's efforts in the Honde Valley are focused on the building up of a pasture base and the introduction of various fodder species. Here, we shall briefly consider the extent of response to the programme within the households studied. Among the fodder grasses and legumes propagated, we found that napier grass was more easily adopted by households than guatemala because of its resemblance to a local grass *pfu-pfu*. Indeed, napier grass was often termed *pfu-pfu* by the sample households. Guatemala and napier grass aside, we did not hear much in the households we visited of the other fodder species exhibited in the DDP's demonstration plot, although there was some mention of kikuyu grass.

During 1986 and 1987, many of the sample households had experimented with growing fodder grasses in their gardens. In 1988, these households had fenced in one to three acres of their landholding for fodder cultivation, under the DDP project which distributed fencing material donated by the EEC. We must confess to some curiosity as to whether participant households would actually take the jump from small scale fodder cultivation in gardens to growing fodder as a crop, a practice associated more with commercial cattle farming than with subsistence techniques. Our curiosity had to remain unsatisfied, however, for this was the first agricultural season after the plots had been fenced in, and cultivation had reached only the stage of ploughing. It would be interesting to review progress in a few months time, and also to monitor changes and developments over the coming years, especially with regard to variations between different categories of households.

There is no doubt that the DDP pasture development project will have to weather a number of problems in the years ahead. These problems include both the need for wider support, such as a regular and adequate supply of fodder seed, and the need to maintain participation by local households, especially those households without any immediate stake in pasture development. Within our sample, we came across only one case of a participant whose involvement in the programme had gradually faded, but there were certainly lessons to be learnt from his case.

Within the pasture development programme, therefore, a number of questions can be debated, questions pertaining to the choice of fodder, the procedures of fodder development, the involvement of participants, and so on. We must also, however, consider the programme as part of the wider agenda of cattle development in the Honde Valley, some of the imperatives of which have been sketched out above, and ask, "Is pasture development enough?"

Presumably, better fed cattle should calve more and yield more over longer productive periods, but this will be an extremely slow process. Should the DDP then attempt further interventions in breeding and disease control as well as in feeding, perhaps in collaboration with other agencies? If this is desirable, to what extent is it feasible? We cannot answer these questions, but we would like to raise them.

In the preceding paragraphs we have occasionally referred to different categories of households within the sample studied, and we would now like to discuss these differences, if briefly. Interestingly, we found socio-economic variations between households far less striking among the membership of the DDP's Honde Valley project than within the Chikwaka project (although admittedly with a much smaller sample in the Valley). During our household visits we did not seem to penetrate below a socio-economic level that was relatively secure. In Chikwaka, it was during our interviews at households without cattle that we came across some striking cases of precarious existence. On the other hand, in the Honde Valley, of the three households without cattle, two were clearly quite well off, with menfolk employed elsewhere as teachers, and the third which was headed by a young woman whose husband worked in Mutare as a mechanic seemed by no means badly off, if new and not yet fully established. This was in contrast to the widows in the same cattleless category whom we



met in Chikwaka, and who earned their living by selling vegetables or hawking roasted mealies to bus travellers.

Our limited period of fieldwork did not permit us to explore why there was this difference in the programme's recruitment over socio-economic categories in Chikwaka and in the Honde Valley. One answer could be that the Valley's more fertile location in Natural Region I renders livelihood less precarious. Another could relate to our choice of households, about which we have ourselves expressed some uneasiness. A third possibility is of some bias within the programme that discourages participation by disadvantaged households. Although we suspect some combination of all three factors to be responsible, perhaps we could explore the third a little further, since this would probably be of interest to the DDP when it examines its own programme. For example, could the programme's present rather specific emphasis on pasture serve to discourage households without the resources to invest in pasture development? Do some of the procedures adopted have a sieving effect on poorer participants? We did meet some women without cattle who had dropped out of the programme because they could not afford the various financial commitments that had to be made to confirm membership.

While on the subject of difference in procedures adopted in Chikwaka and the Honde Valley, we should perhaps mention the differing use in the two project locations of fencing material donated by the EEC. In Chikwaka, the material was used for communal grazing schemes, whereas in the Honde Valley it was distributed to selected participants for individual pasture plots. (According to local project personnel, of the 87 members at Hauna, some 65 received fencing, and of 60 participants at Gatsi, 30 or so were given material.) Certainly there was a need for such fencing, in that participants narrated how their earlier attempts at growing fodder had been nipped by straying cattle. However, it can be argued that this use of fencing material had some counter-developmental consequences.

At the time of distribution of the material, a rush for membership ensued, in consequence of which (quite understandably) the membership fee was raised, but this then shifted membership criteria to an able-to-pay basis rather than a willing-to-work one. When allocating the fencing, one consideration was the earlier interest shown by participants in fodder cultivation and their performance so far. While this was necessary and sound, it did not seem to take into account that the fodder cultivation of some participants might progress better than those of others as a consequence of resources and opportunities rather than interest alone. Certainly chagrin was observable among those who did not receive fencing, and possibly divided membership in a manner that benefits to participants in general would not have. Again, the fencing programme may have stimulated hopes of other free inputs. When one respondent mentioned possibilities of acquiring free cattle, and we asked her what made her think this would be forthcoming, the answer was, "After all, the fencing was given free." Further, if our impression that the programme reaches only the relatively better off is correct, then the distribution of fencing may have served to increase disparities. That fencing does play a role in economic disparities was brought home to us in the following way. When respondents spoke of local sale of vegetables, we wondered who the buyers could be in such a fertile area. On enquiring, we were told that they included those whose gardens were not fenced in and so were vulnerable to damage by cattle, especially in the dry season.

If dairy development in the Honde Valley was to include some component of aid to individual households rather than to participants more generally, we wondered whether this should not have been channelled towards the less advantaged.

Our emphasis in earlier paragraphs on participants' concern to rehabilitate their herds and keenness to produce milk for home consumption, should not play down their interest in additional income from sale of milk, for they do evince such interest, especially in households where children are grown or away in school. After all, many of these households have diversified economies which they would like to diversify further. However, as yet their perception of the logistics and economics of sale of milk is not sharp, possibly because of the absence of a local milk market. For example, in no interview did we get a ready or decisive response when we asked how much the procurement price per litre of milk should be. (We had in any case to first demonstrate what amount constituted a litre.) One calculation was that if Sterimilk was purchased at 55c for a half litre, then a litre ought to fetch 110c! There was



also some vagueness about the actual mechanisms whereby milk would be collected and sold, with a general feeling that this was the responsibility of "Dairibord" (i.e. the DDP).

If respondents are unclear about marketing mechanisms and procedures, it is perhaps because these are seen as operating outside the household. They were far more specific on matters of production, viewed as internal to the farm. For example, some respondents said that they would invest part of the income from sale of milk in buying stock feeds for their cows, although the DDP has suggested that participants should rely on home-produced feedstuffs. Respondents argued however that investment is necessary for returns. If a milk market is established, it is likely that those who now have the poultry projects described earlier will weigh the returns from feeding maize to cows rather than to poultry and will opt for whichever they feel is more profitable. We suspect that the emergence of a remunerative milk market will increase the intensity of green fodder cultivation. A commercial approach to dairying seems somewhat inevitable, given the requirement for investment (e.g. in a milking shed) triggering off consideration of returns.

More broadly, comparing the DDP's activities in the Honde Valley with Chikwaka, we felt that a certain narrowing had taken place, and shall illustrate this with two examples. The first is that in the Valley the DDP seems to be a dairy development programme as such, unlike in Chikwaka where it also seems concerned with water, sanitation, fuelwood, other income-generating activities, group organization and so on. In other words, the diffuseness of the DDP approach in Chikwaka has been replaced with a certain specificity in the Honde Valley. Our own feeling was that this was a loss rather than a gain, and might explain why the socio-economic profile of membership seemed wider in Chikwaka than in the Valley. Many respondents expressed their frustration at the absence of an adequate local market for their fruit and vegetable produce and wished for example that they could take advantage of the market at Mutare. The DDP's preliminary research report on the Honde Valley had in fact mentioned this local need and the possibility of co-operative marketing. It seemed to us that a broad developmental programme which began with the co-operative marketing of fruit and vegetables would recruit from a wider constituency than that of cattle owners and could then move on to milk. Of course, the question remains whether a *dairy* development programme should handle these other commodities. We shall leave that question for the moment, but will touch on it again in Chapter 8.

Not only did the DDP project in the Honde Valley seem to us to be more dairy-specific than in Chikwaka, it also appeared to be rather pasture-specific (as already mentioned in an earlier paragraph). Given the DDP's concern to develop people and not only cows, we might ask whether in the Valley the DDP was developing people or pasture. Our doubts on this score took the form of questioning what appeared to be a smooth inter-institutional linkage in the Honde Valley between the DDP and Agritex, rather paradoxically since in the case of Chikwaka we had questioned the absence of such a linkage! In the Valley, the two agencies seemed to co-ordinate closely in pasture demonstration and lessons, so that if the DDP were to pull out in accordance with its long-term intentions an easy takeover by Agritex could be envisaged, unlike in Chikwaka. All the same, we wondered whether the Valley project, with its focus on pasture, might not represent a certain "Agritexization" of the DDP, with a possible loss of developmental vision and thrust, where indeed we would have preferred to see a "DDP-ization" of Agritex!

Our discussion so far has considered differences in the cattle situation prevailing in the Honde Valley and Chikwaka, as well as differences in the DDP approach to the two areas. However, in conclusion, we would like to emphasize some of the important similarities between the two cases. Dairy development in both places will require the use of technology appropriate to milk production and marketing in the communal areas of Zimbabwe, that is technology not too removed from existing patterns of farming and living. As we have stated in our discussion of Chikwaka, and as we shall reiterate in Chapter 7, we do not consider the transfer of dairy technology from the country's large scale commercial farms to be appropriate, especially for poorer households in the communal farming areas. Indeed, the war-battered herds of the Honde Valley can be described as even further removed from cattle on large scale farms than the herds of Chikwaka.

The other set of similarities that we would like to draw attention to are the various dilemmas of development that the DDP must resolve, some of which we noted when discussing Chikwaka. Here



we shall point to one which seemed rather active in the case of the Honde Valley project, namely that of latecomers to the DDP project.

#### 6.4 MARIRANGWE

In this section we return to Mashonaland from Manicaland. However, from another viewpoint this section is not a return but a further journey, from dairy development in Zimbabwe's communal areas to the DDP's pilot project in a small scale commercial farming area. As suggested in Chapter 5, in addition to agro-economic differences, there are important social differences between Marirangwe and the two communal areas studied. For example, the social universe covered is much smaller. Where in Chikwaka and the Honde Valley membership of the DDP project ranged between a hundred to two hundred out of a much larger resident population, the total number of farms in the Marirangwe area amounted to some 65, and suppliers of milk to the DDP project there fluctuated between 15 and 20. One consequence of this smaller universe is that the DDP has a sharper view of its local constituency. Thus, from DDP documents a researcher can piece together a picture of how many of the local farmers are active and less active participants, and how many have remained uninvolved (see Figure 5.1). This kind of mapping would be far more difficult in the two communal areas, where the membership in DDP projects is more than twice as large as the total number of farms in Marirangwe!

That Marirangwe is a very different arena of dairy development from the other two studied is exemplified by the fact that milk collection there began a little more than a year after the DDP's initial research, while in Chikwaka the corresponding gap amounted almost to five years! Yet, after fieldwork we would hesitate to classify Marirangwe as a world apart from Chikwaka and the Honde Valley, even if the smallest farm that we came across there, of 105 acres, was still some nine times as large as the largest farm we studied in Chikwaka. Matinhira (1988), in a thesis on the DDP project participants at Marirangwe, noted that the cattle farming styles of these participants covered a fairly wide range, one end of which was closer to the large scale commercial farmer and the other end nearer to the peasant in the communal areas.

While we would agree with this position, we would add that the interpenetration of categories is more complex than any comparison of the lowest level at Marirangwe to the highest level at Chikwaka. Instead, we would suggest, to extend our description of the 29 sample households at Chikwaka as ranged along a socio-economic continuum, that the 16 households which we studied at Marirangwe could be fitted onto this continuum, not all at the upper end but many interspersed with Chikwaka households. However, the most disadvantaged household that we were able to locate in Marirangwe was still better off than many in the middle ranges in Chikwaka and the Honde Valley, so that the overlapping ended somewhere in these middle ranges. Just as we have suggested that the Honde Valley stood at a dairy development threshold behind that of Chikwaka, since we found no sellers and few milkers in the Valley, it could be said that Marirangwe is at a dairy development threshold ahead of Chikwaka, with a single non-owner in the sample, everyone else being not only a milker but a seller, if not a supplier to the collection centre.

It may be interesting to integrate the findings of our fieldwork with those of Matinhira. As explained in 5.3, he divides suppliers of milk to the Marirangwe collection centre into three categories according to the size of their herds. (Note: in the Chikwaka section we have discussed herd size with reference to total livestock units. Here, following Matinhira, we shall consider milch cows alone.) From his first category, of those with between 12 and 29 cows that are generally dairy animals, we chose four of the six he had identified. We shall call three of these the "entrepreneurs". All were weekend farmers with business enterprises of various sorts and were visibly well off, employing for their dairy herds supervisors who were often recruited from large scale commercial farms. To them, dairying seemed to be a business like any other, and capital was moved to and from dairying to their other enterprises. They did not buy feed through the milk collection centre as others did, but purchased in bulk from sources in town, not dissuaded by transport costs as others might be because they owned large vehicles. One of them had in fact said to the investigators conducting the DDP's research in 1983 that if the dairy project was not viable he would sell soured milk in his own shop! The other two were more recent arrivals to the area. Although we would not presume to assess the complexity of their



entrepreneurial activities, we wondered if the operations of the milk collection centre had not been one factor attracting these two to the area. One of the three had in fact acquired a large scale commercial farm of some 8000 acres located near Marirangwe.

The fourth case from this category is actually intermediate between this and the next category, which we shall call the "diversifiers", as an example of a very successful diversifier. Unlike the entrepreneurs, this household had no business interests, and were resident farmers who supervised their own herds, with the wife playing an important role (unlike the wives of the entrepreneurs who usually resided in town — indeed, the wife of one entrepreneur managed a business in town). Their dairy herd had been built up from 9 cows to 19 between 1983 and 1988, less from capital investment than from careful husbandry. (Over the same period they had consolidated a poultry enterprise.) Income from sale of milk was put in the bank and not shifted to business ventures. This member was also very active in the affairs of the milk collection centre and had been the secretary of its association for some years. This was again in contrast to the entrepreneurs who with their absences could not manifest a similar degree of commitment to and involvement in the association's affairs.

Matinhira's next category was of seven members who kept smaller herds of 7 units or less, and whose herds included dairy cows as well as beef cows. It is this group that we shall call the "diversifiers", of which we had some four cases in our sample. (One was in fact a minor entrepreneur, but not apparently as wealthy as those we have placed in our first category, and based in Marirangwe rather than in Harare.) The diversifiers operated essentially from the base of a farm economy, although trying to multiply their sources of income within this, as with the keeping of specialized dairy cows. Family labour tended to be an important input into their dairying, and the income from sale of milk was reinvested in farming and dairying, or banked, or both. The diversifiers, being locally resident and interested in income from dairying, usually took an active part as committee members in the running of the milk centre.

The third category, described by Matinhira as those members who used beef cows for milk, will be termed by us the "farmers". Like the diversifiers, they operated within a farm economy, but in contrast to the diversifiers they had not been able to commercialize various sectors of this economy. In other words, they were crop cultivators who sold some milk. We took all three of the cases that Matinhira had placed in this category. (One could be termed a potential diversifier, a headmaster who at present did not have the time to develop various farm activities, but who planned to acquire dairy cows after retirement.) Since the farmers used beef cows, they milked only once a day, leaving the afternoon's milk for the calves.

Perhaps the typical farmer was the middle-aged wife of an aging resident. She had been stimulated by the example of her neighbour, the successful diversifier already mentioned, to supply milk to the collection centre. She did not attend the centre's demonstrations regularly, though, and was not a particularly active member. She seemed rather pleased with her farm as it stood, describing her Afrikaner cattle as "lovely" and her kraal as "beautiful". She supervised the milking but took no exact measure, not sure even after a year of supplying the centre of exactly what amount a litre indicated. She said she did not know if the centre paid an adequate price since she had no standard to measure it against but thought that the profit was "quite all right". She felt that people who milk their cows twice a day to sell milk were "greedy for money". However, that commercialization hovers on her horizon is clear from the fact that she is banking the monthly cheque from the collection centre with the intention of buying dairy cows! Perhaps her son, who delivers the milk to the centre, has a sharper idea of measures and money.

To summarize some of the differences between the three categories, here is an example from each. The largest of the entrepreneurs kept 41 cows (of which 37 were dairy cows) on some 8000 acres of land. In October 1988, he supplied 8887 litres to the collection centre and received a cheque for \$3619. We could not meet him during our fieldwork, since he lives in Harare, and his manager did not know what the income from milk was used for. One of the better off among the diversifiers had a herd of 14 cows, of which 6 were dairy cows, on his farm of 233 acres. In October 1988, he delivered 885 litres to the centre and collected a cheque for \$246.37, some of which money was banked and the rest used for home and farm expenses. The farmer whom we described in the last paragraph kept 8 cows, all beef, on a 200 acre farm, and in October 1988 gave the centre 104 litres and received \$28,81 as a cheque,



which as mentioned she put in the bank to save for dairy cows. (The cheques represent what remains after overheads and purchases of inputs through the centre have been deducted from income from milk.)

Another perspective on the three categories is derived from the size of their herds over time, using data from the DDP study conducted in Marirangwe in 1983. Since the entrepreneur given as an example in the previous paragraph has arrived recently in the area, we shall choose another case. At the time of the 1983 survey, this other entrepreneur kept 16 cows and now has 44, many purchased from large scale commercial farms. The diversifier cited above maintained 8 cows in 1983 and now as described has 14, some of which were raised on the farm. Again, the farmer whose case we have used so far was not included in the survey of 1983 (not having shown interest at the time) so we shall consider that of the headmaster already mentioned, although his herd of 30 cows is unusually large for a farmer or even for a diversifier, indeed approaching that of an entrepreneur! What is notable is that the size of his herd has remained constant between 1983 and 1988.

Data suggests that the critical difference between entrepreneurs and diversifiers, and between diversifiers and farmers, is of capital rather than of land base. The attitude of others towards the entrepreneurs is interestingly ambivalent. While their lack of involvement in the running of the centre is resented, there is considerable admiration of the scale of their herds and output and of their productive activity generally, a feeling that this is how dairying ought to be done, that it is properly a commercial and not a subsistence activity. The entrepreneurs are seen as close to the epitome of what dairying should be, namely the large scale commercial dairy farms that surround Marirangwe. (Indeed, one entrepreneur attends the field days and seminars organized for and by these large scale farmers.) The entrepreneurs buy herds of pure dairy cows from the large scale commercial farms and employ supervisors who have worked on these farms, they purchase cattle feed in bulk as these farms do, they supply milk in four figure amounts every month and pick up cheques that are also in four figures . . . all of which the diversifiers and farmers cannot do but would like to. Perhaps also they feel that if men like themselves can achieve this, with land and animals which they too own, then one day they (or their children) can achieve such things. While such thinking can be described as false consciousness, it can motivate application to the dairy enterprise.

In a similar way, the diversifiers provide a model for the farmers, a model that perhaps seems more attainable than that of the entrepreneurs. Particularly so is the case of the most successful diversifier, described above, who without the capital of the entrepreneurs has managed to consolidate his dairy enterprise, to the point where in the flush season he too is able to supply and receive returns in amounts of four figures.

So far we have considered only those who supply the milk collection centre. Our sample also included five non-suppliers, and these too covered a fairly wide range. One could be placed somewhere in between the entrepreneurs and diversifiers, a builder with houses to rent in town, acquainted with neighbouring commercial farmers, contemptuous of small amounts supplied to the centre, trying to locate finance in order to make a "proper" entry into commercialized dairying. A second non-supplier might compare with the diversifiers. Both had milking sheds which were almost complete, and both were located at some distance from the collection centre and faced the problem of transport. A third household was, in contrast, situated fairly close to the centre, but was owned by an old couple without an effective second generation. A fourth case seemed to combine some of the problems of the others, with a household composed of old women and young children, quite far from the collection centre. The final case was of a widow who sells vegetables at a stall close to the collection centre, who attends dairy demonstrations but does not own any cattle.

Although this last case may sound similar to some of the vegetable-vending, cattleless widows of Chikwaka, we would like to underline some of the differences. The lady in Marirangwe cultivated 10 acres of her land and realized some 65 bags of maize, of which she sold 20 and retained the rest as a buffer stock. A vegetable-selling widow in Chikwaka, on the other hand, was able to grow maize only on one acre. However, with the money she had received during her daughter's marriage, she invested in 7 bags of fertilizer, almost twice as much as she had ever been in a position to use earlier. As a result, she was for the first time able to sell maize, 10 bags, the money from which was used for school fees. She kept 5 bags of maize for home consumption, but feared that this would not suffice through the



year for herself and her three children. Another widow in Chikwaka, who sold roasted mealies to bus travellers, realized only 3 tins of maize from 1.5 acres of land, since she had been unable to purchase fertilizer and the absence of cattle meant no organic manure.

This is why we suggested earlier that the lower end of the socio-economic spectrum of our sample in Marirangwe reached somewhere halfway down the corresponding spectrum in Chikwaka. It may be of interest to explore the upper ranges of the spectrum, and to note that there were entrepreneurs and diversifiers among the suppliers and ex-suppliers in Chikwaka as well as in Marirangwe. The relative similarity between the entrepreneurs in both places could be explained by our earlier suggestion that it is not so much landholding size as access to capital which is responsible for socio-economic differentiation in Marirangwe (and Chikwaka). That the Chikwaka entrepreneur is no second rate version of the Marirangwe entrepreneur is illustrated by the fact that after a visit to one Chikwaka entrepreneur, our (urban based, London educated) research assistant was impressed enough to wish that he might enjoy a similar lifestyle when he reached the entrepreneur's age. We have already mentioned in 6.2 how some of the most advantaged members in Chikwaka expressed a desire that the milk centre be run on more commercial and less developmental lines, explicitly citing Marirangwe as an exemplar. Although our sample in the Honde Valley did not seem to include any entrepreneurs, certainly one or two of the more diversified households (for example one that derived income from teaching, farming, poultry, vegetables and sale of knitted articles) appeared to compare favourably with diversifiers in Marirangwe.

Having related some of the sample households in Marirangwe to those in Chikwaka and the Honde Valley, we can now discuss where Marirangwe fits in the overall developmental context of the DDP. From this point of view, it is a pity that we were not able to include another small scale commercial farming area in our study, and we would request that our findings from Marirangwe not be generalized automatically to other areas.

There appears to be some ambivalence, both within the DDP and among donor agencies, towards projects in areas like Marirangwe. After our fieldwork we found this attitude quite understandable, given the relatively privileged position of those in Marirangwe compared to many (but not all) in Chikwaka and the Valley. Members of the DDP project at Marirangwe have a somewhat different perspective. "We are the people in the middle whom no one wants to help. The large scale commercial farmers don't need help from anybody, they are well enough off. The people in the communal areas are badly off, but the government and the foreign donors are very keen to assist them. We are in the middle, perhaps at an advantage when compared to the communal areas, but certainly disadvantaged when put next to the large scale farmers. We have our needs and handicaps too, but no one pays attention to us."

Having spent a few days with the milk suppliers of Marirangwe, let me present some justification for their inclusion in dairy development programmes, probably covering some of the same considerations which led the DDP to set up a pilot project there, but perhaps offering one or two additional points:

- (1) If the DDP works only in communal areas, there is a danger that small scale commercial areas will indeed fall between two stools, as "the people in the middle". The Dairy Marketing Board will continue to procure milk from large scale commercial farmers, and if the DDP confines its activities to communal areas, small scale commercial farmers will either be bypassed or a third agency will have to be set up for them! At present it is hard to visualize how exactly in the future the functioning of the DMB and the DDP are to be organically integrated. If at this point dairy development in the small scale and the communal areas are not co-ordinated, the future problem will be to fuse not just two but three worlds of dairy development.
- (2) In the same way that the entrepreneurs or the most successful diversifier of Marirangwe provide a model, with which to some extent those less fortunate can identify, and which stimulates attempts at emulation, the Marirangwe project as a whole seems to have some demonstration effect for DDP projects elsewhere in Zimbabwe, with a "We can do it too" message. It has functioned successfully for almost four years now, with milk flowing through it to the DMB and income in the reverse direction. This is noted



and mentioned by people in Chikwaka, most of whom would also like a similar income from milk, and who now have tangible evidence from Marirangwe that this is possible for those who are less than large scale commercial farmers.

- (3) If small scale commercial areas like Marirangwe do not appear to embody the most urgent development need when juxtaposed with communal areas, they do contain substantial production potential to be tapped. In 2.7, this report argued that there is as yet considerable unsatisfied demand for milk and its products in rural Zimbabwe. If this is so, such small scale commercial areas provide the most ready new source for tapping. Marirangwe has demonstrated how organized procurement can attract milk (Table 5.1). Given the more stable levels of living in small scale commercial areas, sale of milk is unlikely to be at the expense of domestic consumption, as may be the case if households in the communal areas are squeezed for procurement too early.
- (4) Although what now follows is related to the points above and especially to (3), we consider it the major justification of a dairy development programme in Marirangwe (and perhaps in similar areas). This concerns an organized supply of milk to the communal areas neighbouring Marirangwe, the residents of which at present buy small quantities of milk from the local farms, with the price varying from 10c to 20c for 200 millilitres. These communal areas do not yet seem to have been studied or surveyed. However, extrapolating from the situation in Chikwaka and the Honde Valley, many households in communal areas can benefit from a regular and organized milk market, especially poorer homes where the consumption of other kinds of animal protein is irregular. The Marirangwe households at present selling milk informally often seem to be those prevented by transport problems from supplying the milk collection centre, but who would otherwise prefer a guaranteed outlet for milk and a monthly lump payment.

If, on the lines suggested for Chikwaka in 6.2, the DDP were to decentralize its manner of collection and sale, both procurement and distribution networks should widen. For a start, small DDP depots could be set up at the one extreme of Marirangwe south and the other extreme of Marirangwe north, whereupon both new suppliers and new consumers should materialize. It is possible that milk producers in the communal areas will now or in the future bring milk for sale to these booths and become members of the project. Although the absorption potential of the neighbouring areas needs to be examined, ideally speaking, milk from Marirangwe should course in little streams through the thirsty communal areas, rather than be added to the DMB's procurement as a drop in that ocean. Also, schools in these communal areas can be supplied with milk in the manner of those in Chikwaka. Product manufacture could also be considered.

One problem with the above suggestion, though, is that income from the informal trade in milk, both at present and before the opening of the collection centre, was often in the hands of farmers' wives. A DDP document on Marirangwe notes some complaints among local women that milk cheques from the collection centre were handled by their husbands only. This more general issue is discussed — though not resolved — in 7.7.

In this section we have considered the milk collection centre in Marirangwe, in both its immediate and wider context, rather than focus on the problems internal to the centre with which the DDP may be more familiar, such as the question of how to charge for overheads and how to use profits, and the related conflict of interests between large and small suppliers. To do justice to these internal issues, we would have required a longer period of fieldwork to talk to all suppliers and not just a sample, and to examine in greater detail the records of the centre.

In closing, we should mention a common problem that the DDP faces in Marirangwe as in Chikwaka, namely participants' unwillingness to take over management of the collection centre themselves and allow the DDP to pull out. If the DDP measures its success in terms of withdrawal after mobilization, then it has not as yet attained success in Marirangwe. However, if the collection centre at Marirangwe is to be a developmental and not only a commercial institution, for example if as suggested above it is to attempt enhancement of nutrition in neighbouring communal areas, the paradox is then that the DDP cannot withdraw, because the participants' interests at present are squarely commercial.



## CHAPTER 7: DISCUSSION ACROSS THE THREE AREAS

### 7.1 HOUSEHOLDS AND ACTIVITIES

Why is it necessary to consider households and activities, as we propose to do in this chapter, if we have already outlined our findings from each area in Chapter 6? The reason is, we think, that a dairy development programme, even if it selects areas which differ from each other in various ways, works essentially with households through activities connected with the production and marketing of milk. Also, in our discussion of the three areas, we sought to compare and interrelate households found in one area with those found in the others. Thus we emerged with a number of categories into which the households in all three study areas could be placed. Table 7.1 depicts this categorization.

TABLE 7.1: CATEGORIES OF HOUSEHOLDS ACROSS THE THREE STUDY AREAS

Categories	Areas		
	Marirangwe	Chikwaka	Honde Valley
1. Suppliers	11 (1)	5 (3)	–
2. Sellers	4 (1)	3 (1)	–
3. Milkers	–	7 (3)	3 (1)
4. Non-milkers	–	7 (2)	5 (4)
5. Non-owners	1 (1)	7 (7)	3 (3)
Total (women)	16 (3)	29 (16)	11 (8)

[Explanation of categories: *suppliers* to the milk centre; private *sellers*; *milkers* of cattle owned; *non-milkers* of cattle owned; *non-owners* of cattle. See Figures 5.1 to 5.4 for the wider universe in each area. Bracketed figures () give number of women in each category.]

Among other things, this table demonstrates that (as noted in 6.3 and 6.4) the areas as a whole stand at three different thresholds of dairy development, with the suppliers and sellers who are absent from the Honde Valley sample predominating in the Marirangwe sample, and with Chikwaka somewhere in between. However, as suggested in 6.2, the five categories of households themselves can be seen as poised on varying thresholds, and to that extent there is some similarity between the concerns of households in the same category but in different areas.

The various activities connected with the production and marketing of milk will have a different relevance to each of these categories. For example, while acquiring cattle is of critical interest to non-owners, it is relatively less so to suppliers, and while suppliers are deeply concerned with selling milk this is not of immediate relevance to non-owners.

In this chapter, we propose to run through our findings on the major activities associated with dairying, with particular focus on the category of households to which that activity is most relevant. We shall then look briefly at one example of an issue which subsumes areas, households and activities, namely female participation.

### 7.2 ACQUIRING A COW

It does not really need stating that in order to produce milk the primary requirement is for a cow. Of our total sample of 56 households, 11 not only lacked this primary requirement, but owned no cattle at all. Yet prospects were not equally bleak for all eleven. A schoolteacher's wife in the Honde Valley had added \$200 sent to her by her husband to the \$100 she had saved from sale of crops, and was hoping with the total to acquire a pregnant heifer and a female calf, both crossbred, since market prices had dealt a blow to her original dream of purchasing two cows with this sum. Another schoolteacher's



wife planned a soft entry into dairying, by raising a calf rather than spending on a cow. A carpenter's wife in Chikwaka had been assessed as sufficiently creditworthy for a loan from the AFC to buy cows, although she had not been able to muster the \$600 deposit. A Chikwaka widow was expecting a *mombe youmai* from her daughter's marriage, and had already pegged out a site for her milking shed.

Some of the non-owners, however, had resigned themselves to this condition. These were usually widows without a strong network of family support, deriving barely enough maize from their cultivation for subsistence, selling vegetables to eke out a livelihood, and apparently not able to press claims for *mombe youmai* when their daughters married. They seemed imprisoned within what might be termed a cycle of cattlelessness, part of a wider cycle of assetlessness. Their extremely constrained asset base, of which the absence of cattle was a symptom, involved such a persistent struggle for subsistence, that — as one such woman admitted to us — even if she did own a cow she would not have the time to look after it.

Thus the non-owners in our sample were not a homogenous category. Some were poised to step over the threshold of cattle ownership, others had long-term if not immediate hopes of acquiring cattle, and others had shrugged away all expectation of ever owning a cow. All consumed milk in some form and quantity, though, those in the Honde Valley purchasing dairy products from shops and those in Chikwaka buying milk from the collection centre and its vendors on bicycles.

### 7.3 PRODUCING MILK

If owning a milch animal is the first step towards producing milk, it by no means completes the entire journey, as the 12 non-milkers in our sample would testify, since they owned milchstock but did not derive milk from these. (Most however did not go completely without milk, as they made purchases from the milk collection centre or its bicycling vendors.) One of the 12 should in fact be treated as a marginal case between the non-owners and non-milkers, since she owned only two oxen. As with the non-owners, the non-milkers displayed considerable internal differentiation within their ranks.

Two non-milkers were not strictly on the same side of the threshold as the others, since they moved across it and back with the lactation cycles of their cows. One of these households, to be discussed further below, illustrated the principle that at least 2 cows are necessary for an unbroken year round supply of milk. Three other non-milkers (two in Chikwaka and one in the Honde Valley) could be described as non-milkers by choice, resting at the threshold and choosing not to cross it, since they felt that priority should be given to the needs of the calves. Their position by no means represented complacency at the nutritional and income levels of the household, but rather insecurity at the vulnerability of their herds. It was also associated with acknowledgement of the meagre diet of their cow(s), assessed to lie at a level where the cow could only support her calf and not the household through direct supply of milk. There were cautionary tales around, of households that from lack of judgement or greed had sold milk from cows which did not yield sufficiently, and as a result had lost calves.

Another Chikwaka household represented non-milking by default, where 4 cows were owned but none milked because no-one had the time to do so, the father often away with his work as a builder, the mother absent on weekdays since she taught at a school in Seke, no permanent labour employed, and the children busy with schoolwork. It seemed simpler for this household to buy a litre or two of milk every day from the milk centre. In two of the households already described, a subsidiary reason cited for not milking was that the women of the house did not know how to milk and had never milked a cow.

The remaining non-milkers, found mostly in the Honde Valley, had immature female stock which had not as yet calved. They often represented the initial step in the process of rebuilding a herd which had been wiped out during the war, using the less capital-demanding strategy of investing in a female calf or heifer rather than an adult cow. In this way, such households had gradually eased themselves over the threshold of cattle ownership at its lowest point, and were preparing to try and cross the next threshold by nursing their young female(s) to maturity, impregnation, birth and lactation. Some



accident or household contingency could push them back to non-ownership, especially where the household's hopes were centred on a single animal. If all went well, and their herd gradually grew, their position on this side of the ownership threshold would be secured. However, cautiousness might prevent their actively attempting to scale the next threshold and become milkers. Like others in this category described above, they might opt to let milk go to the calves rather than for household consumption and sale, choosing to rest at the milking threshold rather than cross it.

If non-owners and non-milkers proved to be categories that were internally somewhat heterogenous, and between which there were fuzzy boundaries rather than sharp ones, the same is true of the other categories, including that of the milkers to whom we turn now. We have already noted that two non-milkers were milkers when their cows were in lactation. One such household was, at the time of our fieldwork, taking measures to cross the threshold for good rather than surge over and back with the lactation cycles of their single cow. They had managed to prove their creditworthiness for an AFC loan to buy cows, had put together \$300 out of the \$600 deposit required, and were now trying to make good the remainder. The other household owned more than one cow but tended to have all dry up together. The fact that they could not recognize when a cow was in heat made it difficult for them to try and reschedule lactation cycles.

In 6.3, we saw that the three milkers in the Honde Valley sample had only just managed to cross the milking threshold, taking as little milk as possible for home consumption and leaving the rest for calves as part of their strategy of herd rehabilitation. These households can be described as minimal or marginal milkers. We did not find cases as minimal in Chikwaka, probably because of the relatively more secure condition of herds there.

Of the 7 milkers in the Chikwaka sample, most seemed to get about two litres a day from the one or two cows which were in milk in each household. Milking took place only once a day, with the explanation that the afternoon's milk was for the calves to suckle. Thus these households were just one step better off than those which chose not to milk or which milked minimally in the interests of calf conservation. Yet that step meant a more enjoyable diet, with milk in tea more than once a day and soured milk with meals. These households attributed the small amounts of milk yielded by their cows to the diet that the animals subsisted on, of grazing supplemented with crop residues (and sometimes a little grain for an animal in milk), and this diet in turn to the household's economic limitations. One household did get four litres a day, but this was from four cows! The exception was a household deriving five litres from a single cow, a Brahman bought from a neighbour and fed on crushed soya. The smallest amount of milk that a household received from its cow was half a litre, sufficient only for the morning's tea and porridge, the cow's lactation being almost at an end. A number of the Chikwaka milkers supplemented home supplies of milk with purchases from the DDP's milk vendors on bicycles or from the milk collection centre.

Privileged as they may appear from the point of view of milk consumption when compared to the non-milkers, the milkers tend to compare themselves instead with those who derive income as well as milk from their cows. They sometimes venture to cross over into that next category, as we shall see in the next two sections.

#### 7.4 SELLING MILK LOCALLY

One of the milker households, who at the time of fieldwork received two litres from a single cow in milk, sometimes got as much as eight litres when four cows were in milk together. At such times the household sold some milk locally to neighbours, who came over and purchased a cup at a time for 25c. (The cup appeared to us to hold 250 m.l.) We spoke to the man of the house, who said that he did not know how much the amount sold or income received accrued to because selling milk was "the women's business". (More of this in 7.7.) This household was unusual among the milkers in that it fed maize meal to cattle in addition to grazing and waste. It was also unusual in its sale of milk, since most of the other milkers said that they would not sell milk locally but would supply it to the collection centre. The reason they gave (already mentioned in 6.2) was that selling milk locally rendered a household's cattle vulnerable, for if the milk were carelessly handled, and especially if it were allowed



to boil over into the fire, the cow would suffer and its udders would crack. Such mischief could be either deliberate or unintentional. On the other hand, if milk was supplied to the collection centre, it would be mixed with the milk delivered by others, and thus could not be used to cause harm to any particular person's cow.

Why did the household just described not fear such consequences? Before we attempt to answer this question, let us look at the other three households in our Chikwaka sample which sold milk locally.

One was a single member household, of a woman whose husband and two grown sons worked in Harare. Her herd numbered 38 units, of which 16 were cows and out of these, 11 were crossbred cows bought as heifers by her husband from a commercial dairy farmer near Beatrice. Cattle were fed with crushed inferior maize, sunflowers and some concentrate, and cows in milk with dairy meal. At the time of our meeting, six cows were in milk and together yielded some 16 litres a day at two milkings. She sold milk to neighbours at 30c for 250 m.l. (our estimate of her cup). She had supplied milk for four months to the milk centre, but had stopped because she found the distance too great for delivery of milk. In those four months, she told us, the largest cheque she had received from the collection centre had been for \$40 and the smallest for \$13. She was not able to give us an average figure for daily income from local sale of milk, but said that on the day prior to our meeting she had earned \$1.20. Generalizing (admittedly, without much validity) from that figure, it could be said that she earned about \$36 a month from sale of milk without leaving her house. All the same, she expressed her preference for selling to the centre, since it would provide a guaranteed outlet, and said that she would resume supply if the transport problem could be solved.

The second case was also that of a former supplier to the milk centre who had resumed selling locally. Between January and June six of his nine cows had together yielded 20 litres a day, allowing a substantial amount of milk to be carried on foot to the collection centre by a labourer. In August, when yields fell, he stopped sending milk to the centre and began local sales. He said he sold milk at 30c a pint and had made \$1.40 the previous day. The highest cheque he had received from the centre had been for \$64 and the lowest \$34, which he had used for school fees for the three children in school. He expected milk yields to rise again in December and January, whereupon he planned to resume supply to the centre. The main advantage of this outlet according to him was payment in a lump sum (presumably for bulk payments, as for school fees). He too fed crushed maize to cattle.

The third private seller in our Chikwaka sample was the entrepreneur referred to in 6.4. He had retired from government service and operated a grinding mill at his residence. He politely declined to divulge the returns from his grinding mill, as income tax officials showed keen interest in his concerns. Unlike the other two, he was not a former supplier to the collection centre but a prospective one. He had built a milking shed with a plan supplied by a commercial farmer, and was soon to acquire cows from commercial farms. His present herd was a specialized dairy herd, unlike others, of three cows and their female calves. Two cows were in milk at the time, yielding six litres between them, of which three litres were sold daily, at 50c for 500 m.l. He planned to switch supply to the collection centre when his new cows arrived, explaining that local sales would not absorb the milk he hoped to generate, and that he would like lump payments to help cover his electricity or telephone bills. His cows were grazed in his own paddocks and fed on dairy meal, with green maize for cows in milk.

The last interviewee waved aside mention of harm coming to cows through sale of milk. The other three described in this section agreed that there was some hazard to cows if milk was sold, but that they were careful whom they sold milk to and warned buyers to handle the milk with care. We would like to draw attention to two characteristics of these households, which might help answer our earlier question as to why these sold milk when others did not. The first characteristic is the wider resource base of these households, indicated among other things by the superior diet which they were able to give their cattle. Thus it could be argued that these households sold milk because they had more milk than did the others, and they had more milk because they were able to feed their cows better. Again, these households' more secure base meant that they experienced and expressed less anxiety about their cattle, and were able to cope more calmly with beliefs that mitigated against selling milk. Other less fortunate households lived in greater insecurity, especially over their herds, and were therefore more vulnerable to fears about sale of milk.



Moving from Chikwaka to Mariangwe, and to the four households in our sample that sold milk locally rather than to the collection centre, we note an important difference, in that here no mention was made of danger to cows from selling milk. Our research assistant explained this by saying that in Marirangwe most farmers were Christian and hence did not subscribe to traditional beliefs. While there is something in this argument, we do remember Christian affiliation and activity in some of the Chikwaka households that still feared for their cows if milk were sold. Perhaps at the economic level of the small scale farmers of Marirangwe, as with the more secure in Chikwaka, such fears were easier to overcome.

Of the four Marirangwe households which sold milk locally, three were situated at a distance from the collection centre that made transport of milk difficult. Two of these were, however, extremely keen to commence supply and had almost completed building their milking sheds. The third household seemed somewhat cut off from the social sphere of the collection centre, being composed mostly of children and old women, but had heard of the centre and expressed interest in supplying milk to it. The fourth household, close to the centre unlike the other three, seemed preoccupied with its internal problems of old age and an incapacitated second generation, but also displayed interest in the centre and preference for its payment by cheque.

Thus, of the seven households in our sample which sold milk locally, all appeared interested to a greater or lesser degree in moving over the next threshold and supplying milk to the collection centre. The attractions appeared to be a definite outlet, aggregated payment and money for measure, with local sales having the related disadvantages of unpredictability, payment in small amounts, demands for credit and an expectation that a little more than the measure would be tipped into the vessels of neighbours/relatives/friends. Since the main obstacle to supplying the centre seemed in many cases to be the transport of milk, our suggestion in 6.2 and 6.4 to set up a more decentralized network of collection booths in Chikwaka and Marirangwe might help overcome this problem.

## 7.5 SUPPLYING MILK TO THE COLLECTION CENTRE

In the last section, we described how two of the three households in our Chikwaka sample which sold milk locally had at one time supplied the collection centre, and indeed one household planned to resume supply when milk yields rose with seasonal changes. Indeed, two of those numbered among the non-milkers because their cows were dry at the time of fieldwork, had been able to cross a number of thresholds during their cow's/cows' lactation and supply milk to the centre, until with the drying up of that lactation they became non-milkers again. Although in this section we shall focus upon the eleven households in the Marirangwe sample and the five households in the Chikwaka sample which supply milk to the local collection centres, we shall consider where relevant the experience of those not permanently in this category, emphasizing again that the boundaries between our categories are soft rather than hard.

Compared to the other activities described so far in this chapter, supplying milk to a collection centre entails some important differences. This is perhaps best illustrated by comparison with local sale of milk, which does not demand much more from the household than making it known to the neighbourhood that milk is available and being around to measure it out, activities quite compatible with the others engaged in by the household. On the other hand, supplying the collection centre makes demands on the household's time, energy and finance. The Dairy Act stipulates the need for a milking shed, a structure which is sometimes more sophisticated in materials and construction than the producer's home. Milk has then to be carried, often over sizeable distances for those with basic transport or none at all, to the collection centre within specified time periods. Income from sale of milk does not trickle in as milk trickles out, but is lumpy and discrete, to be collected as a cheque from the collection centre and then turned into cash before it can be assimilated by the household. It is on these three aspects, viz. milking sheds, transport of milk, and income from the collection centre, that we shall focus in this section.

Milking sheds, after the DDP's innovations within the Dairy Act, can be either individual or communal. We shall first review individual milk sheds, themselves quite heterogenous, ranging from



the handsome building constructed by the Chikwaka entrepreneur discussed under 7.4 above, to some touchingly fragile structures. Individual milk sheds are in fact generally preferred to communal ones, for understandable reasons, since people would rather milk in their own backyards than lead a cow some distance and then perhaps wait for a milking section to become vacant. However, it is generally agreed that communal sheds are the only possibility for those without the resources to construct a shed of their own.

Because there was so much variation in the structure of milking sheds over the three areas studied, it is hard to put down an exact sum as the cost of the shed. At one extreme, there was the woman with one of the few milking sheds in the Honde Valley who said that she could not remember actually spending money on it. The extension worker gave her the plan, her grandson in Form 1 who learned building in school constructed the shed, they moulded the bricks without hired labour, they used mud instead of cement, a bag of cement which had been lying around for some years was used for the floor, and metal sheets from an old building constituted the roof! This woman's socio-economic position, however, was somewhere in the middle ranges, and it should be remembered that not all households happen to have bags of cement or metal sheets lying around, or command the necessary social capital that brings unpaid help to mould bricks. At the other extreme, a household in Marirangwe spent around \$1000 to construct their milking shed, a sum they remember because they sold two heads of cattle in order to realize it. (Note: \$1000 is not the upper limit spent on a milking shed, but has been chosen as representing the largest amount spent on a functional structure.) Other households gave us estimates varying between these two, depending on the materials used, the sources of these, and the building skills and labour available. Overall, however, the structures at Marirangwe appeared to cost more, possibly because capital was less scarce, notions of status more in evidence, and inspectors more demanding.

It should also be noted that the categories of individual and group milking sheds need not be mutually exclusive. The shed in the Honde Valley that we described had some group connotations, in that a neighbour who was related to the owner of the shed said that once she acquired cattle she intended to use that shed until she had her own, since she had helped with the moulding of bricks and the building of the shed. A somewhat different situation was found in Marirangwe, in a household which could not supply milk both for want of a shed and of transport. The solution they arrived at was to transfer three cows which were in full lactation to the farm of a supplier to the collection centre. The supplier maintained these cows for the peak period of their lactation, milked them in his shed, supplied the milk to the centre, and paid the owner a certain sum, the details of which we were unable to ascertain but which presumably represented the value of the milk less the cows' board and lodging, and a commission. One of the entrepreneurs at Marirangwe also used such an arrangement to channel the milk from his herd to the collection centre in the period while he negotiated for a local farm, since he acquired the herd before he had a milking shed.

Such cases, however, were the only manifestation of group sheds in Marirangwe, the large and dispersed nature of farms precluding any more formal arrangement. Communal sheds, thus, seemed more suited to demographic patterns in the communal areas, almost by definition. In the Honde Valley, group sheds appeared to be sited on individual holdings (unlike Chikwaka where they were located on communal land allocated by the local authorities with a site then selected by Dairy Services). Individuals who offered their land for location of a group shed had apparently traded off privacy and the produce of that land for a building. Some voiced the opinion that gradually others in the group would build their own sheds, so that the group shed actually represented group work on a private shed from which the group would benefit in the short term and the owner of the land in the long term, again fitting into a category in between individual and group, as with the individual shed in the Honde Valley described earlier. However, if the DDP did provide cement and roofing for group sheds (as in Chikwaka), any long term conversion into a private shed could raise difficult questions. At the time of our fieldwork, no group sheds had as yet been constructed. It will be interesting to observe the group dynamics of these sheds when they materialize.

The project area with the longest and most ramifying history of group activity in general and group milking sheds in particular is of course Chikwaka. As we have already discussed some important questions with regard to Chikwaka's group sheds in 6.2, we will here only note some of the differences



between groups, because these differ markedly in coherence and activity. Some have an existence long pre-dating the local dairy project, such as the endearingly named Try Again group which sews uniforms and has won choir competitions. Try Again has an all-female membership, and a (male) liaison worker attached to the DDP project commented that group activity is not new to women, but it is to men. The dairy groups tend to be mixed, although women's groups are now being formed within these, with DDP encouragement. In any case, women appear to predominate in most dairy groups, but then many households in Chikwaka are female headed, with husbands employed in town. Strikingly, many groups have a significant component of members without cattle, sometimes as many as half the total membership, sometimes even more. We were told that the men in dairy groups tended to be cattle owners, but we were not able to check on this.

The information from the project's liaison workers was that there were some ten groups in existence, and that four more were in the process of being formed. The number of members ranged from ten to sixteen, with twelve a common number. The basis for organization seemed to be the village of residence. Some dairy groups had emerged from existing group activities and networks, others had been formed anew. We were told that five groups had finished constructing their milking sheds, and that another three sheds were nearing completion. Others were still at the stage of moulding bricks. Each group had its own saga of how members and resources were mobilized, how building skills had been recruited and how problems were overcome or not overcome. In some cases these problems were technical, in others they were human. Certain groups had organized kraals, silage pits and plots of legumes as well as milking sheds, others had not. It appeared that groups in the Gutu ward were doing better than those in the Mwanza ward, but as suggested in 6.2, this could be as much the result of the project's history as of local circumstances.

Whether the household attempting supply of milk to the collection centre used an individual or a group milking shed, it would then have to consider the problem of delivering milk to the centre over some distance and over rough roads. In Marirangwe, most members had some form of transport. The largest suppliers delivered milk with their tractors or in their cars. Others used bicycles, some keeping a special bicycle for the purpose and not allowing it to be used for any other activity. The reason for this care was brought home to us when we heard of a supplier whose farm lay some 13 kilometres away from the collection centre and who had to discontinue delivering milk because his bicycle tyres wore out. At the time of our fieldwork he was looking for replacements and in the meantime selling milk locally. Certain suppliers had in fact invested some of their income from milk in a new bicycle, to ensure continuation of this income. Some households sent their milk to the centre by wheelbarrow. Among the non-suppliers in our sample, we noted that distance from the centre and the associated transport problems could act as obstacles to crossing the threshold of supply, since in two cases milking sheds were almost ready.

In Chikwaka, the five suppliers in our sample had solved this problem in various ways. One lived a short walk away from the collection centre, which was just as well, since this was a widow with no transport but a broken bicycle, and with very small children. Another sent a labourer to deliver milk, taking a bus part of the way and then walking. What was perhaps the most affluent household of the five kept four bicycles in addition to larger vehicles, and two bicycles were put aside for delivery of milk by one of the household's two permanent labourers. A fourth household used a motorcycle for delivery twice a day. In this case, sale of milk was intended as a major source of income, and a young male relative who had been brought in as dairy manager drove the motorcycle to the centre. The final case was of a woman who had joined a group delivery system whereby turns were taken to carry milk to the centre by bus.

It is also interesting to consider how some of the ex-suppliers to the Chikwaka collection centre had delivered milk. One household had delivered milk by bicycle until it broke down. The bicycle ride had taken an hour, and when they attempted to deliver milk on foot, the milk turned sour and was refused. Other ex-supplier households had taken milk to the centre on foot, but probably over shorter distances. One man had walked for an hour each way, and another for three hours, although the latter sometimes sent his labourer. Members of a household which was part of a group delivery system where milk was usually delivered by bus, preferred when their turn came to walk two hours both ways in order to save on bus fare, money being especially tight for them with five young children.



While all this might suggest that delivery problems discouraged these members from continuing supply, it should also be remembered that the flow of milk within these households was less regular than with those who continued to supply the centre. Thus, when these households had what they considered a reasonable quantity to deliver they were prepared to go to considerable trouble to reach the centre, but did not bother when yields were low, planning to resume supply when milk production increased. Again, this relates to the resource base of a household, which affects both resources for producing milk and resources for transport.

We come finally to monthly income from milk, that ultimate incentive which motivates households to try and surmount all the thresholds that we have described, where they might rest content with attaining ownership of cattle, or with some milk for domestic consumption, or with a trickle of money from local sales of milk. For most households the prospect of a monthly consolidated amount of income — “like a salary” — was an attractive one.

What did households do with this monthly milk money? Under 6.4, we have suggested the different use that the entrepreneurs, diversifiers and farmers made of this income in Marirangwe. Those in Chikwaka who seemed closer to suppliers in Marirangwe, than to their neighbours, used their income in similar ways. The largest supplier, who supplied more than 30 litres a day in the flush season, fed his income from milk back into his dairy enterprise, his largest cheque from the centre amounting to \$375 and his smallest to \$250. He planned to repay an AFC loan for purchase of high-yielding cows from milk income after the cows arrived. The second largest supplier was actually more affluent than the first and did not need loans to purchase cows. The monthly income from milk was used for improvements to his land and buildings, and this income ranged from \$400 to \$78.

The other three suppliers in our sample used some or all of their milk money to meet household expenses on tea leaves, bread, sugar, oil and other items, which had to be purchased from outside the household economy and for which therefore ready cash was required. These three were all women, and we should here perhaps quote another woman who had supplied the centre for a few months, who said that with a regular monthly cash income from milk a woman could meet such household expenses herself and did not have to wait on her husband in Harare to provide some cash. Local sales also provided money for these purposes, but in an irregular, disaggregated and unpredictable flow, while the point was that with a lump sum a woman could plan expenditure and perhaps even buy some items more economically in bulk. The largest amount received for milk by any of these three suppliers was about \$60, and the smallest \$15.

One ex-supplier's monthly milk income had ranged from \$16 to \$5 over nine months, for which amounts he or his wife had walked for two hours once a week to and from the centre with the group milk can. When asked if the centre's price of 49c for a litre of milk allowed much profit, this couple replied, “We only looked at the money. We didn't think of profit.” Where profit is more carefully considered, among more regular and large scale suppliers in Chikwaka and Marirangwe, there is some demand for a higher procurement price, but also an acknowledgement that some profit and some cash income is better than none.

There was also some effort to save money from the monthly milk income among the small but regular suppliers, and this was another reason advanced in favour of lump payment every month, that it facilitated saving. Although some respondents were keen on direct payment in cash and some indeed averse to cheques, others said that payment by cheque would make saving easier. Cheques held other connotations too. “Cheques are respectable,” said a respondent in Marirangwe. “I would like to have a cheque in my name,” a woman in Honde Valley said of a milk income that was at present very far away, and warming further, added, “I would like to be seen in the bank cashing a cheque.”

## 7.6 HOUSEHOLDS, ACTIVITIES AND DAIRY DEVELOPMENT

What we have attempted to do so far in this chapter is to move from grouping households in a static table (Table 7.1) to representing them more dynamically, as engaged in a series of activities which are in turn interspersed between a number of thresholds. Each household can be seen as attempting to



maintain its position and not slip back over the last threshold it has scaled, at the same time hoping to surmount the next threshold in the immediate or indeterminate future. We have thus not only a series of activities but a series of households, all fifty six of those interviewed during fieldwork, distributed at various points at, between and over thresholds, engaged in the activities that will prevent them from sliding back and may help them move forward.

Our focus in this chapter has been these households, not the DDP, because in the last chapter we have already reviewed DDP efforts in three project areas. Here we have considered how various households operate within their environment, of which the DDP's projects are at present a part. We have underlined some of the problems of these households, but here have not often suggested how the DDP can address these problems, since we have already made some recommendations in Chapter 6. What now remains is to put these two perspectives together, and to try and integrate our assessment of the DDP's efforts with our assessment of various households' needs. This we shall attempt to do briefly in Chapter 8.

In the final section of this chapter, we provide an example of how an issue which cuts across areas, households and activities can be analysed. The subject chosen is the effect of the DDP's development strategies on female involvement in dairying.

## 7.7 FEMALE PARTICIPATION

Our main argument here is that female participation must be viewed within the wider context which we have endeavoured to describe in Chapters 6 and 7. Thus we will not present new descriptive and analytic material here, but will only highlight some points that have already been made, and provide a few additional issues for discussion.

Our contention has been that a "community" is not made up of homogenous units and we have emphasized the range of socio-economic differentiation that we came across between and within the various categories of suppliers, sellers, milkers, non-milkers and non-owners. We would like to reiterate that such differentiation is also found within the category of "women". For example, there appeared to be considerable difference in the lifestyle and security of the female suppliers in the Chikwaka sample and of the women without cattle.

One supplier's husband was a schoolteacher who had acquired three crossbred cows from commercial farms. A labourer tended the 26 livestock units in her herd and delivered milk to the collection centre every day. Her two ox ploughs were hired out with some of her eight oxen, and had brought in an income of some \$100 in the previous agricultural season. After the previous harvest, she had sold around a hundred bags of maize to the GMB. Woodfuel was loaded on her scotchcart from some convenient source every two months. The household's diet was varied, with urban items like rice and soup in addition to the traditional *sadza* and its accompaniments. The children in the house were given milk whenever they wanted it.

By contrast, one of the women without cattle in the sample had recently been widowed, and had six school-going children. Her husband had never been in employment. The household had no cattle, and their maize, cultivated with the plough and oxen of a relative, yielded only three tins from 1.5 acres because they had no manure of any kind to apply. She was dependent on a neighbour's well for water. Finding woodfuel was very difficult, and she often went searching for stumps and twigs. She also gathers mushrooms and termites to supplement the family diet. She had once run a vegetable stall in the local market, but had forfeited that by an absence when she was recovering from a caesarian operation. She now exchanges some of the vegetables she grows for green mealies, and boils these in a big drum early in the morning while she works in the fields, then sells them through the day to travellers on the long distance buses which stop at Juru. The money she gets is partly reinvested in green mealies, and partly used for household needs. She does buy milk from the collection centre's vendors, and finds this better value for money than the Sterimilk which she earlier purchased. If she does not have money for milk, she carries the previous day's milk over by boiling it. She was one of those who asked us if the collection centre could manufacture milk products as well. She had



gradually dropped out of the various groups she had once belonged to, ashamed of her inability to contribute.

Such case studies lead us to suggest a developmental focus on poor and socially marginal women rather than "women" as such — a hybridization of Norway's assistance focus to women and the poorer sectors of society. If at present the DDP's production activities have little impact on such cattleless households, its local sales of milk have contributed to consumption within these homes. Again, if milk processing is to be attempted under the DDP project, perhaps the employment of such women could be considered.

In the remaining paragraphs of this section, we shall consider how the evidence from our fieldwork relates to a widely debated question, namely how the formalization/commercialization of dairying affects female involvement. We should make it clear at the outset that our evidence does not unambiguously support or counter the proposition that as household trade in milk moves from informal to formal, from the private sphere to the public, and from the kitchen door to the collection centre, women lose access to income from milk.

Certainly we had some evidence of this happening in the course of our fieldwork. In 6.4 we have already noted that a DDP document on Marirangwe mentions some dissatisfaction among suppliers' wives at losing control over income which was in their hands when milk was sold at the farm. When we interviewed the only female supplier at the Marirangwe centre, a widow who is on the managing committee and who also happens to be a local politician, we asked her opinion on this issue. She agreed that some wives were dissatisfied, and said that she had begun telling local women that their hope of income lay in pigs and poultry, not cows.

In 7.4, we mentioned a milker household which occasionally sells milk locally when several cows are in lactation. At present local sale was in the hands of the women, and the male head of household did not know what the income was, explaining that this was women's money and that he handled the income from sale of their garden's vegetables. However, he was quite explicit that if the household started supplying the collection centre, he would then take charge of the income, since it would no longer come in a small daily amounts but would accrue as a lump sum.

A conversation with one supplier will help demonstrate how commercialized dairying can erode female income indirectly as well as directly. When discussing the income the household received from various crops, the supplier said that we should ask his wife about the sale of groundnuts since tradition decreed that those were hers to dispose of. A little later, while talking about area planted with fodder legumes, he said that they were planning to increase that acreage by reducing the land under groundnuts!

Yet what has been described so far is not the entire picture. One of our visits in Marirangwe was to a household which had not as yet begun supplying the centre and where the wife at present carried on a brisk morning trade in milk, even supplying a local creche, and made around \$20 each month. She was present while her husband discussed plans to send milk to the centre, but when asked whether this would upset her business, she displayed no chagrin at all and said that they would then bank the cheque in order to save for two Jersey cows, ownership of which had long been her dream. Her husband said that the income from milk would still be hers.

Another respondent at Marirangwe informed us that when the monthly milk cheque was cashed, husband and wife divided the money between them, she taking three-fourths for household expenses and he keeping one-fourth to spend on the farm. A third said that every month the household budget was discussed between husband and wife. Both the last statements were made in the course of the interview, without any leading questions asked about female access to income. A female respondent in the Honde Valley said she would prefer payment for milk by cheque, and when we asked whose name should be on the cheque, replied that it would probably be her name since she had registered for membership. She then smiled and added, "But it will be our money and we will use it together." Another memorable response came from a second woman in the Honde Valley. We had asked her if her husband had objected when he came home for the weekend and heard that she had joined the



dairy project. She replied that their relationship was such that she could take decisions on her own if necessary and he would understand. It would be wrong then for an agency focus on women to assume, and thereby perhaps provoke, a confrontational situation within households.

Also, more broadly, we came across traditions of separate incomes for spouses. In one polygamous household in Chikwaka, the grain harvested each year was divided into three shares, for each of the two wives and for the husband. In the last season, each wife had received 40 bags each, and the husband 55 bags. Each party had contributed 5 bags for home consumption, and then sold their share to the GMB. More specific to dairying was the situation in a Marirangwe household, where the wife had fallen out with her entrepreneur husband when he had decided to supply milk to the centre. Finally, she continued to sell milk locally from her beef herd, while he installed a dairy herd with a manager who delivered milk to the collection centre. In this Marirangwe household, therefore, we have the piquant situation of an entrepreneur and a farmer under a single roof and married to each other!



## CHAPTER 8: FIELDWORK CONCLUSIONS

In this concluding chapter, rather than summarize the various points put forward in the last two chapters, we will return to the questions raised at the beginning of Part III in Chapter 5, and answer them as briefly as possible, in order to round off our discussion.

Our first question concerned the relationship between dairying in the three agricultural sectors of Zimbabwe, namely the large scale and small scale commercial sectors and the communal sector. The households in our sample ranged from the widow cultivating 1.5 acres in the Chikwaka communal area to the urban entrepreneur who invested in a large scale commercial farm of some 8000 acres near Marirangwe. The widow had no cow and the entrepreneur had 41 in his dairy herd alone. Both were participants in DDP projects. There can be different views on this situation, but as explained in 6.4 we consider it necessary for long term integration that the DDP cover as wide a spectrum as possible. If the prospect of urban entrepreneurs benefiting from rural development projects appears unattractive, this may be balanced if the milk generated by these entrepreneurs is channelled to the neighbouring communal areas instead of further swelling the procurement of the DMB, again as suggested in 6.4.

However, that the DDP's activities (until now) took place under the DMB's umbrella has helped considerably in local acceptance of these activities. The DDP seems not as yet to be known by its name or its acronym in the households we interviewed, for whom the local project was run by the "Dairibord". Apart from the ease and catchiness of the latter name, and the clear associations with milk, the usage seemed to serve some feelings of inclusion, for the logo of the local project was the same as at the shopping centres in the city's glamorous suburbs, and on the vehicles which collected milk from the large farms. As one of the DDP staff remarked, it was as though after decades of neglecting the communal and small scale farming areas, Dairibord was at last actually making an effort to "nourish the nation". Although the integration between the DMB and the DDP has so far been mechanical rather than organic, and this formal integration is now being sundered, perhaps some decades from now Zimbabwe will finally have a dairy board to which all producers and consumers have equal access.

Apart from any interrelationship achieved within our sample, or through the positioning of dairy organizations, it was clear that the three sectors were not cut off from each other. Although our small study could not adequately study their relationship, it was exemplified in as basic a feature as the presence in the small scale and communal areas of cattle purchased from large scale commercial farms. That all interaction between the three sectors need not be formal was illustrated by the wily householder in Chikwaka who told us how his cattle had gradually acquired Afrikaner blood through a strategy of trespass and mingled grazing on nearby commercial farms!

Our small study sufficed however to confirm that the relationship of the three sectors was one of hierarchy and technological distance, especially between the large scale sector and the other two, but also between these latter. It seemed to us that hierarchy would not be reduced by lessening the technological distance, if the dairy technology used was Euro-American, for this would only lock hierarchical structures more firmly into place. In 6.2 we have discussed the unsuitability of such technology to many households in the communal areas, and regretted the present lack of an adequate science of small scale dairying. In the context of the "We can do it too" message of Marirangwe mentioned in 6.4, it appears a pity that the message conveys that it can be done essentially by adopting the dairy technology of large scale farms, because this suggests that those without the means to do so will have to remain spectators to success. We regret the absence of alternative models of success which households with fewer resources might consider within their reach.

Our second and third question in 5.1 have already been answered descriptively in chapters 6 and 7. The second question referred to various differences between areas selected for dairy development projects. The answer can be summarized by pointing to the different distribution in these three areas of the categories of suppliers, sellers, milkers, non-milkers and non-owners, as mentioned in 6.3, 6.4 and 7.1. This difference in distribution arises out of a combination of circumstances, and results in the three areas themselves being located on three different thresholds of dairy development. No doubt



study of the other project areas will reveal further variation, especially as we move out of Natural Regions I and II.

The third question pertained to dairying in the context of other productive activities, and this has been illustrated both in terms of area (Chapter 6) and households (Chapter 7). If we have a summary statement on this matter, it is that dairying appears to be complementary or supplementary to other productive activities rather than compensating for their absence. Dairying seemed to be grounded in a firm agricultural base and fed by finance from urban and other employment. The use of dairying in poverty removal programmes therefore needs very careful conceptualization and implementation.

Our four remaining questions focused on the DDP rather than on the study areas themselves. The first concerned the developmental strategies adopted by the DDP in various project areas, and any difference in the DDP's relationship to Chikwaka (the programme's "first child"). In 6.3 we considered and to an extent revalidated the DDP decision to use zero grazing or limited grazing strategies in the Honde Valley, since this represented working along the lines that local residents seemed already to have moved towards under prevailing circumstances. We wondered however whether pasture development strategies alone would suffice to nurture and restore herds which had been badly affected by war. The Honde Valley case suggested the need for a careful assessment of the situation in each project area, and reaffirmed the DDP choice of an experimental rather than a replicative approach.

We noticed though a certain diminishing of the breadth and momentum of DDP activity in the Honde Valley when compared to Chikwaka (6.3). The reason we felt lay with the DDP, which we did not study directly, rather than in the Honde Valley. On the one hand, it could pertain to the human and material resources which the programme presently has at its disposal, and whether these are at the moment somewhat overstretched. On the other, Chikwaka could represent the "first project" syndrome, wherein an organization sinks tremendous developmental energy and impetus into its first effort, and later proves unable to fully recapture the freshness and intensity of that experience elsewhere. Our feeling was that both these factors were responsible for the difference in the programme's thrust in Chikwaka and the Valley. In 6.4 we have described what we felt was some ambiguity within the DDP to the Marirangwe project, and our own opinions in the matter.

The last three questions move from differences between project areas to project activity within any single area. Two questions relate to the DDP's choice of a community development approach, one to the consequences of intervention and the other to the processes of intervention. We questioned whether communities were as homogenous as they might appear from outside, and if they were heterogenous, what differential consequences the DDP project would have for various local strata and interests. During fieldwork, in each of the three study areas, we noticed some correlation between socio-economic position and degree of benefit from the DDP projects in the case of production activity. However, in Chikwaka, it could be argued that some (literal) trickle down of consumption benefits took place through the local sales of milk under the programme.

Our other question pertained to the DDP's efforts to work through processes of community decision making. While this is certainly a change from top-down strategies of development, we queried whether it might militate against any major restructuring of positions and opportunities within the community. Our findings here were rather mixed. In Chikwaka, certainly there had been some consequent reinforcement of existing power relations. However, the DDP had managed to staff the milk centre with local personnel who did not own cattle, and seemed to have succeeded in attracting a constituency from among the cattleless, some of whom sat on project committees. Perhaps the DDP will have to reconsider this whole question, acknowledge that at times its developmental perspective will not coincide with the views of those ascendent in the community, and identify and listen to subordinate voices (as it is already doing to some extent). That is, while we endorse the DDP's commitment to community decision making, we suggest that the DDP further think through some issues within this.

Again, we found the DDP's position that it is a catalyst rather than any integral element to be less than realistic. The role of a catalyst implies that the other necessary elements are already present and only



require stimulation to new forms of interaction. In actual fact, the communal areas and even the small scale commercial farming areas do not appear as yet to have all the ingredients needed for dairy development. It is not only that material inputs are lacking, as indeed they are, and that some agency will have to co-ordinate the mobilization and distribution of these inputs. It may also be that wider perspectives on development are required, to be offered to the community, and that this will affect the introduction of inputs critically. If other official agencies do not as yet share the DDP's developmental perspectives, then the need for the DDP to carry on its work, while exchanging ideas with these agencies, continues.

Our last question asked whether the sort of broad based development that the DDP seemed to have in mind could be tied to a particular commodity, particularly one like milk which is difficult to handle and beyond the scope of the poorest households to produce. This question has an odd pertinence at the moment, as the DDP moves out of the DMB and into ARDA. Our answer is once again mixed. On one hand, part of the programme's success at Chikwaka can be attributed to the fact that its activities did not confine itself to milk. Again, we have suggested that in the Honde Valley the DDP might attempt the co-operative marketing of vegetables and fruit while working to consolidate household herds in preparation for local marketing of milk. Yet, on the other hand, if the DDP were to mutate into a general broad-based development programme, there would then be no agency that addresses itself specifically to dairying in the communal and small scale commercial farming areas. Not only is such an agency necessary to contribute to the development of cattle, an important productive component in these areas, it also has a major role to play in making milk and its products available to local households. We would suggest therefore that the DDP continue as it has presented itself in Chikwaka, as a dairy development agency which works both in dairying and in development more generally.

#### *Summary Statement*

This report has placed emphasis on constructive criticism assuming this to be more useful perhaps than approval in an assessment of this kind — both for the donor and the DDP. However, development work such as DDP is engaged in is often a very isolating experience; not only can one not please all the people all the time, very often it appears one can hardly please any of the people any of the time. DDP's jury includes a whole range of interests all of which seek to be heard. The social strata identified within communal areas themselves express very different needs, the stratification institutionalized in the dairy industry causes other obstacles, sympathetic and less sympathetic potential donors often have their own agenda, and bureaucratic scepticism and technocratic hostility have to be canvassed. It is to be hoped that DDP will now get the considered support it needs from Government and donors so that its energies can be focused on development, confidence can be sustained in project areas and staff morale upheld.

After our fieldwork, we can only endorse the DDP's open, flexible and experimental approach, and its principle of dairy development in the rural areas for the rural areas. We feel such a programme, as stated above, definitely merits support. However, precisely because of what it attempts, the DDP will have difficult questions to address, some of which have been raised in this report. What it has embarked on is a learning experience for other parts of Africa and Asia as well as for Zimbabwe.



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- the DFP project staff: the three senior studies Mr. P. Jones and Mr. M. S. M. Mashonaland and Mazhar Shah (senior study); Mr. W. Magoni and Mr. T. Mubvumba; Mr. J. Mubvumba; Mr. V. Mubvumba; Mr. V. Mubvumba; Mr. P. Mubvumba and Mr. T. Mubvumba at Chibvata; Mr. S. Mubvumba; Mr. S. Mubvumba; Mr. S. Mubvumba and Mr. P. Mubvumba at Hwange.
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**PART IV**

**THE DDP PROGRAMME**



## CHAPTER 9: DDP OBJECTIVES, STRATEGY AND SCOPE

### 9.1 OBJECTIVES

The objectives of the National Dairy Development Strategy (NDDS) of October 1987 were recorded in Chapter 2. These reflect a concern for balance between commercial and peasant production and for development of dairying as a whole. Overall, however, the emphasis of the document is on bringing new producers into the sector.

The major issue to be addressed is the disparate supply of dairy products between the urban and rural people. The principal means of overcoming this will be the promotion of small-scale dairy development in the communal, resettlement and small-scale farming areas. It is emphasized that dairy production in the rural areas is to be used as a developmental tool primarily for the benefit of the most disadvantaged sector of Zimbabwe's population, and particularly for the benefit of women and children. It is expected that this development will generate a number of supplementary benefits all resulting in an improvement in the quality of life of this sector. (p 3)

Furthermore, the developmental aspects are identified as the primary justification for the DDP strategy.

The benefits in terms of development, the spin-off effects of co-operative organization, resource management, health and nutrition and a host of other socio-economic aspects are difficult to quantify but indeed are the primary reason for such a strategy. It is of particular concern that this should be a real benefit to the women and children who are by far the majority of the rural population.(p 9)

These statements strongly reflect the thinking which has developed within the DDP, but it is significant that they have been discussed, and endorsed within a formally accepted strategy document by the Dairy Programme Co-ordination Committee (DPCC). This committee represents all the agencies participating in dairy development, including the organization representing large-scale commercial dairy farmers (NADF).

The most recent and comprehensive statement by DDP of its objectives is contained in its July 1988 *Perspective Plan Period 1988-97, with Detailed Proposals for 1988/89-1990/91*, henceforward referred to as the DDPlan. Two levels of objectives are specified in DDPlan:

#### *Objectives at the micro-level:*

At village level, the objective of the programme is to introduce a ripple effect, through milk production used as a tool for development, making a positive contribution to the following:

- increased local per capita milk consumption;
- increased incomes;
- employment generation;
- cash flows in rural areas;
- co-operative development;
- hygiene and nutrition;
- rural industries;
- strengthening bargaining power and decision-making;
- stimulating infrastructural development;
- conservation, through improved utilization of resources including land, water, crop residues and livestock in general;
- maximizing the potential productivity of farming systems.



### *Objectives at the macro-level:*

At the macro-level, the programme's objectives are to contribute towards those of the Government, by stimulating development via agriculture and integrated rural development through:

- a major effect on the productivity of the national cattle herd, thereby maximizing the potential of an already existing resource;
- a direct effect in improving conservation and proper management of the grazing lands, which in turn contributes to the national policy of land use planning in the communal areas;
- enhancing nutritional levels in the rural areas and the stimulation of improved health and sanitation practices;
- working towards fulfilment of Government's intentions to integrate the two farming sectors (commercial and communal), by drawing the small-scale producer into the dairy industry;
- looking towards a reduction in the national shortfall between the supply of and demand for milk within a framework of national self-sufficiency;
- the development of co-operatives, which are central to rural development policy;
- responding to the directive to parastatals to take an effective role in development and to be meaningful instruments of change in the country's transition to socialism;
- moving towards the situation where the people have equal access to milk, a national good.

It is evident that the above objectives, at both levels, are very closely aligned with the overall objectives of Norwegian development assistance. Norway's special concerns with the environment and health, with development reaching the poorest segments of any community and with the ultimate recipients themselves making decisions about how projects should be designed and managed are closely mirrored in DDP's objectives and approach.

## 9.2 PROGRAMME ACTIVITIES

The conceptual framework of DDP has already been described in some detail in Chapter 2 and elaborated upon in the fieldwork report in Part III. In operational terms, there are a number of specific steps, which together form the framework of the programme. According to DDPlan, these include:

- selection of suitable areas with observed potential for, and expressed interest in, dairy development;
- mobilization of the population whilst simultaneously investigating potential and identifying investment and training needs, as well as establishing links and co-operation with relevant agencies at the local level;
- provision of relevant training;
- investment in and construction of facilities (dip tanks, fencing, milking sheds, milk collection centres, etc);
- assistance to farmers to obtain credit where appropriate;
- establishment of milk collection and marketing structures;
- provision of on-going assistance in respect of production, management and technical aspects of dairying;
- mobilization of a co-operative or other local management structure.

The need for flexibility in applying this framework is stressed:

Whilst this operational framework provides the broad outline of the model of the programme in general, it is used flexibly. Adaptations are made depending on the local needs



and conditions in each individual area. Indeed, the need to involve the full participation of communities in shaping and designing specific projects for their own areas implies that individual projects will differ from each other. The types and combinations of direct and indirect benefits will also vary between areas. In following this approach, the DDP is also in step with current Government policy on agricultural development, which requires that each area be viewed in terms of its own needs, resources and potential.

If the programme genuinely seeks to respond to popular needs and interests without presuming to know them, the process will of necessity be slow. However, the inherently slow rate of implementation is aggravated at the moment by financial uncertainties which undermine DDP's confidence in dealing with communities. Comments on this point and on the scope of programme activities are given in Chapter 11 below.

### 9.3 PRESENT GEOGRAPHICAL COVERAGE

Despite these difficulties, DDPlan reports that by mid-1988, in addition to Chikwaka, Marirangwe and Honde Valley, seven other projects had been investigated and were at different stages of implementation (see Map 9.1). An eleventh and twelfth are planned for Matabeleland and Masvingo:

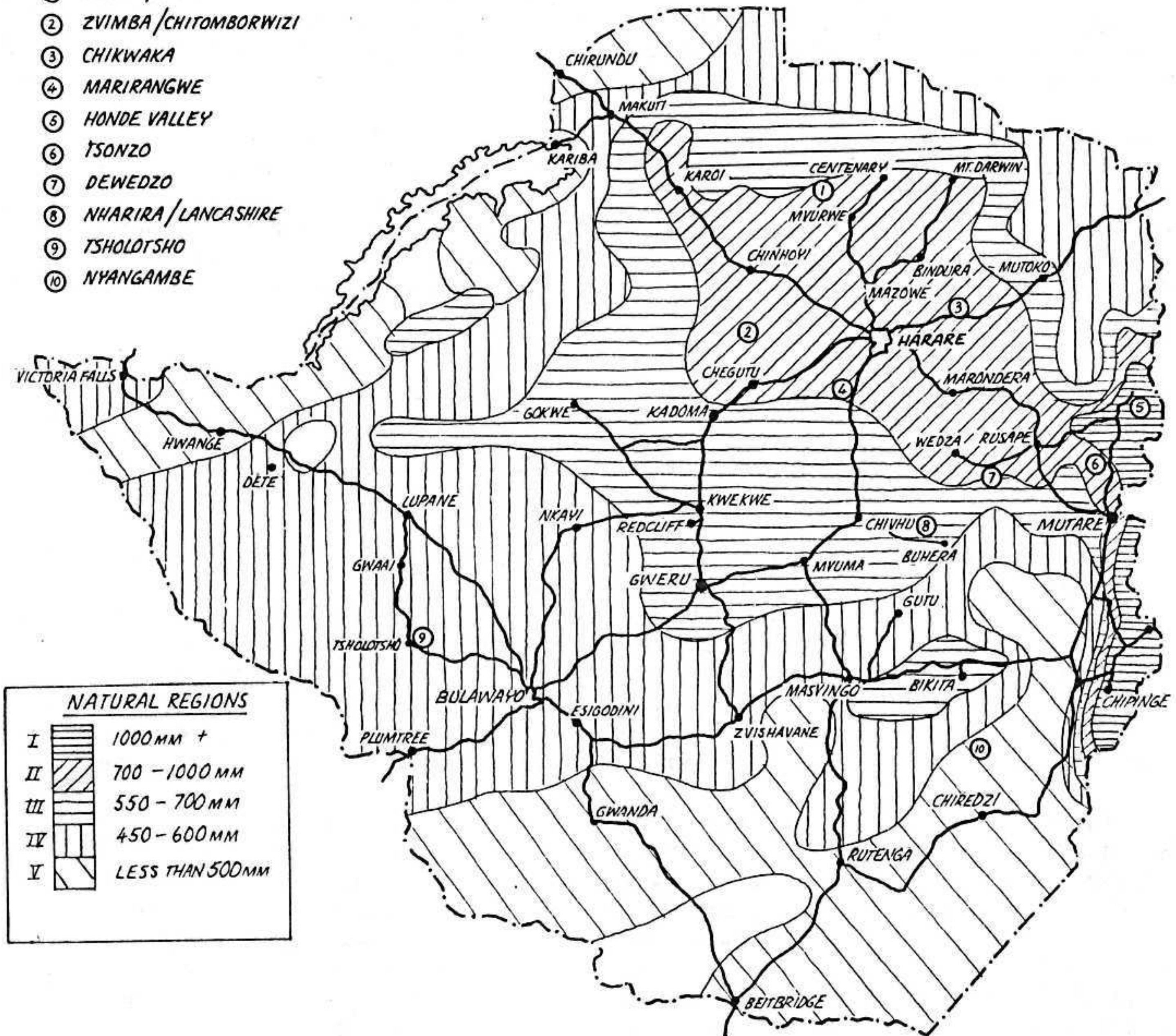
- Producers in Tsonzo small scale commercial farming area, in Manicaland, started producing milk in May 1988.
- Producers in Nharira and Lancashire, in Midlands, are combining to build a milk centre, and some 15 group milk sheds are sited, with the Ministry of Water and Energy Development sinking boreholes at each site.
- In Zvimba/Chirau and Chitomborwizi, Mashonaland West, three associations are combining activities at Murombedzi, and are preparing to establish a fairly intensive production base, combining grazing areas and fodder grown on plots.
- Guruve in Mashonaland Central will be the next area of implementation.
- Tsholotsho in Matabeleland and Nyangambe in Masvingo are under investigation.

It is significant, at least as an indicator of perceived viability by the communities and of DDP's good reputation, that in almost every area where the DDP has started to work, neighbouring areas have expressed a strong interest in the programme and requested similar assistance. It has not been possible with limited resources for the programme even to attempt to take on all requests, but wherever possible the necessary advice and assistance are provided.



DDP PROJECT AREAS

- ① GURUVE/GOTA
- ② ZVIMBA/CHITOMBORWIZI
- ③ CHIKWAKA
- ④ MARIRANGWE
- ⑤ HONDE VALLEY
- ⑥ TSONZO
- ⑦ DEWEDZO
- ⑧ NHARIRA/LANCASHIRE
- ⑨ TSHOLDTSHO
- ⑩ NYANGAMBE



NATURAL REGIONS	
I	1000 mm +
II	700 - 1000 mm
III	550 - 700 mm
IV	450 - 600 mm
V	LESS THAN 500 mm



# CHAPTER 10: INSTITUTIONAL STRUCTURE AND POLICY FRAMEWORK

## 10.1 INTRODUCTION

To serve the geographical spread of its operations as described in the last chapter, DDP has expanded its staff and organization at project, provincial and national levels. It perceives its role as being primarily one of mobilization and co-ordination, as well as training and assistance in the provision of shared infrastructure. It would be impossible and, from many points of view, undesirable for DDP to have a massive structure which could implement all projects in their totality; the issue which this chapter seeks to address is whether the other institutions involved provide an adequate institutional framework for dairy development and whether DDP has sufficient capacity to effect the necessary co-ordination. The question of the necessary complementary agricultural policy framework, particularly in respect of prices, is also addressed.

In order to put these issues into perspective for Zimbabwe, the next section, drawing on material presented in Chapter 2, lays out a general framework and identifies the institutions which fulfil the various roles in Zimbabwe. Section 10.3 then describes each of the major agencies in turn. Finally, in Section 10.4, the position and structure of DDP is outlined and some points made regarding its status. Particular attention is given to the transfer of DDP from the Dairy Marketing Board to the Agricultural and Rural Development Authority (ARDA), a move which was made during the carrying out of this study.

## 10.2 INSTITUTIONAL AND POLICY GUIDELINES FOR DAIRY DEVELOPMENT

From the discussion in Chapter 2, the general prerequisites for sustainable dairy development may be summarized as follows.

Firstly, the commercial characteristics of milk, which make it such a difficult product to market, have led to a special involvement of producers in the marketing of this product. This appears to be the lesson of the development of dairying over the last century in all those countries that are now well established in dairying. Furthermore, in the circumstances of those countries now embarking upon development projects, there would seem to be no other route. It would appear that neither privately owned nor Government operated systems are really satisfactory alternatives. Additionally, they do not offer the same degree of commitment as does an organization owned and operated by the producers. In Zimbabwe, the most obvious form for a producer association to take is a co-operative.

Secondly, a price at a level to encourage production will always be necessary otherwise the development of dairying will not proceed. Producer-orientated, rather than consumer-oriented price policies are in the end inescapable; while not presently a problem for peasant producers, the consumer subsidy (linked to statutory price) on milk in Zimbabwe cannot be allowed to stifle peasant production in the future. In the establishment of such prices, some regard may have to be given to the possibility of imports if the Government proceeds with a dismantling of the import allocation system and private importation of dairy products becomes possible. In the organization of dairy development, a measure of protection against imports and particularly against the indiscriminate reconstitution of skim milk powder and butter oil is desirable.

Price and import regulation will be matters always within the purview of Government in most developing countries as indeed they are in the well established dairying countries.

The following is a summary list of the central points of the institutional and policy framework required by the dairy development programme:

- (1) A clear definition of aim, recognizing that the principal object is the betterment of small farmers with **prices fixed accordingly.**  
(*MLARR National Dairy Policy*)



- (2) A separation of the internal price structure from the consumer subsidized urban market (and international market) with, in particular, a control over the use of skim milk powder and butter oil for reconstitution, so that some assurance of price to producers can be made.  
(*MLARR/AMA/DMB; Statutory price regulations*)
- (3) The full involvement of producers as the first tier at village level in the organization of the assembly, testing and despatch of milk, through the formation of village co-operatives or associations.  
(*DDP*)
- (4) The establishment of an appropriate infrastructure of milk collection, reception and processing, again with as much producer involvement as can be arranged.  
(*DDP at local level; DMB as appropriate at regional and national level*)
- (5) A close linking of all other dairy development services, extension (*Agritex*), AI, disease control (*Veterinary Services*), feed and requisite supply to this primary industry institutional structure, making full use of its organizational and communication links, and, again maximizing producer involvement.  
(*MLARR Technical Departments; DPCC; Henderson National Dairy Institute.; NADF Committees and schemes*)

The italics following each item indicate the agencies responsible in Zimbabwe; as can be seen, the major components of the institutional infrastructure necessary to sustain a development programme are present in Zimbabwe. A more detailed look at the individual components is given in the next section.

### 10.3 INSTITUTIONAL FRAMEWORK

#### *Introduction*

The Dairy Industry in Zimbabwe is, as was pointed out earlier, mature and sophisticated, especially when considered in a regional context. The industry has developed an intricate web of inter-relationships over the years, with the involvement of most of the institutional components associated with the MLARR.

#### *Government Institutional Framework*

Most of the governmental organizations providing support to the dairy industry in Zimbabwe are within the *Ministry of Lands, Agriculture and Rural Resettlement* (MLARR). These and their relationship to other organizations are illustrated in Figure 10.1. The *Dairy Programme Co-ordinating Committee* (DPCC) arose out of an earlier Dairy Liaison Committee, set up to ensure communication throughout the vast industry structure. This committee will be dealt with in greater detail later.

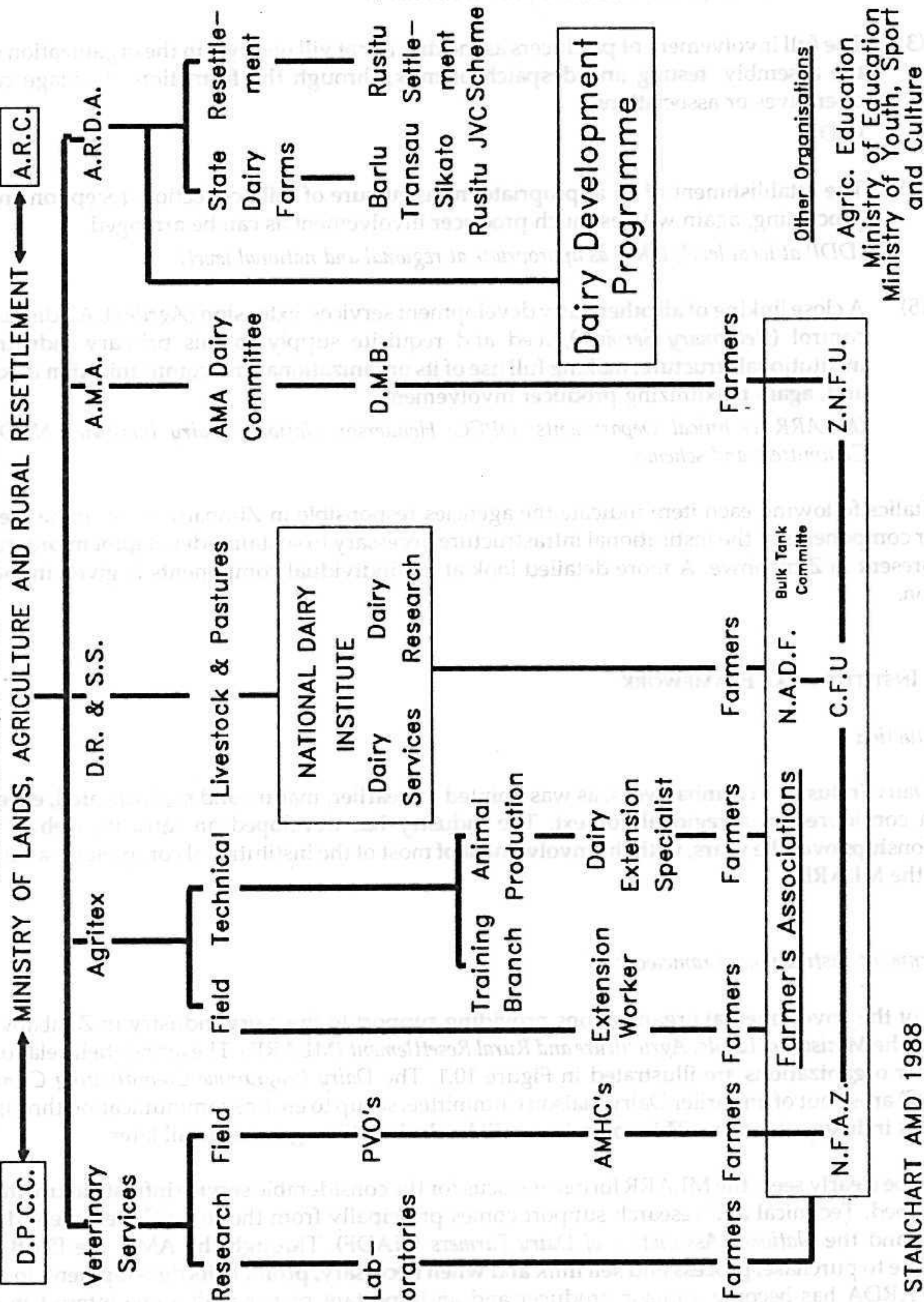
As can be clearly seen, the MLARR forms the focus for the considerable service infrastructure that has developed. Technical and research support comes principally from the three Government departments and the *National Association of Dairy Farmers* (NADF). Through the AMA the DMB has a mandate to purchase, process and sell milk and when necessary, promote its development. In recent years ARDA has become a major producer and an important player with some interest in dairy development. The move of the DDP to ARDA will reinforce their development mandate in this respect.

The *Department of Research and Specialist Services* (R&SS) is responsible for production research and statutory, advisory and management services, while the *Department of Agricultural, Technical and*



# ORGANISATIONS INVOLVED IN DAIRYING

## Relationships and Interactions



STANCHART AMD 1988

FIGURE 10.1



*Extension Services* (Agritex) provides extension in dairy production as well as all other aspects of farming. In order to improve the institutional capacity of these two departments and so fulfil their role within the Dairy Development Strategy, a *National Dairy Institute* (NDI) is about to be formed to co-ordinate dairy research, extension and services. The Institute will have its headquarters at Henderson Research Station, but maintain officers and laboratories in the various regional centres corresponding to the DMB processing plants.

The *Department of Veterinary Services* is responsible for the control, prevention and eradication of livestock disease and in principle provides free diagnostic and veterinary services to livestock owners. Historically this Department has for the most part serviced the large-scale commercial sector; since Independence, its services to the communal areas have improved with the establishment of 250 Animal Management and Health Centres.

The Agricultural Colleges and Institutes, which run general agricultural courses leading to diplomas and certificates respectively, are also administered through MLARR. The *University of Zimbabwe* and the technical colleges however, fall under the Ministry of Higher Education. One of the severest constraints to dairying development in Zimbabwe is the absence of adequate specific training in dairying within the country.

DDP is starting to develop curricula suited to small-scale production systems at its Nyarungu Training Centre. It also benefits from courses made available by FAO's regional training centre in Kenya, and *ad hoc* opportunities offered by NADF and local NGOs. Advantage is taken of every opportunity to send professional and technical staff out of the country for training, and short, in-country courses are run for other workers whenever feasible. A Manpower Study for the Government of Zimbabwe is to be carried out to determine the exact nature of the training facilities and courses which should be provided within Zimbabwe.

#### *Parastatal Framework*

The *Agricultural Marketing Authority* (AMA), which is responsible to the Permanent Secretary, MLARR, is the umbrella organization to the various commodity marketing boards, including the *Dairy Marketing Board* (DMB), which is responsible for the purchase, processing, distribution and marketing of milk and dairy products (see Chapter 2 for details). Other AMA Boards have a peripheral position in the dairy sector, as some provide livestock feed ingredients (*Grain Marketing Board* and *Cotton Marketing Board*) or purchase livestock (*Cold Storage Commission*). The *Agricultural Finance Corporation* is the major agency providing both long- and short-term loans to farmers. The farmers in DDP's Marirangwe Project are understood to have been the first SSCFA farmers to get loans for dairy cows from the AFC.

As DDP has now been transferred to the *Agricultural and Rural Development Authority* (ARDA), somewhat more information on that parastatal is warranted. ARDA grew out of a pre-independence parastatal, TILCOR, the Tribal Trust Lands Development Corporation, which was set up by the then Rhodesia Government to "plan, promote, assist and carry out, the development of the Tribal Trust Land" (now Communal Areas). Since Independence, ARDA has been given two sets of responsibilities: on the one hand, to operate state owned agricultural estates, and on the other to promote agricultural development through identifying, planning and executing rural development projects.

Amongst the state farms for which ARDA is responsible, there are six commercial dairy undertakings, two of which are at present run in a joint venture with the Commonwealth Development Corporation. These are likely to have an important effect on regional milk deliveries, with current targets suggesting a milk production level of 15 million litres in the early 1990s (see Table 10.1). The Ruitu Valley Scheme (an outgrower scheme) near Chipinge is managed by ARDA and is intended to cater for a potential 650 resettlement farmers. The scheme is based on the allocation of a 4 ha plot of which 2.6 ha is used for fodder production. Milk production is based on cut fodder for up to seven animals milked once a day. Milk is collected centrally and sold to the DMB in Chipinge. The scheme represents a very different model to that of DDP, emphasizing milk procurement and requiring a level of investment an order of magnitude higher per household than DDP.



TABLE 10.1: OUTPUT OF MILK FROM ARDA ESTATES SUPPLIED TO THE DMB

Estate	Litres × 10 <sup>3</sup>		Regional Dairy
	Current Production	Target Production	
Balu	4 500	5 300	Bulawayo
Rusitu	4 300	6 300	Chipinge
Sikato	830	1 700	Gweru
Transsau	750	1 300	Mutare

### Private Sector Framework

There are a number of other organizations providing support either directly or indirectly to the dairy production sector.

#### Farmers Associations:

*National Association of Dairy Farmers* whose membership is open to all dairy producers, but which presently consists of commercial dairy farmers.

*National Farmers Association of Zimbabwe* which represents the communal area farmers

*Zimbabwe National Farmers Union* which represents the small-scale farmers.

#### Specialist Services:

Various agricultural consultants, management agencies and veterinarians are available.

#### Financial Services:

There are a number of commercial banks and finance houses within Zimbabwe that play an increasingly large role in the provision of farming finance to the smallholder.

### Dairy Programme Co-ordinating Committee

The *Dairy Programme Co-ordinating Committee* (DPCC) was appointed in early 1987 by the Permanent Secretary of MLARR, in accordance with "Dairying Development in Zimbabwe", a paper accepted as Government policy on 1st October 1985.

The DPCC, to a degree, grew out of the Dairy Liaison Committee, established to ensure a flow of information between all parties interested in the Dairy Industry. The original Liaison Committee provided a badly needed focus for the dairy industry in the absence of a dairy institute or other institution. Some detail on the activities of the Dairy Programme Co-ordinating Committee is included here as it is likely to have a considerable influence on dairy development issues and processes.

#### Terms of Reference of the Committee

- (1) The Committee shall be responsible for keeping the National Dairy Policy under review in order to advise the Permanent Secretary for Lands, Agriculture and Rural Resettlement as to whether it remains compatible with national needs.
- (2) The Committee shall be responsible through the Permanent Secretary for the implementation of the National Dairy Development Strategy.
- (3) The Committee shall be required to monitor, evaluate and report on the progress of the National Dairy Development Strategy and whether it continues to fulfil the objectives of the National Dairy Policy. This shall be carried out annually.



- (4) The committee shall, through the Permanent Secretary be responsible:
  - i. In case of projects funded by government or through government-to-government aid, for the technical evaluation, co-ordination, integration and approval of all projects involving a dairying component.
  - ii. In the case of projects funded and carried out by independent bodies or institutions, for attempting to ensure that implementors of such projects are aware of the overall strategy and solicit their co-operation to ensure that their projects assist in meeting the national objectives and do not conflict with or duplicate other projects.

The Committee has emphasized that the strategy is a national one, therefore encompassing all aspects of the industry. Furthermore, it is recognized that the importance of dairying in the context of national development is not just in the milk which is a relatively expensive protein and energy source, but in the fact that in achieving increased production in the communal, resettlement and small-scale areas, there will be, *inter alia*, improved livestock and resource management and productivity; facilitation of co-operative approaches; and improved infrastructure.

#### 10.4 THE LOCATION AND STRUCTURE OF DDP

The decision to move DDP from DMB is a critical one, because uncertainty about the institutional home of DDP appears to have been the reason for Government delay in submitting proposals for funding to donors. Problems relating to the actual amount of counterpart funds which should have been generated are raised in Section 11.3. Whatever the resolution of this question, counterpart funds will only be sufficient to cover part of DDP's core funding needs in future.

Although there were definite advantages for DDP being part of DMB, ARDA would seem to be an eminently suitable home for the programme. ARDA's public image is determined more by its visible involvement in state farms throughout the country, but its development arm is increasingly involved in detailed planning studies and implementation of rural development projects in communal and resettlement areas. As Figure 10.2 shows, the DDP now falls directly under the Deputy General Manager responsible for Agricultural Operations, Planning and Development. DDP is thus placed within the development milieu of that branch of ARDA, but may have to struggle to put across its innovative and flexible approach to development of communities in the face of the more production oriented approach current in ARDA, as is symbolized by its Rusitu Valley dairy scheme.

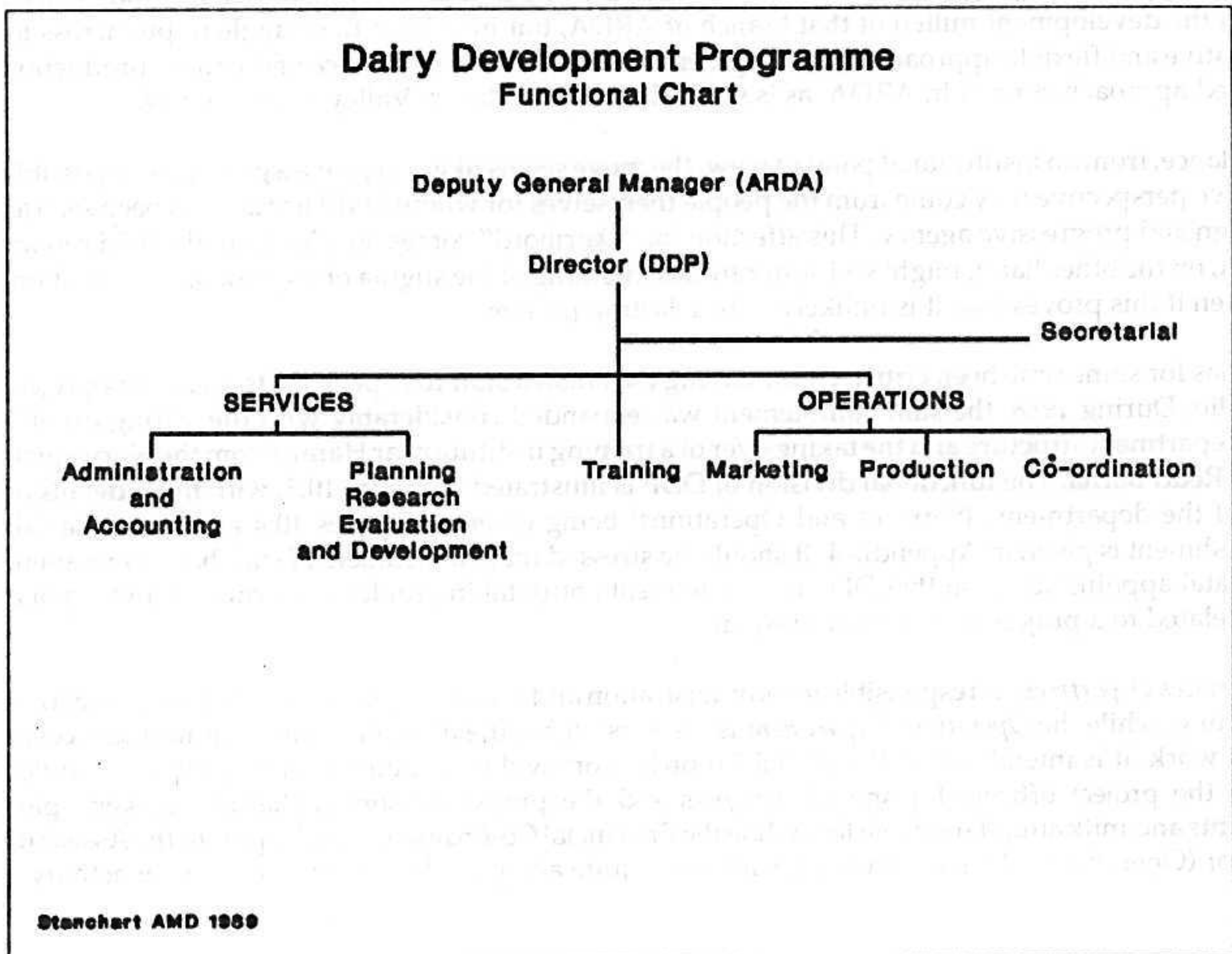
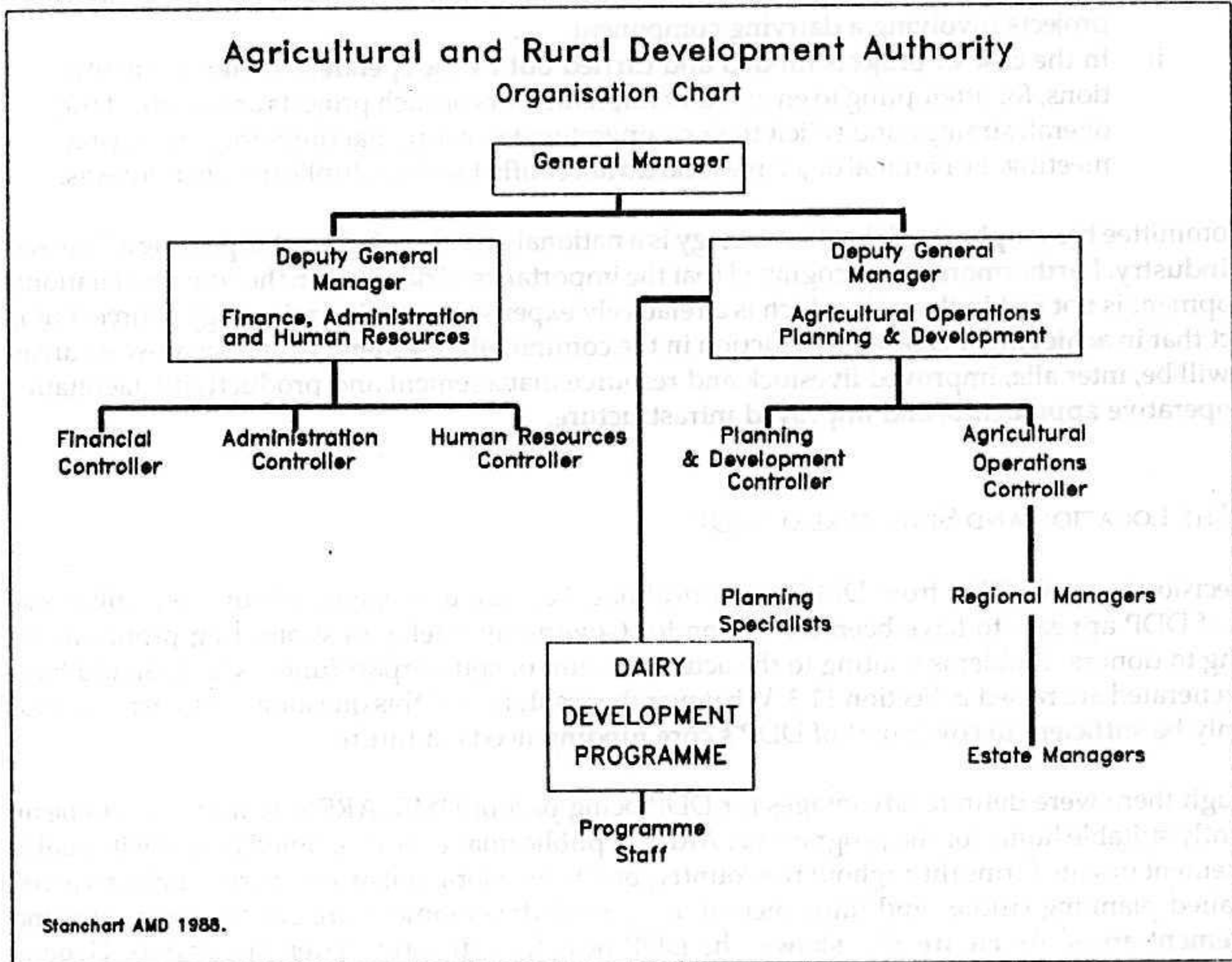
On balance, from an institutional point of view, the move seems likely to prove a good one. A possible negative perspective may come from the people themselves for whom DMB has always been seen as a benign and progressive agency. This affection for "Dairibord" comes out clearly in the field report. ARDA, on the other hand, might still suffer from something of the stigma of its previous incarnation, but even if this proves true it is unlikely to be a lasting problem.

DDP has for some time been criticized for having too small a staff to cope with its increasing project portfolio. During 1988, the staff complement was expanded considerably with the setting up of a two-department structure and the taking over of a training institute near Harare from the Norwegian NGO, Redd Barna. The functional division of DDP is illustrated in Figure 10.3, with more details of each of the departments (Services and Operations) being given in Figures 10.4 and 10.5. The full establishment is given in Appendix 4. It should be stressed that all members of staff have permanent parastatal appointments, so that DDP is a permanent entity falling under Government and is not a team related to a project with a fixed lifespan.

The *Services Department* is responsible for administration and accounts, planning and the organization of training, while the *Operations Department* is responsible for the marketing and technical aspects of DDP's work. It is intended that Provincial Co-ordinators will be appointed in all provinces, under whom the project officers for specific projects and the project personnel (liaison workers, plot assistants and milk attendants) will fall, while the Provincial Co-ordinators will report to the Assistant Director (Operations). This structure appears to be quite adequate for the present level of activity.

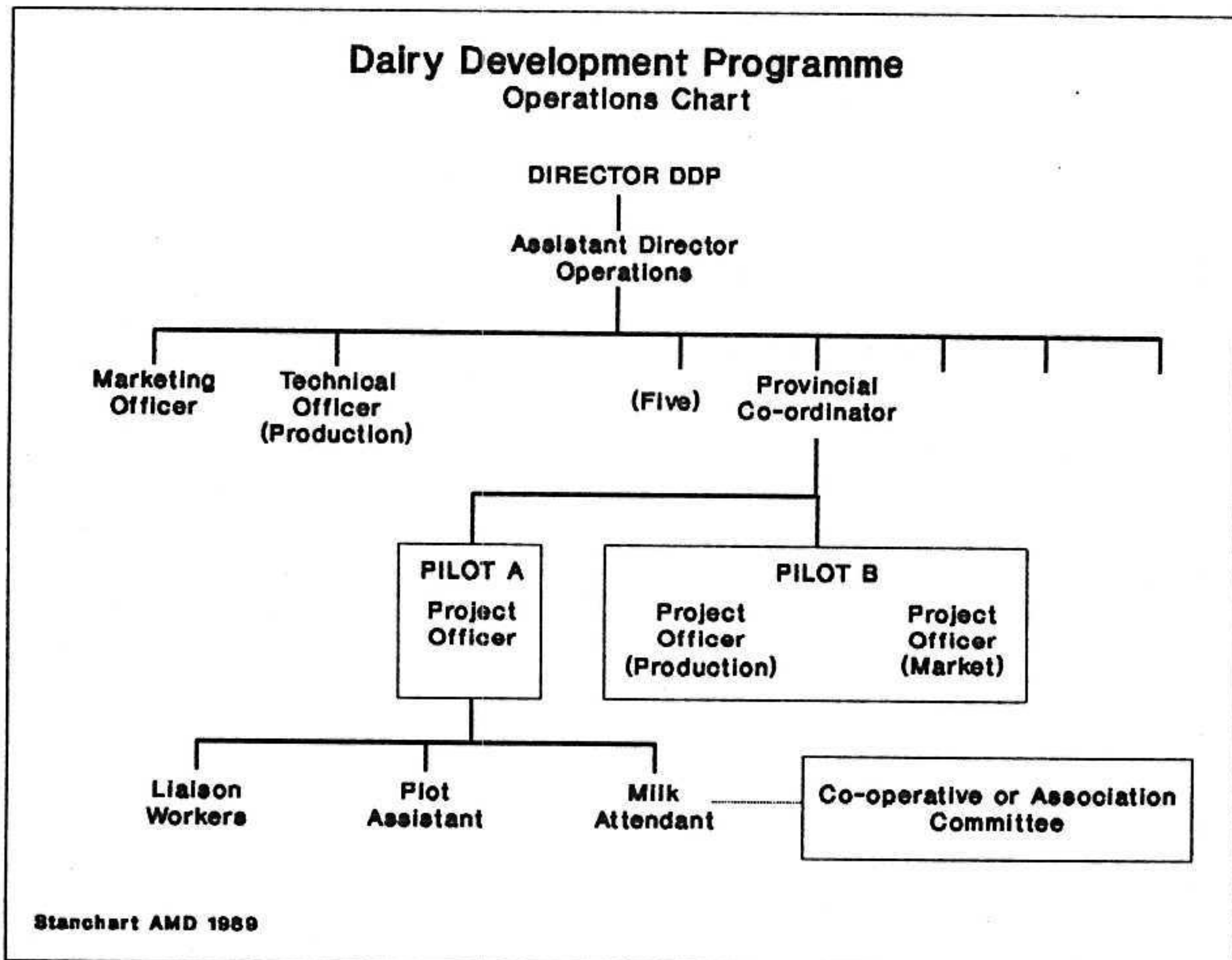
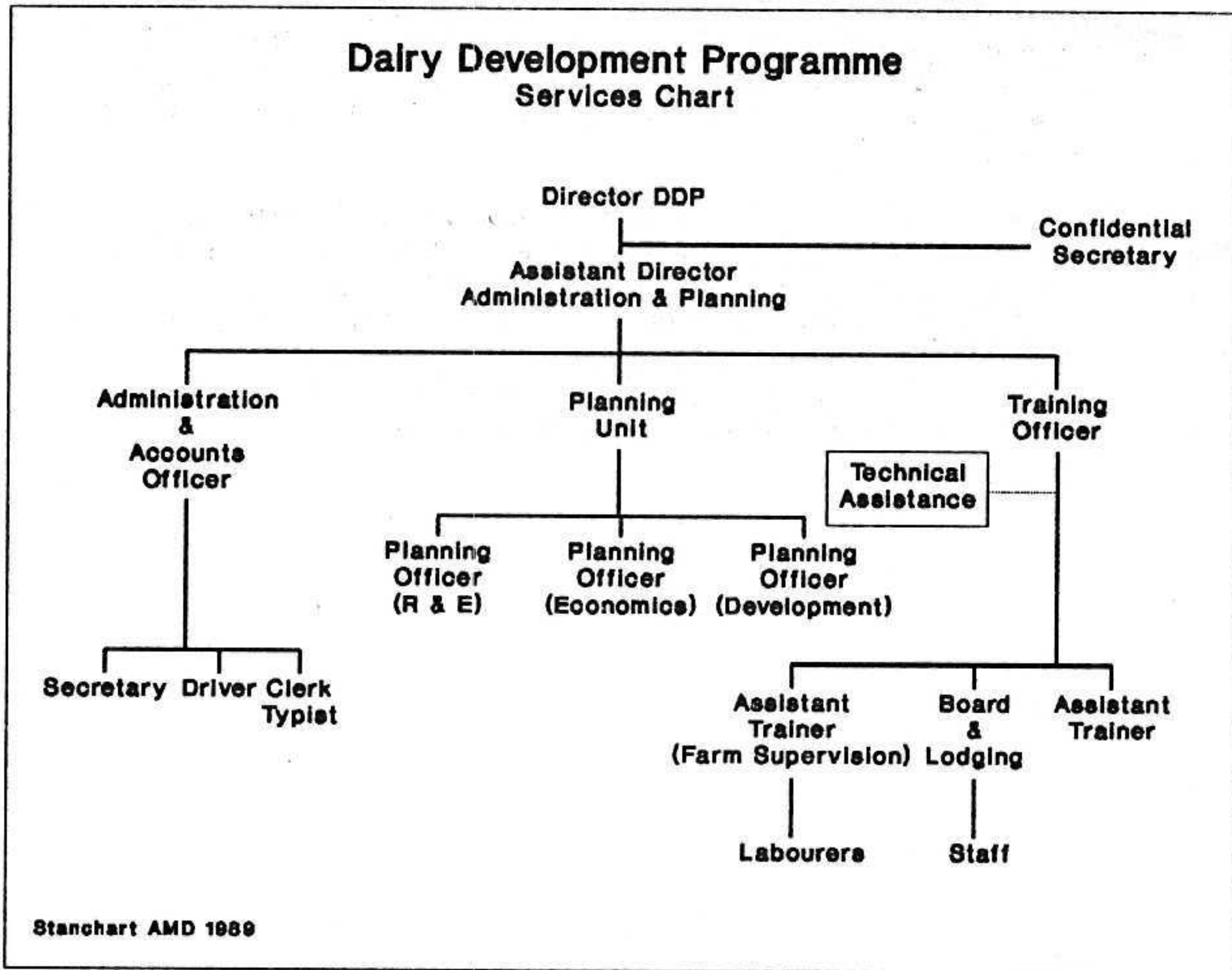


FIGURES 10.2 AND 10.3





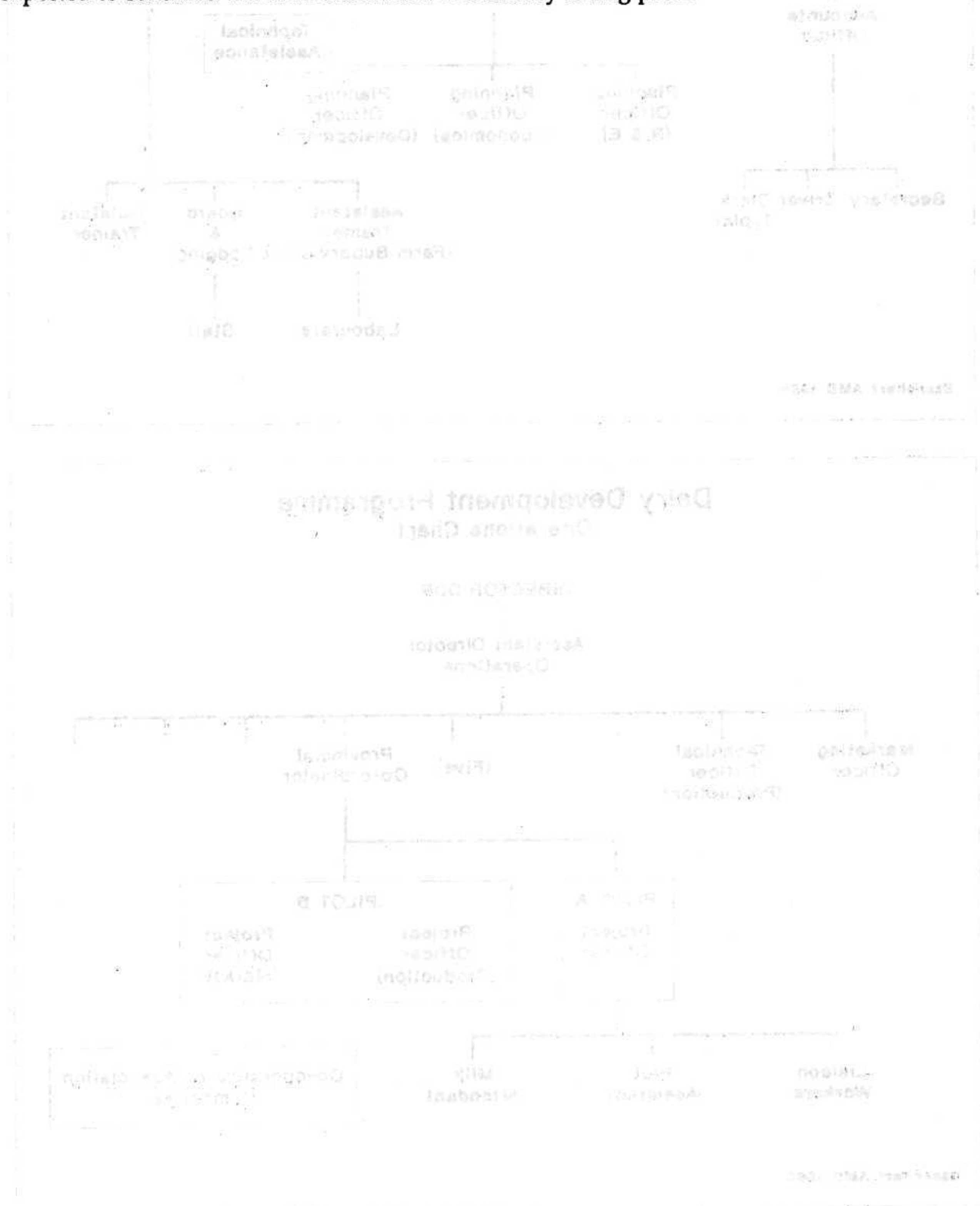
FIGURES 10.4 AND 10.5





DDP's policy of employing local people as liaison workers has generally had a positive impact on community attitudes and enthusiasm for the projects. This has also enabled DDP to use its small head office staff and limited transport resources to best advantage. Another of DDP's achievements has been the establishment of organized, representative local structures with which to work; different models have emerged as farmers in different areas have formed their own dairy associations with DDP's assistance, or formed dairy planning sub-committees of the VIDCOs and WADCOs (diagrammatic examples are given in DDPlan).

With the acquisition of the Nyarungu Training Centre and engagement of staff to organize training courses both at the centre and at the project areas, the emphasis that has been placed on training can be brought to fruition. It is envisaged that training will be offered at various levels, including the farmers themselves, locally recruited staff, DDP project, provincial and head office staff and officials from other agencies involved in dairying. Course leaders will be drawn from DDP and other local agencies; assistance from the FAO regional Dairy Development Training Team based in Nairobi is also expected to continue. An in-house review is currently taking place.





## CHAPTER 11: ASSESSMENT OF DDP

### 11.1 ASSESSMENT OF ACTIVITIES AND EXPENDITURES TO DATE

#### *Evaluation Difficulties*

The stress on flexibility is an aspect of fundamental importance in the Dairy Development Programme, but it does make for some inherent difficulties in evaluation. There are no rigid or absolute standards against which assessments are to be made; production or lack of production of milk is not itself a performance criterion which, over the short run, should be given particular weight. Indeed, there are those who would regard over-hasty "extraction" of milk as a negative element. Ideally, the question should be asked whether DDP recognized and made the most of opportunities to mobilize communities and assist in carrying out development activities of direct benefit to the communities, possibly with a longer term contribution to dairy activities. This would, however, require the consultants to have an impossibly detailed knowledge of all the communities so far involved in the scheme.

The assessment has thus to be reduced to supplementing conclusions drawn from the fieldwork with comments about the complexity of the programme, the overall pace of implementation in different areas of the country and on the use of funds, in particular the Norwegian bulk milk tank counterpart funds.

#### *Impact on the Communities Involved*

The carefully executed fieldwork reported in Part III has indicated both the strengths and weaknesses of what has been achieved so far. The perspective adopted is a critical one, focussing on the extent to which the programme has succeeded in reaching the poorest members of the communities. In a situation where ownership of cows is a pre-requisite for benefiting from the production aspects of the programme, and only some 50% of communal area residents own cattle at all, it is not surprising that this objective is hard to attain.

It is hoped that the insights offered in the field report will prove useful to DDP in strengthening its current interventions and in planning its future projects. This indeed was one of the objectives of this evaluation which was strongly endorsed at the Inception Seminar in Oslo in October. The fieldwork report ends with a very positive analysis of DDP's principle of dairy development in the rural areas for the rural areas.

The fieldwork was carried out at the level of individual households and categories of households looking at the programme as viewed by the beneficiaries. Also relevant in assessing the impact of the programme on the communities is the fact that DDP interventions have led to the establishment of groups which are engaged in a variety of activities besides milk production. As examples, in Chikwaka there is a reportedly viable women's carpentry group, trained at the instigation of DDP at Glen Forest Training Centre. Groups have also been formed around the shared milking sheds, typically with a majority of women; several of these now propose to diversify through the purchase of grinding mills. Creches served with milk from DDP have asked for assistance in improving shelter for the children. Whatever the specifics of group activities, the organizational skills and confidence arising from success in one sphere is bound to have positive knock-on effects in the future.

#### *Complexity and Manageability of the Programme*

On the face of it, DDP having objectives and a range of activities which are not limited to milk alone is extremely ambitious. The programme is not, however, an externally conceived one in the mold of the discredited integrated rural development projects. In contrast, it is a programme formulated and designed entirely by Zimbabweans in response to the articulated needs of the communities involved and applying in every aspect technologies and approaches which are appropriate and manageable.



In water, for example, through the supply of a *vonderig* (hand auger device suitable for community use) and the transport of cement for latrine and well lining, the DDP's role has been a catalytic one which has made possible initiatives which the communities themselves were seeking to make, but which required a small outside input. Being fully aware of the nature of the environment in which they are working, DDP officials are able to make the most of various possibilities which are in themselves rather modest, but together amount to a substantive contribution to the rural communities. Where further technical back-up is required, DDP sees its role as being to alert or pressurize the responsible Government agency to specific community needs.

Fears that the DDP approach will fail because DDP does not have specialized expertise in each of the areas being tackled and/or will find it too difficult to co-ordinate the different aspects, seem thus to be based on a misconception about the scale and style of operation that is involved and the range of supporting institutions providing services for rural development in Zimbabwe. A more relevant concern is whether DDP can maintain its commitment to a broad-based development strategy in the face of pressure from certain sections of the communities, Government and donor agencies seeking performance measurable in terms of milk production.

### *Pace of Implementation*

Even by its own criteria of not forcing the pace of development, progress in implementing DDP has been slow. The fundamental problem here has not so much been slowness of implementation within individual areas, but the delays and confusion engendered by uncertainty about DDP's institutional status and absence of the Ministry backing it required to operate confidently and effectively. This was manifest in delays in disbursement of counterpart funds and failure to approve plans for onward transmission to donors. It is to the credit of DDP's development team that they have maintained morale and an apparently high level of commitment to individual projects in the face of this ongoing insecurity.

### *Generation of Norwegian Counterpart Funds*

As documented in Part II, the most important criticism to be made of the bulk tank project is that the basis on which rentals for the tanks were set was highly unsatisfactory in relation to the objective of maximizing the generation of counterpart funds for small-scale dairy development. By the end of June 1989, the amount generated will be about \$1,75 million, as against \$4,0 million if a more commercial basis had been established. The current flow of less than \$0,5 million pa should be more than doubled if rentals are set on a commercial basis; this would increase total farmer costs by only 0,5%.

### *Use of Counterpart Funds*

The major source of funds for the programme has been the bulk milk counterpart fund, of which DDP received \$1,5 million between June 1984 and December 1988. The EEC skim milk-butterfat counterpart funds, which amounted to \$8 million, in the end were diverted from the small scale dairy sector due to the long delay between their generation and the Ministry's presentation of a dairy development policy to the EEC.

Additional small inputs have come from diplomatic discretionary funds for micro projects (eg EEC support for grazing scheme fencing), from the FAO regional Dairy Development Training Team based in Kenya in respect of training and planning, from Government agencies in the provision of their services, NGOs, particularly those involved in training, and the large-scale commercial farmers through the National Association of Dairy Farmers (NADF). Welcome as such contributions are to the recipient communities, however, they tend to be very time consuming in terms of DDP time and in terms of audit and reporting requirements.

Since its inception in 1983 to December 1988, the programme has spent \$1 516 939, broken down as follows:



	\$
Overheads/administration	750 162
Training and Extension	90 118
Livestock Improvement	961
Implementation	
Chikwaka	233 805
Marirangwe	79 787
Honde Valley	96 644
Nharira/Lancashire	125 888
Tzozzo	72 658
Zvimba/Chirau/Chitomborwizi	43 588
Guruve	23 328
TOTAL	1 516 939

DDPlan justifiably points out that a programme such as this inevitably has a high central overhead cost, particularly in the early stages when salary and travel costs for mobilization and assessment are the main activities. As project areas come on line, capital and developmental expenditures increase. As noted earlier, however, it is DDP policy that as much input as possible should come from the communities themselves, as part of the empowerment process and to underline ownership responsibilities.

The consultants' judgement is that the overheads so far have not been excessive for this type of operation, especially in its start-up phase. It is normally expected that a 60% overhead would be incurred in a service-oriented environment, and to date the overhead for DDP is less than 50%. This judgement is made in relation to both the intangible success of the programme in mobilizing communities and to the considerable list of tangible items which have been put in place as a result of DDP's work to date. In Chikwaka, for example, in addition to the impressive milk centre, DDP can point to 4 grazing schemes, 12 milking groups with group sheds in various stages of construction (2 completed so far), approximately 70 improved ventilated latrines and wells and a cattle dip. The other milk centre which has been built and is operational is at Nharira, where 15 groups are moulding bricks to build milk sheds. The Honde Valley provides a good example of farmers responding to DDP initiatives in respect of fodder production; to date, 110 farmers have each established at least one hectare of fodder.

## 11.2 THE PERSPECTIVE PLAN

DDPlan is a comprehensive, balanced document, laying out the strategy and objectives of the programme, giving details of its operations and activities to date and justifying its proposed budgets. No attempt is made to hide deficiencies and problems; areas of difficulty and issues to be resolved in the future are pinpointed. For these reasons, DDPlan is considered a key document. Comments are made on the cost-benefit analysis presented in DDPlan in the next section, but rather than repeat more of its content, it is suggested that on other matters it be read in conjunction with this evaluation report.

The budget given in DDPlan to support the level of expansion of DDP operations up to 1990/91 is given in Table 11.1 (a revised version of this budget is due to be presented at the end of June 1989). The activities catered for include making fully operational the current portfolio of projects, as well as expanding into Masvingo and Matabeleland North and South Provinces with a total of four new projects being identified.

By the end of the 1990/91 financial year, it is thus envisaged that there will be at least two pilot projects in each of Zimbabwe's eight provinces, with a provincial co-ordinator in each. Training will be an important component of activities. As the programme expands, overheads will not expand proportionately as the clustering of projects will reduce transport costs (a major expense) and there will also be opportunities for adjacent projects to share the costs of establishing a joint milk collection centre.



For example, the DDP project in Zvimba/Chitomborwizi combines communal and small-scale farming areas. Further details are given in DDPlan, Section 8.3.

TABLE 11.1: DDP BUDGET ESTIMATES 1988/89 TO 1990/91

(thousand Z\$)	1988/89	1989/90	1990/91
Capital	780	799	652
Operations	1 097	1 537	1 721
<b>TOTAL</b>	<b>1 877</b>	<b>2 336</b>	<b>2 373</b>

### 11.3 COST-BENEFIT ANALYSIS

It is important to have the assurance that the DDP approach will be viable from the point of view of the participants, the milk collection centres and the programme as a whole. Unfortunately, the projects are too new to provide the sort of detailed information required to make viability calculations with confidence. It is nonetheless useful to analyse the situation as this may lead to identifying the parameters likely to determine viability and it is these parameters which can then be used for management purposes.

DDPlan makes a commendable effort to estimate financial viability for the farmer, milk collection centre and overall programme. Given the paucity of data, there is little point in trying to refine the calculations made in DDPlan, and what is given here is thus mainly a summary of and commentary on Section 9 of DDPlan. Details, extracted from DDPlan, of the main assumptions and of the numerical calculations are given in Appendix 6.

The main caveat which is to be given at the outset is that cost-benefit calculations focus attention on milk, the revenue from milk sales being the main quantifiable benefit. Other aspects of the broad developmental approach of the DDP are difficult to quantify. Even with the milk revenue, the analysis below does not take into account any possible investment of the proceeds of milk activity, which would then provide a secondary income. For these reasons, it is likely that the projects are more viable than the straightforward calculations reported on below would tend to suggest.

#### *Viability for the Communal Farmer*

Here two different models are considered, for those without cattle taking a loan to obtain a crossbred cow and for those already owning indigenous cattle and milking two per day.

The analysis usefully shows that a non-cattle owner borrowing from existing credit sources to purchase a cross-bred cow producing 5,5 litres per day over a 200 day lactation would not be viable at prevailing rates of interest. This type of finding has obvious relevance for the design of an appropriate credit scheme to enable the non-owner to be drawn into the programme as a producer.

For those already owning indigenous cattle, viability is a function of yield; as a measure to be monitored by the programme, yield may be used as a convenient proxy for the level of management of a particular type of cow. The enterprise is found to be viable at a level of just 2 litres per day and 2 cows being milked at any one time.

#### *Viability for the Collection Centre*

Based on the price structure prevailing at the time that DDPlan was drawn up, a milk collection centre involved in local sales is shown to be satisfactorily viable. As DDPlan points out "this raises questions regarding the issue of re-investment as opposed to farmer pay-outs. There is, for instance, the



possibility of the 'surplus' being used to partly offset the poorer viability at farmer level". The Plan goes on to talk of the funds being used to provide credit for those without cattle at all. "These and other options will have to be carefully considered and discussed with participants in the scheme".

### *Viability for the Programme*

To examine the viability of the overall programme, DDPlan assumes a nine year time frame, over which period 31 communal area milk centres and projects are expected to be developed, giving direct benefits to about 4 200 farmers. The cattle-owning farmer model is used to calculate milk production and sales, while on the cost side an attempt is made to quantify the input from other Government departments such as Agritex, Dairy Services and the Veterinary Department.

As the graph in Appendix 6 shows, if support costs are not included, there is a breakeven after 8 years. "When DDP and other support agencies' input is assessed and a projection made, the overall net balance could reasonably be assumed to reach zero by the 10th year." This can hardly be regarded as being sound in pure financial terms, but it would not be expected that a programme with broad developmental objectives would exhibit financial viability. There are a number of additional factors to consider, which add to its justification.

Firstly, it is notable that only communal area farmer schemes are included in the calculations. If the SSCFA schemes were to be reflected, much faster returns in milk and revenue in relation to modest incremental costs of DDP's intervention would dramatically reduce the period before breakeven. This factor can be related to a second set of limitations of these calculations. As the DDPlan observes, "this method of analysis concentrates attention on milk", (undoubtedly the focus in the SSCFAs), "rather than on the broader social and developmental aspects of the programme, which are an integral component of the DDP" (at least in the communal areas).

As already mentioned, if the unquantifiable development aspects could be included as benefits, the viability would be considerably enhanced. These would include benefits to non-owners of cattle through better access to dairy products and the spin-off effects of improved water and sanitation in the community, better livestock management and agricultural practices. At the national level, the programme will have made "a concrete response to national objectives, such as rural development, conservation and improved productivity, more widespread ownership and control of significant productive assets, decentralization of production and consumption, and more generally, community decision making, organization and co-operation". To make a significant impact on all those dimensions will be no mean achievement, but it is notable that, in leaving out these factors, the calculations as presented in DDPlan in effect give the "worst case" situation of only communal farmers with indigenous cows and no developmental benefits; that the programme should still breakeven after only ten years is encouraging.

Quite apart from the necessity to show its viability in order to be assured of donor support, the exercise of compiling an economic justification for the programme has evidently been useful to DDP. It has, for example, sharpened ideas about the viability of a cattle-less farmer borrowing in order to purchase a cross-bred cow. More broadly, it has also shown that "there is need for a much more detailed consideration of production models, costs and returns. It is intended that this exercise be a major element of the evaluation and monitoring programme over the next three years, in order to arrive at a realistic picture of small holder milk production and its contribution to rural development."

## 11.4 IMPLICATIONS FOR NORWEGIAN ASSISTANCE

### *Programme Support to DDP*

Just prior to the March 1989 Country Programme discussions, the long awaited formal request from Zimbabwe to Norway for assistance to DDP was made. Looking at the objectives and achievements of the DDP programme from the viewpoint of the overall objectives of Norwegian Development



Assistance, it would be difficult to identify a more suitable programme for Norwegian funding than DDP. In particular, the programme is strongly oriented to making the best use of natural resources in different environmental situations and of improving health and living conditions for the poorest, particularly women and children. The fieldwork did, however, clearly demonstrate that it is not straightforward to ensure that the benefits of the programme will reach the poorest, particularly poor women.

As Norway has a strong orientation to programme rather than project funding, which is welcome to Zimbabwe, the following suggestions are made:

- (1) That Norway agree to support DDP through providing basic core funding for the programme, including its training activities.
- (2) That a special allocation be identified to be used to explore ways to ensure that the benefits of the programme do reach those most in need. There are a number of areas which DDP has already identified, examples being:
  - Planning for the setting up of a Dairy Development Fund to allow those without cattle to acquire cows.
  - Initiating small-scale dairy manufacturing, in preparation for which DDP staff members have already spent periods abroad studying possibilities and techniques. The fieldwork report suggested that such activities could provide employment, particularly for landless and disadvantaged women who would not otherwise benefit from the programme (except possibly as consumers of milk).
  - Exploring ways of reducing the costs of milk sheds through using more economical building materials and techniques and through promoting group milk sheds.

If the size of the special allocation permits, various schemes arising from the above could be tried out on a pilot basis. In some cases, however, such as the Dairy Development Fund, a further allocation of funds might be necessary to make ideas operational.

#### *Type & Level of Support — Counterpart Fund Recommendations*

In view of the fact that the programme has to date been successfully staffed and run entirely by Zimbabweans, it would be unnecessary and indeed counterproductive for technical assistance to be included as part of Norway's support. As long as the programme continues to operate at a sustainable pace determined by the absorptive capacity of the communities themselves, Norwegian assistance should take the form of financial assistance. However, exactly how much funding DDP will require to implement its plans is uncertain, pending the outcome of negotiations over the generation of counterpart funds.

Due to the Government delays mentioned previously, the present situation is one in which DDP is in dire financial straits. With inflows to the counterpart fund running at about \$39 000 per month, while the minimum operating expenditures of DDP without any capital expenditures are now \$70 000 per month, the need for an additional source of finance is clear. Taking into account capital expenditures that are already committed, the projected deficit to the end of June 1989 is about \$420 000. It has been agreed that the excess of expenditure over income will be added to ARDA's deficit, as it was in the past to DMB's deficit, but this situation is clearly unsatisfactory. Of greater importance for the programme itself is the fact that if capital expenditures are not resumed soon, the momentum that has been built up among certain communities will be lost and will be much harder to rekindle in future when expectations and promises have not been fulfilled. The urgent resolution of DDP's financial difficulties is thus of critical importance to the success of the programme.

One important element of this must be to put the generation of counterpart funds onto a more satisfactory footing. In this regard, the following recommendations are made (for definition of terms, see Section 4.4):

- (1) that Norway continue to make clear its dissatisfaction with the basis on which the counterpart funds have been calculated in the past;



- (2) that the request for further funding for DDP be held up until the Part 3 rentals have been set on a commercial exchange rate and interest rate basis acceptable to NORAD and the Zimbabwe Government and that payment into the counterpart fund be made for the shortfall accumulated since payments commenced at the lower Part 2 levels;
- (3) that the first tranche of the additional funding then be released, but further tranches held back pending a satisfactory proposal being agreed and implemented in respect of increasing the monthly rentals on the Phases 1 and 2 tanks;
- (4) that the Government of Zimbabwe be asked to present a formula whereby the counterpart funds are compensated for the shortfall that has accumulated; the best solution would be one in which the bulk milk farmers agree to make good the shortfall, using accumulated surplus funds from the bulk tank account, but there are other alternatives (DMB has suggested extending the period over which rentals accrue to the counterpart fund — once the 15 year agreements expire, DMB intends to continue to charge a rental, which it is presently envisaged will then accrue entirely to DMB);
- (5) that NORAD ensures that it is kept informed of the status of negotiations with the Dutch Government over the supply of replacement and additional tankers and is informed about the resumption of the installation of the remaining 100 Part 4 tanks;
- (6) that the basis for calculating the rentals for the Part 4 tanks be reviewed when installations commence; if a temporary rental level is set, that it be at a high level benefiting the counterpart fund, with the undertaking of subsequent repayment to the farmer;
- (7) that in future, when a tank is moved or exchanged for a larger tank and a new agreement is signed by the farmer, that the highest prevailing rental be applied in the new agreement.

Using the capital cost basis and interest rate of 13% discussed in Section 4.4, Step 2 would increase monthly flows on all the tanks from the present level of about \$39 000 to \$66 000, as well as generating a back payment of the order of \$240 000. In principle, steps 3 and 6 could increase monthly flows to \$131 000, while step 4 could generate a back payment of as much as \$2,25 million, but these steps would all require negotiation. In immediate terms, therefore, adopting a cautious stance of not allowing for increased rental on the old tanks or for a back payment, and assuming the Phase 4 tanks only become operational in 1990/91, the picture over three years would appear to be as follows:

DDP budget estimate 1988/89–1990/91	\$6,5 million
Projected income from counterpart fund	\$2,5 million
Projected shortfall	\$4,0 million.

The level of NOK 15 million which Norway has earmarked is equivalent at present exchange rates to about \$4,4 million ie somewhat in excess of the shortfall projected on conservative assumptions. If the recommendation above of releasing funds in tranches is accepted, then it would be possible to adjust levels of disbursement in future years to both the level of counterpart funds actually being generated and to the pace of project implementation actually being achieved.

The final determination of the level of financing and the setting of the size and timing of tranches must await the presentation of a revised budget estimate and the statements showing the actual amounts of counterpart funds generated which have been requested of the Zimbabwe authorities by NORAD. These documents are expected at the end of June 1989, by which time it is hoped that the counterpart fund situation can have been resolved at least in respect of the Part 3 tanks.

#### *Deepening Co-operation between Dairy Producers*

NORAD has made it clear that in future the intention is that all assistance will go directly to DDP and not via counterpart funds. As the bulk of DDP's funding requirements are in local currency, this is tantamount to untying the foreign exchange aspect, allowing the foreign currency to be used for any purpose, not necessarily connected to the dairy industry.



Our observations on dairying in Zimbabwe point, however, to the importance of the DDP continuing to be given the "breathing space" that the existence of the commercial dairy sector allows. If that sector were to decline due to shortage of foreign currency, pressure on DDP might be applied to emphasize the production of milk for urban consumption, this leading to all the negative consequences that such pressures had in the case of Operation Flood in India. DDP's slower and community-oriented approach is far more likely to have widespread benefits for the communities involved and to be sustainable in the longer term.

To assure that success, we thus put forward the suggestion during the evaluation process that Norway tie the use of the foreign exchange element to DDP's relatively modest import requirements (for example essential field vehicles) and then to the dairy sector in general, including the parastatal Dairy Marketing Board. Once the basic requirements of the dairy industry had been met, any surplus could then be used in any other sector to which the Government of Zimbabwe assigns priority. In this way, the concern expressed in the conclusions to Part II of this study, about the sustainability of the bulk tanks scheme and more generally of the commercial dairy sector being so dependent on the availability of foreign currency, could thereby be allayed, while at the same time giving greater assurance to the success of the Dairy Development Programme itself.

This suggestion was for various reasons rejected both by the Norwegian and Zimbabwe Governments, but it did have the effect of provoking a useful discussion on the dual (foreign-local currency) aspect of all aid flows and of the interdependence of the two dairy sectors in Zimbabwe. That interdependence makes it imperative that the foreign exchange requirements of the formal sector be met; one way in which to bring this to the fore would be to link the provision of foreign exchange to the commercial farmers actively assisting the emergent producers.

There are many ways in which such assistance could be given, and some members of NADF have already taken a few initiatives in this regard. One specific area where a more formal, institutionalized role could usefully be developed is in respect of the Small-Scale Commercial Farming Areas. In terms of production system, technology, and commercial orientation the SSCFA are more closely identified with large-scale dairying than the peasant sector; NADF assuming the responsibility for the SSCFA sector would economize on the development skills of DDP staff. Both Norway and DDP would prefer the DDP programme itself to concentrate exclusively on peasant producers in the communal and resettlement areas.



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# APPENDICES



APPENDICES



# APPENDIX 1

DRAFT (22.08.88)

## TERMS OF REFERENCE

FOR

### EVALUATION OF NORWEGIAN ASSISTANCE TO THE DAIRY SECTOR IN ZIMBABWE

#### I. BACKGROUND

The Norwegian assistance to the dairy sector in Zimbabwe has to date consisted of:

- a. Direct support in the form of a grant of NOK 50 million which has financed the supply of ca. 360 bulk milk tanks to Dairy Marketing Board (DMB), thus allowing commercial dairy farmers to replace milk cans with large milk tanks for cooled bulk storage of the milk. These tanks are leased by the farmers, and the rents paid constitute a Counterpart Fund in treasury ??/Ministry of Finance ??, which has been earmarked for development activities in the peasant/smallholder sector.
- b. Indirect support to DMB's Dairy Development Programme, aimed at peasants/smallholders, through utilising the Counterpart Funds for this programme.

Though the supply of bulk milk tanks started as commodity import assistance, it was from the very beginning linked to utilising the counterpart funds for development activities among peasants/smallholders. Thus, all the Norwegian involvement in the dairy sector has been justified through its implications for small scale, communal and resettlement farmers.

In continuation of this, it has been decided that future assistance to the dairy sector will be earmarked for direct financial



contributions to the Dairy Development Programme.

## II. OBJECTIVES

The objectives of the evaluation is as follows:

1. To assess the impact of the introduction of the bulk milk tanks on the dairy industry as a whole, both with regard to its viability and to the price and quality of the milk sold to the consumers.
2. To assess the way in which the Counterpart Fund has been utilised and the role it has played in furthering the aims of the Dairy Development Programme.
3. On the basis of the experiences gained from the DDP so far, assess the programme's potential for providing support for the development of dairy production amongst peasant and smallholder households, in relation to the objectives of the Dairy Development Strategy of the Ministry of Agriculture. In this context the consequences which developments in the large-scale commercial dairy sector have for peasant/smallholder production is of special importance.

## III. ASPECTS TO BE ADDRESSED BY THE EVALUATION MISSION

### 1. Objectives and framework

- a. Assess whether the objectives of ZIB 004 Milk Tank Project (including utilisation of counterpart fund) have been realistically formulated in relation to the development strategy of the GOZ for this sector, as well as the policies and strategy for development co-operation of the GON.
- b. Assess the organisational/institutional/administrative



framework for the programme.

2. Delivery and utilisation of milk tanks

- a. Assess the benefits of introducing the milk tanks against the costs of the programme, both at the level of the individual producer, as well as for the sector as a whole.
- b. Assess the appropriateness and sustainability of the technology chosen in relation to the objectives and strategy for the dairy sector.
- c. Assess the system for determining the cost of renting the milk tanks by the farmers involved and the effectiveness with which rentals have been collected.
- d. Determine the implications which the introduction of the milk tanks have had for different categories of producers, especially in relation to production levels and access to such tanks.
- e. Assess the appropriateness and sustainability of the arrangements/programme proposed for the maintenance of the milk tanks.

3. Counterpart Fund

- a. Assess whether the objectives, strategy and target group for the Counterpart Fund have been clearly and adequately formulated, and the extent to which this is in accordance with the objectives of the DDP as well as the objectives of Norwegian development co-operation.
- b. Assess whether the objectives, strategy and content of the programme have been in accordance with the needs and wishes of the target group. In this context, assess also the degree



of local participation in the planning and implementation of the programme, as well as the implementation tempo.

c. Bearing in mind the long-term strategy of the Dairy Development Programme, assess the extent to which the short-term goals set by the DMB for the programme have been attained. In this context it is important to investigate the impact which the development of commercial dairy farming amongst peasant and smallholder households has had for:

- income levels
- the nutritional status of such families
- the productive role of women in the household.
- ecological aspects

#### 4. Recommendations

Based on an assessment of experiences so far in this sector, the evaluations team shall make recommendations concerning the nature and scope of possible future Norwegian contribution to the dairy sector. A prime consideration here will be an assessment of the possibilities for reaching peasant and smallholder families and the potential for women to gain benefits from such programmes.

#### 4 Personell

The team should comprise members qualified to cover the following:

- the dairy-technical aspects of the programme
- the economic and the organisational implications of the programme
- socio-economic aspects.



**APPENDIX 2:  
GENERAL ECONOMICS OF COMMERCIAL DAIRYING IN ZIMBABWE**

**COST CATEGORIES**

	\$	\$
<b>Food costs (per day, per cow)</b>		
Cotton Seed	25 kg	0.07
Silage	18 kg	0.54
Silage Balmor Meal	10.5 kg	2.52
Rye Grass Hay	3.0 kg	<u>0.14</u>
Total food		<u>3.27</u>
 <b>General costs (per day, 112 cows)</b>		
Wages, 8 × \$115 = \$920 per month by 30		30.00
Chemicals		8.10
ESC		6.25
Dry Cow Meal 17 × \$1.17		19.89
Repairs and maintenance in dairy		<u>19.80</u>
Total general costs		<u>84.04</u>
 <b>Heifer rearing costs (per annum)</b>		
64 heifers × \$948.94		60 732.16
AI 64 bull calves × 1.6 × \$50.00		5 120.00
Monthly herd visits \$350 × 12		4 200.00
Dipping and fly control		2 400.00
Sundry vet		<u>7 054.00</u>
		<u>79 506.16</u>
 <b>Bulk charges (per annum)</b>		
3.8 cents per litre × 19 lts/day × 30 days/mnth × 112 cows		
= \$2 425.92/mnth × 12 mnths		<u>29 111.04</u>
 <b>YEARLY MARGIN</b>		
<b>Total Income</b>		
112 cows × 19 lts × 41.7 cents × 365		323 892.00
 <b>Total Expenditure</b>		
Food \$3.27 × 112 × 365	133 677.60	
Daily costs \$84.04 × 365	30 674.60	
Heifer rearing costs	79 506.16	
Bulk charges	<u>29 111.04</u>	
		<u>272 969.40</u>
 <b>Total yearly margin</b>		 <u>50 922.60</u>

**NOTES**

Calculations based on average herd in Zimbabwe of 112 cows.

Food costs are 41% of income, which is based on 19 kg per cow per day at 41.7 cents. Food cost of milk is 17.2 cents per litre, giving a gross margin of 24.5 cents per litre.

Total yearly margin equates to 18.7 cents per \$1.00 of outlay.



**APPENDIX 3:  
AGREED POSITION BETWEEN DAIRY MARKETING BOARD AND  
THE NATIONAL ASSOCIATION OF DAIRY FARMERS [NADF]**

**1. INTRODUCTION/PREAMBLE**

- 1.1 Dairibord and NADF wish to record their intentions to endeavour to regulate the rate of milk production so as to ensure a sufficient milk production for the domestic and export market where viable at prices which the average consumer can afford and which, without subsidization, will ensure the viability of the milk producer.
- 1.2 It is recorded that the total production of milk for the present intake year 1987/1988 ("intake year" meaning the period from 1 July in one year to 30 June in the next) is assumed to be 254 million litres and that the split would thus be 180 million litres for liquid products and 74 million litres for manufacture products.
- 1.3 To give effect to the intentions of the parties a "Two Tier" producer pricing system linked to milk usage is proposed which would broadly reflect the historical split between liquid products (using approximately 70% of milk intake) and manufactured products (using the balance of approximately 30% of milk intake). The percentage split assumes that risks in packaging and other Dairibord requirements which Dairibord may encounter will not change that percentage split.

**2. PRODUCER PRICE**

- 2.1 It is proposed that the two tier price system be effected from 1st April, 1988. 1 April 1988 to 31 March 1989 the producer price would be calculated on the basis of
- 49 cents/litre for a total milk intake of 180 million litres ("the first tier price")
  - 35 cents/litre for the balance of the milk intake ("the second tier price")

(It is recorded that this will produce an average producer price increase from 1 April 1988 of 3,9 cents/litre from the present 41 cents/litre to 44,9 cents/litre representing a 9,5% increase arrived at as follows

180 million @ 49 cents/litre	=	\$88,2 million
74 million @ 35 cents/litre	=	\$25,9 million
		<u>\$114,4 million</u>

which equals an average of 44,9 cents/litre)

- 2.2 In each subsequent year for a period of four (4) years ending 31 March 1993 180 million litres of milk intake, for which the first price would be paid, would increase each year at the rate of five per cent (5%) of 180 million so that the intake figure would be
- 1 April 1989 – 31 March 1990 = 189 million
  - 1 April 1990 – 31 March 1991 = 198,45 million
  - 1 April 1991 – 31 March 1992 = 208,37 million
  - 1 April 1992 – 31 March 1993 = 218,79 million

The second price of 35 cents would continue to be paid on the balance.



- 2.3 Deliveries of less than 50 litres per day will be paid for at the first price whilst new producers entering the industry after 1 April 1988 will be paid the first price for their first 50 litres per day or less delivered and the second price for the excess delivered. This ruling will not apply to schemes second price for the excess delivered. This ruling will not apply to schemes on the small-scale dairy development programme who would need to apply for exemption.
- 2.4 It is recorded and agreed that any producer price increase must be linked to an increase in the consumer price increase so that for every 1 cent increase in the producer price there must be a 3 cent increase in the consumer price. Thus any increase on the producer price is conditional upon such increase in the consumer price so that producer/consumer prices continue to be increased simultaneously over the period of five (5) years from 1 April 1988.
- 2.5 Prior to the commencement of each year commencing 1 April 1989, 1990, 1991 and 1992 the parties shall consider and review and endeavour to agree the producer price for the next intake year on the basis of the prevailing level of inflation using as a basis for reaching such agreement that on the assumption of a fifteen per cent (15%) inflation the first price increase will be at the rate in each of the years of 4 cents/litre so that the first price will be as follows
- |                              |                |
|------------------------------|----------------|
| 1 April 1988 – 31 March 1989 | 49 cents/litre |
| 1 April 1989 – 31 March 1990 | 53 cents/litre |
| 1 April 1990 – 31 March 1991 | 57 cents/litre |
| 1 April 1991 – 31 March 1992 | 61 cents/litre |
| 1 April 1992 – 31 March 1993 | 65 cents/litre |

The second price will remain at 35 cents/litre unless otherwise agreed. The consumer price would accordingly be annually calculated and increased. The understanding is that this agreement is a package deal over a period of five years.

### 3. MILK PRODUCTION AND PAYMENT TO PRODUCERS

- 3.1 NADF undertakes to take a national position and set targets so as to procure a minimum production of milk to be delivered annually to Dairibord of at least that amount at which the first price is to be paid by Dairibord in accordance with this agreement.
- 3.2 Each Dairy Producer will be given a monthly quota of milk production for the year from 1 April on which the first price will be paid by Dairibord so that the totals of these quotas do not exceed the milk intake figures referred to in 2.2. Dairibord shall pay the first price on that quota produced and delivered and the second price on any excess produced and delivered. The NADF would allocate the 180 million first tier milk in consultation with Dairibord who will provide the figures.

### 4. MONITORING

- 4.1 There will be a need to monitor total milk production.
- 4.2 The A.M.A. Dairy Committee could monitor the programme with Board management providing actual data for quarterly perusal. The agreed position has been recommended for consideration by A.M.A. Board and for onward submission to the Ministry of Lands, Agriculture and Rural Resettlement.



**APPENDIX 4:  
CALCULATION OF COUNTERPART FUND REVENUE  
FROM RENTAL OF THE BULK MILK TANKS**

**BACKGROUND**

When the 1982 agreement was signed between Norway and Zimbabwe for the supply of bulk milk tanks, there was no formal stipulation about the level at which rentals for the tanks were to be set. The agreement itself stated only that:

Zimbabwe shall arrange for effective and careful use of the farm milk tanks. The Dairy Marketing Board shall let the tanks to farmer and the rent shall in quarterly payments be placed at a separate treasury account. The funds of the separate account shall be used to support development of cooperative schemes for small farmers in Zimbabwe.

*(Article III.3)*

Outside of the formal agreement, Norway had, however, made it clear that the primary intention in giving the tanks was to support peasant sector development and it was thus expected that the rentals would be set so as to obtain a commercial return on the tanks.

In practice, it would seem that the decisions made on the Zimbabwe side were based on a paper prepared by DMB (Paper 33/82, dated 11 March 1982). The paper records the acceptance on 3 March 1982 by the Ministry of Economic Planning and Development of the Norwegian offer to finance the tanks and notes that an Advisory Committee on Bulk Milk Collection was being established to liaise with DMB in its day-to-day administration of the scheme. In respect of finance, the paper goes on to state that:

- The basic principle accepted by the National Advisory Committee is that the full costs of the scheme will be recoverable from participants. To facilitate this, the Board has made arrangements for the accounts of the scheme to be maintained separately from those of the Board as a whole. Farm tanks will be leased to producers and depreciated over 15 years.
- Charges to producers in the scheme will be deducted from payments made for milk delivered to the Board on a monthly basis. Such charges will contain two primary elements, a lease charge for the equipment installed on the farm which will include the cost of routine maintenance, and a charge for milk collection. . . .
- The full cost of the installation will be written off over a period of 15 years and normal commercial principles will be applied to recover capital and interest in full.

Thus far, the statements are uncontroversial, although the choice of a 15 year period is completely arbitrary. However, the paper then moves on to argue for a low capital base and a low rate of interest to be used to calculate the rentals.

**CAPITAL BASE FOR RENTAL CALCULATIONS — Z\$ VALUES OF THE TANKS**

The paper notes somewhat indirectly that the prices for the Norwegian tanks are higher than those from other suppliers. It proposes, however, that the farmers be charged on the basis of the lowest tender received, rather than the actual amount paid by Norway for the tanks:

- Under normal circumstances, the Board would have awarded the tender for the supply of equipment to the company offering the lowest prices for equipment which satisfied technical specifications. In the current exercise this has not been possible because of the financial constraints.
- At the same time, the Board has yet to conclude its financial negotiations with Landteknikk, and the cost of the equipment purchased with the the Norwegian funds



will only be known after these discussions have taken place. It is, therefore, proposed that for the purpose of charging farmers for installation made during the 1982/83 financial year, prices should be based on the lowest obtained by the Board in the tender conducted during September/October 1981.

## INTEREST RATE

Despite the preceding statements about normal commercial principles, an interest rate of 7,5% is introduced as follows:

- The Ministry of Finance has decided that statutory corporations will receive the full benefit of donor funding and it is anticipated therefore that the outright grant from the Norwegian Government will be made available to the Dairy Marketing Board for the purchase of farm tanks. It is clear that the benefits of such a facility cannot be passed on to producers in full, and therefore a decision will have to be taken by the Ministry of Agriculture regarding the interest rate to be charged within the scheme. In this respect it is suggested that the interest rate on loans to producers for the installation of bulk storage facilities on farms be set at 7,5% per annum.

## THE ACTUAL SCHEDULE OF CHARGES APPLIED

The DMB paper was written in the form of a justification for a set of recommendations to the Agricultural Marketing Authority and the Ministry of Agriculture. The above figures were evidently accepted by these authorities, as they came to be implemented via a schedule of rentals for each tank size (see Attachment 1). Two main points are to be noted:

- (1) The "Capital Costs" used are exactly the figures given in the DMB Paper 33/82 as the *lowest* tender prices for the tanks. The actual prices charged by Landteknikk thus did *not* form the basis for establishing the capital cost for the rental calculation. Rentals on tanks installed from July 1984 are about 5% higher than those on the first set of tanks installed, this being effected through assuming a higher capital cost basis. The additional 5% in no way compensates, however, for the much higher prices of the Landteknikk tanks (of the order of 30% more expensive) let alone for inflation in the interim period.
- (2) The rentals themselves are composed of two loan amounts, one being the capital cost, the other the import tax and installation charge. The former is the element supplied by Norway, to which an interest rate of 7,5% is applied. The latter is in effect an advance from DMB to the farmer, to which an interest rate of 9,75% is applied (this is explained in Section 4.2 in the main text).

The tanks falling under the two different capital cost structures are referred to by DMB as "Part 1" and "Part 2". For convenience in what follows, this nomenclature will be extended to cover the 200 tanks supplied under the second agreement: Part 3 will be taken to refer to the 100 tanks installed over the period March to December 1988 and Part 4 to the remaining 100 tanks from the second agreement which have still to be installed. Installation has been suspended by the Advisory Committee pending adequate tanker capacity being assured.

In a note accompanying the schedule by the DMB Chief Accountant (Paper A/1/28 of 22 August 1984), the following pertinent statements are made:

- Note that interest charges have been estimated for the 15 year period and spread evenly over that period even though the actual amounts in the early years are higher and will reduce as payments are made. This is to simplify the system.
- The actual capitalized values may differ from the totals shown as recoverable in the way of rentals on the attached schedule. This amount will have to remain as outstanding, accruing interest at 9,75% and then chargeable at the end of the 15 year period.



The second statement is ambiguous, but could become part of the negotiations over the reinstatement of the accumulated shortfall (see recommendations in Chapter 11).

## CRITIQUE

Implicit in the rationale for the low capital base and the low interest rate, both leading to a low rental figure, are the notions that the farmers should not pay more than they would have done if they had been free to choose the source of supply, while at the same time that they should share part of the benefits of the outright grant, despite Norway's wishes to the contrary. Logically, these notions should have been separated from one another. The fact is that the farmers were *not* free to choose the source of supply because Zimbabwe was only able to enter into a bulk milk collection scheme with donor funding of the foreign exchange component; Norwegian funding was chosen because the benefits to the country of a grant were deemed to outweigh the somewhat higher prices that had to be paid for the tanks. Thus if the farmers were to be given the benefit of having the tanks valued at the price of the lowest tender, they should not also have been given the benefit of a low interest rate and *vice versa*. Another benefit to the farmers arose from the waiving of duties: if they had been free to import the tanks on a purely commercial basis, they would have had to pay import tax on them; although import tax was initially included in the rental charges, it was subsequently dropped to conform with Article III.2 of the agreement with the Norwegian Government.

The import tax was not treated as part of the basis for counterpart funds, but the choice of a low capital base and low interest rate are central to the amount of counterpart funds generated. In terms of Norway's expressed interest and concern in the project, it is to be asked whether there was justification for either of these to be on a concessionary basis to the commercial farmers, let alone both. In relation to the ostensible principle of recovering costs from the farmers on a *commercial basis* in order to maximize accruals for peasant sector development, the following criticisms arise:

### *Capital Base*

In respect of the capital base, the NOK 30 million spent in Parts 1 and 2 from the schedule equate to \$3,356 million, giving an implied effective exchange rate of 8,94. A commercial company would have charged the farmers on the basis of the prevailing exchange rate when the tank was actually imported. To calculate accurately what effect this would have had on the capital base would require knowledge of the history of all 361 of the tanks installed in Phases 1 and 2. The argument for having a fixed price for tanks of a certain size was apparently to simplify procedures at the operational level. Nonetheless, it is to be asked why the cost basis chosen was set at the level of the lowest tenderer for Part 1 and about 5% higher for Part 2, rather than choosing an exchange rate which would have been more favourable to the generation of counterpart funds as the basis. The average exchange rates since 1982 have been as follows:

1982	7,8104
1983	7,1379
1984	6,3491
1985	5,1958
1986	4,3734
1987	3,9604
1988	3,5603

If the 1984 exchange rate is taken as the approximate mid-point of the installation programme of Parts 1 & 2, the NOK 30 million would then equate to \$4,725 million. The returns from a 7,5% annuity payable monthly over 15 years are then as follows (rounded to the nearest thousand, CF = counterpart fund):



MONTHLY RETURNS ON THE 361 TANKS IN PARTS 1 & 2

<i>Capital Base</i>	<i>Amount to CF @ 7,5%</i>
\$3,356 million	\$31 000 per month
\$4,725 million	\$44 000 per month

The difference is over 40%. The above exchange rates, which between 1984 and 1985 differed by 18%, also call into question why the Part 2 figures were only about 5% higher than the Part 1 figures; if the review that took place leading to the Part 1/2 distinction was to update the figures on the basis of changes in prices (increased rather than decreased) and exchange rates, then the difference should surely have been in excess of 18%.

*Interest Rate*

In respect of the interest rate, the first question to be asked is why the counterpart fund part was charged at 7,5% while the loan from DMB for the installation and the import tax was charged at 9.75%. However, even 9,75% cannot be considered "commercial". DMB itself has had to finance its cumulative unpaid subsidy requirement by commercial borrowing from the Zimbabwe capital markets; the average interest rates calculated from the balance sheets have been as follows:

mid-1984	11,7%
mid-1985	12,6%
mid-1986	12,5%
mid-1987	15,3%

It would thus appear that DMB has been on-lending to the commercial farmers at a rate significantly below what it has to pay at the margin for short-term loans. To be charging the farmers even less than this on the counterpart funds account is a clear violation of the principle of recovering the capital investment on a commercial basis. For the purposes of illustration, taking the prime interest rate, which has been at 13% throughout the period, as indicative of a "commercial" interest rate (it is also the current rate for AFC capital loans), the following monthly flows would arise from a 15 year annuity:

MONTHLY RETURNS ON THE 361 TANKS IN PARTS 1 & 2

<i>Capital Base</i>	<i>CF Amount @ 7,5%</i>	<i>CF Amount @ 13%</i>
\$3,356 million	\$31 000 per month	\$42 000 per month
\$4,725 million	\$44 000 per month	\$57 000 per month

The difference between the actual figure based on the lower capital base and the lower interest rate and the "commercial" values is now in excess of 80%. In absolute terms, over a year the difference amounts to \$312 000.

*Values calculated by DMB*

Unfortunately, the situation is made even worse by the fact that the values calculated in the DMB schedule are inaccurate. There is a small arithmetic error in the calculation of the total hire, which should be \$43 273 rather than the \$44 233 mentioned. More seriously, however, the figures are based, as the quotation above indicates, on a



"simplified system" rather than a conventional annuity calculation. The figures arrived at for the counterpart fund element were rounded to the nearest dollar (see Attachment 2). When multiplied by the actual number of tanks of each size installed under Parts 1 and 2, the total counterpart fund contribution accruing per month on the 361 tanks is calculated to be just over \$29 000 rather than the \$31 000 given above. Even if the capital and interest rate basis were to be accepted, this situation reduces potential returns to the counterpart fund by about 6,5%.

#### RENTALS ON TANKS FOR PARTS 3 & 4

A decision is yet to be made by the Zimbabwean authorities about the rental level on tanks in Parts 3 & 4. These fall under the second inter-country agreement, which unlike the first agreement, is far more precise about the interest rate to be charged. Under "obligations of Zimbabwe" it is stated that Zimbabwe shall:

Ensure that the rent is a minimum of 9.75% and is adjusted from time to time to obtain conformity with the prevailing marked [*sic* — presumably market] level in Zimbabwe.

(Article IV.6)

The approach that has been adopted for the first 100 tanks is that the farmer has signed an agreement based on the schedule for Part 2 tanks, but has also signed a letter of understanding, acknowledging that the rental will be adjusted upwards when agreement has been reached on the basis for rentals for tanks falling under the second agreement (see Attachment 3). This situation is unsatisfactory, as the counterpart fund is clearly incurring an opportunity cost. If a temporary arrangement was justified, the rentals should have been set at a very high level, with the promise of later reimbursement, thus shifting the balance in favour of the counterpart funds.

As things stand, the rentals for Part 3 tanks need to be put onto a proper basis as soon as possible. Again, without complete details of the 100 tanks installed in Part 3, it is not possible to calculate accurately the amounts involved, but the orders of magnitude are as follows:

Amount presently being generated on Part 3 tanks:	\$10 th pm
Amount at higher capital base and 13% interest	\$37 th pm

The shortfall is thus of the order of \$27 th per month, or an annual amount of \$324 th. When both Phases 3 and 4 are operational and generating counterpart funds at the higher rate, the total annual contribution from the 200 tanks should be \$888 th.

#### SIZE OF THE IMPLIED SHORTFALL TO THE END OF JUNE 1989

The Dairy Development Programme reports that by the end of December 1988, the total amount of counterpart funds made available since the beginning of the scheme was \$1,517 million. To calculate accurately whether this amount conforms to what "should" have been generated over the period would require detailed knowledge of each of the 461 tanks in Parts 1, 2 and 3: exactly when they were installed, if and when transferred etc. It is to be noted that when a tank is transferred, a new 15 year lease agreement is signed and the rental is set at the Part 2 level, even if the tank had previously fallen under Part 1; this provides a small mitigating factor when assessing the shortfall in counterpart funds collected. Without attempting such a detailed exercise, but estimating on the basis of assuming a steady build-up in installations over three periods (Part 1 over July 1983 to June 1984, Part 2 over July 1984 to June 1985 and Part 3 over March 1988 to December 1988), and using an exchange rate of Z\$ = 3,4 NOK for NOK 10 million in Part 3, the rounded estimates of total counterpart funds at the two interest rates and capital bases discussed above would be as follows:



ESTIMATED RETURNS TO DEC 1988 ON THE 461 TANKS IN PARTS 1, 2 & 3

<i>Capital Base (Parts 1&amp;2)</i>	<i>CF Amount @ 7,5%</i>	<i>CF Amount @ 13%</i>
\$3,356 million	\$1,800 million	\$2,500 million
\$4,725 million	\$2,500 million	\$3,400 million

Allowing for the 6,5% differential due to the poorly calculated schedule and possibly for the last quarter's counterpart funds not yet to have been reflected, the above figure of \$1,800 million suggests that the actual amount received of \$1,517 million is probably warranted on the basis set on the Zimbabwe side. Only a detailed accounting exercise could make that statement more precise; the above figures should be taken merely as giving orders of magnitude. The amount received is certainly not warranted, however, in terms of Norway's objectives in giving the bulk tanks to Zimbabwe in the first instance. Depending on the basis chosen, the difference is \$1 million to \$1,9 million, which is 67% to 127% of the total actually generated to the end of 1988 to benefit peasant producers.

Bringing the calculation forward to the end of June 1989, at the higher capital cost basis and 13% interest rate the total shortfall amounts to \$2,25 million.

ABILITY AND WILLINGNESS OF THE FARMERS TO PAY HIGHER RENTALS

It is pointed out in Section 4.2 that the bulk charges for the average commercial farmer are less than 11% of total costs. This figure includes the transport element of bulk charges, which is much larger than the tank costs. Using the figures in Appendix 2 for the General Economics of Commercial Dairying, for a 5 000 litre tank the rental on the Part 2 schedule is \$161 per month, which on an annual basis is 0,7% of total costs (\$273 000). Of this amount, only \$109 is credited to the counterpart fund under present arrangements, this equating to less than 0,5% of total annual costs.

Even if the counterpart contribution were to be doubled, the total amount would still be less than 1% of total costs. A doubling of contributions on Part 1 and 2 tanks, measured at the (incorrect) level of \$29 000 per month, would result in an additional \$348 000 per annum; this is still less than the outstanding balance of over \$500 000 in the bulk milk accounts at the end of the 1987/88 financial year, but would be a significant amount from the viewpoint of Norway's target of dairy development. The intention of the farmers participating in the bulk tank scheme is that charges overall should be set so that the account breaks even; a half million overpayment in 1987/88 thus indicates at the very least that the farmers would be *able* to pay much higher tank rentals without any impact on their viability.

Whether the farmers would be *willing* to pay higher rentals at this stage is another matter, particularly as the repayment conditions seem to have been determined primarily by DMB. On the Part 3 and 4 tanks there will be no choice, but it is also important that the rentals on Part 1 and 2 tanks be raised and that the accumulated shortfall from previous years be recovered to boost funds available for the Dairy Development Programme. This perspective is taken up in the recommendations given in Chapter 11.



D A I R Y   D E V E L O P M E N T   P R O G R A M M E

STAFF ESTABLISHMENT 1988/89

GRADE	ADMINISTRATION & PLANNING	ESTABLISHMENT 87/88	OPERATIONS	ESTABLISHMENT 88/89	ESTABLISHMENT 87/88	ESTABLISHMENT 88/89	TOTAL ESTABLISHMENT 87/88	88/89
01	DIRECTOR	1		1			1	1
03	ASSISTANT DIRECTOR (A & P)	-	ASSISTANT DIRECTOR (O)	1	1		1	2
02	TRAINING COORDINATOR	1		1			1	1
01	PLANNING OFFICER	2	TECHNICAL OFFICER PROVINCIAL COORDINATOR MARKETING OFFICER PROGRAMME COORDINATOR	2	1 3 - 1	1 3 1 -	7	7
05	ADMINISTRATION OFFICER	1		1			1	1
04	DEVELOPMENT OFFICER	1	PROJECT OFFICER	-	2	1	3	1
02	FARM SUP.	-		1			-	1
01	FARM SUP. BOARD & L. SUP. CONFIDENTIAL SECRETARY	1 - 1	PROJECT OFFICER	- 1 1	6	10	8	12
04	DEPARTMENT SECRETARY	1		1			1	1
03	CLERK/DRIVER	-		1			-	1
	TOTAL 1987/88	9		11	14	17	23	28
	TOTAL 1988/89							

APPENDIX 5



GRADE	ADMINISTRATION & PLANNING	ESTABLISHMENT 87/88 88/89	OPERATIONS	ESTABLISHMENT 87/88 88/89	TOTAL ESTABLISHMENT 87/88 88/89
A1  SPECIAL GRADE 4	COOK ASSISTANT COOK ORDERLY WATCHMEN WORKERS	1 - 1 2 6	LIAISON WORKER	7	7
			MARKET ASSISTANT	1	1
			PLOT ASSISTANT	1	1
			CENTRE ATTENDANT	2	2
				4	4
				4	4
				1	1
				-	-
				1	1
				2	2
				8	8
		10		11	21
		13		23	36



## APPENDIX 6: DDPLAN VIABILITY CALCULATIONS

### ASSUMPTIONS MADE

#### *General Assumptions*

All revenues and costs at July 1988 levels — all milk delivered to milk centres at 49 cents per litre.

All capital costs for convenience are treated as occurring "up front"; in practice they would be spread over the life of the project: figures used include inputs from all sources, not just farmer's direct contribution (it is evident that especially in the communal areas, farmers would not have sufficient cash, hence there is need for outside assistance, including the establishment of a credit scheme).

All models increase yields over time as farmers gain experience and adopt better management practices, resulting in higher milk production per cow.

There are two subsets of communal farmers:

- those cattle owning households (or individuals) who start with two indigenous cows and work towards having crossbreds/purebreds by the 7th year (third generation);
- those with no cattle (often women participants) who will need to take a loan (from AFC, CSC or the Dairy Development Fund) to buy one crossbred cow to start production.

A steady growth rate in farmer numbers at milk centres is assumed, leading to 200 in communal areas. (In practice, this may vary considerably, but is expected to be higher rather than lower, particularly in those areas where the two types of farming groups [communal and small-scale] combine and share facilities. In some cases, numbers will be sufficiently high to be viewed as separate projects, while focussing on one core milk centre.)

Unit costs (such as travelling expenses) will be reduced over time, as existing projects become the nucleus or cluster points for certain geographical areas.

NGOs, other agencies and groups of farmers will be fully involved in, and sometimes have responsibility for, implementation activities, under the overall guidance of the DDP.

No income has been put for sales of steers and cull animals, although this will in fact be encouraged.

#### *Assumptions at Communal Farmer Level*

Milk retained will average 306 litres per cow per annum for calf and own use. This figure is expected to increase due to better management on the part of the farmer;

Farmers gradually up-grade their cows, with milk production and lactation length increasing correspondingly due to better management;

Capital costs from all sources of \$1 500 to \$2 500, depending on initial cattle ownership status. This figure represents the capital costs that can be directly associated with a farmer entering the programme. (The DDP overhead costs are included in the programme justification given below.)



#### CALCULATION A(I) — NON-CATTLE-OWNING COMMUNAL FARMERS

Farmer starts off with no cattle;

She buys one crossbred cow with a loan from AFC, CSC or the Dairy Development Fund;

The average production of the cow is 5,5 litres per day, over a lactation period of 200 days.

##### *Analysis of returns for non-cattle owning communal farmers*

See table in Annex A12

Net Present Value @ 10% discount rate = \$-620,38

Internal Rate of Return (IRR) = 8,4%

This situation is not viable and underlines the need for strategies and interventions that will assist this sector of the community to enter the programme.

#### CALCULATION A(II) — CATTLE OWNING COMMUNAL FARMERS

Farmers begin with indigenous cows;

She milks two cows at any one time with each producing 2 litres per day (in actual fact each farmer would have to have more than 3 cows);

This implies a lactation period of 365 days.

##### *Analysis of returns for cattle owning communal farmers*

See table in Annex A13

Net Present Value @ 10% discount rate = \$202,48

Internal Rate of Return (IRR) = 15%

This is a viable situation. Any improvement or access to subsidy as mentioned above will make it more so.

#### CALCULATION B — MILK CENTRE LEVEL

Milk will be sold locally until estimated demand is satisfied, thereafter surplus will be marketed to DMB;

Retail price of milk is 70c per litre for local sales (DMB consumer price in town as of December 1988 was 78c), and 49c per litre for external (DMB) sales;

Per capita consumption of milk is estimated at 18 litres per annum; in a population of 15 000 demand will thus be 270 000 litres;

Milk Centre and marketing costs are 7c per litre, including labour, electricity, detergents, marketing and transport costs, etc;

Build-up of active producing members is shown in Annex A6 and is expected to reach the nominal target of 200 by the 5th year;

Capital costs from all sources are on average \$75 000 per Milk Centre. (The DDP overhead costs are included in the programme justification given below.)

##### *Analysis of returns for Milk Centres*

See table in Annex A14.

Net Present Value @ 10% discount rate = \$39 122,00

Internal Rate of Return (IRR) = 17,7%.

The programme at this level is viable, Milk Centres having the potential for considerable returns. Local marketing is to be maximized and local processing options explored, because sales to central DMB dairies would be far less remunerative.



## PROGRAMME LEVEL

The analysis shows programme build-up over a nine year timeframe, at which time it is assumed that there will be 31 communal area milk centres and projects;

Model 2 (cattle owning farmers) has been used in respect of the calculation of milk production and retention figures. Local milk sales are costed at 50c per litre and constitute 16% of total milk retained (including calf consumption);

An attempt has been made to quantify input from Government, the main proportion of which is provided by Agritex, but other agencies such as Dairy Services and the Veterinary Department are also included. The costings for these, and details of assumptions made, are shown in Annex A15.

### *Capital Costs*

Investment levels are treated as the same for each project and type of milk centre in communal areas; in practice there will be various combinations of groups and different models of centres;

Over and above the capital already detailed at farmer and centre level, DDP capital costs — including vehicles, equipment and infrastructural development at the training centre — have been included as costs;

No capital costs have been added for Government support services, as it is assumed that the service provided is already part of their operations.

### *Recurrent Costs*

Most of these have been detailed at other levels. In addition, however, are DDP operating costs, which include:

- overhead "core" expenses;
- training
- project level programme costs as opposed to farmer costs.

Estimates of expenditure have been made for subsequent years in the programme analysis, considering the number of projects both being implemented and from which DDP is withdrawing.

### *Breakeven*

According to the graph in Annex A16, breakeven will occur at the 8th year if support costs are excluded and around the 10th year if they are included.

## ANNEXES

In order to reduce confusion between the two documents, the annexes to this appendix are given the same numbers as the corresponding annexes in DDPlan. A listing of the annexes is as follows:

- A5 Estimates of Expenditure 1988/89 – 1990/91
- A6 Communal Farmer build-up
- A7 Communal area build-up of cows, Model 1
- A8 Communal area build-up of cows, Model 2
- A9 Communal area build-up of milk production, Model 1
- A10 Communal area build-up of milk production, Model 2
- A11 Communal area build-up of milk retention, Model 2
- A12 Analysis of returns at communal farmer level, Model 1
- A13 Analysis of returns at communal farmer level, Model 2
- A14 Analysis of returns at milk centre level
- A15 Costing of contribution by other agencies (Government)
- A16 Programme level analysis



## DAIRY DEVELOPMENT PROGRAMME

## ESTIMATES OF EXPENDITURE PHASE I PILOT PROJECTS

\$ 000

1988/1989 - 1990/1991

	88/89 CAPITAL	OPERATIONS	TOTAL	89/90 CAPITAL	OPERATIONS	TOTAL	90/91 CAPITAL	OPERATIONS	TOTAL
OVERHEAD/ADMINISTRATION TRAINING	55 248	354 202	409 450	38 57	422 225	460 282	43 27	464 247	507 274
IMPLEMENTATION MASHONALAND EASI COORD. CHIKWAKA MARIRANGWE	80	20 63 22	20 143 22	32 35	25 60	57 95	5 10	56 66	61 76
MANICALAND COORDINATION HONDE TSONZO DOWA	103 12	41 44 36 21	41 147 48 21	6 55 5	49 60 34 36	55 115 39 36	5 15	56 52 15 28	61 67 15 28
MIDLANDS COORDINATION NHARIRA/LANCASHIRE	150	21 59	21 209	18 52	24 69	42 121	3 15	28 52	31 67
MASHONALAND W COORDINATION ZVIMBA/CHIRAU/CHITOMBORWIZI	114	20 40	20 154	32 94	49 69	81 163	5 15	56 57	61 72
MASHONALAND C COORDINATION GURUVE/GOTA	18	21 30	21 48	4 150	24 60	28 210	35 94	56 69	91 163
MASVINGO COORDINATION PILOT 1 2				18 84	24 33	42 117	3 140	28 51	31 191
MATEBELELAND COORDINATION NORTH SOUTH				35 84	40 33 16	75 117 16	5 140 92	48 51 36	53 191 128
TOTAL IMPLEMENTATION	477	438	915	704	705	1409	582	805	1387
TOTAL CONTINGENCY @ 3% CREDIT PROVISION PLANNING	780	994	1774 53 50	799	1352	2151 65 70 50	652	1516	2168 65 80 60
GRAND TOTAL			1877			2336			2373



ANNEX 6

COMMUNAL FARMER & PROJECT BUILD-UP

	1988/89	1989/90	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
Chikwaka	60	80	100	150	200	200	200	200	200
Nharira	20	40	80	120	200	200	200	200	200
Honde	20	40	80	120	200	200	200	200	200
Zvimba		20	60	120	200	200	200	200	200
Guruve			20	60	120	200	200	200	200
N6			20	60	120	200	200	200	200
N7			20	60	100	200	200	200	200
N8			20	60	120	200	200	200	200
N9			20	60	60	120	200	200	200
N10			20	60	60	120	200	200	200
N11			20	60	60	120	200	200	200
N12			20	60	60	120	200	200	200
N13			20	60	20	60	120	200	200
N14			20	60	20	60	120	200	200
N15			20	60	20	60	120	200	200
N16			20	60	20	60	120	200	200
N17			20	60	20	60	120	200	200
N18			20	60	20	60	120	200	200
N19			20	60	20	60	120	200	200
N20			20	60	20	60	120	200	200
N21			20	60	20	60	120	200	200
N22			20	60	20	60	120	200	200
N23			20	60	20	60	120	200	200
N24			20	60	20	60	120	200	200
N25			20	60	20	60	120	200	200
N26			20	60	20	60	120	200	200
N27 - 31			20	60	20	60	120	200	200
<b>TOTAL</b>	<b>100</b>	<b>180</b>	<b>340</b>	<b>630</b>	<b>1 180</b>	<b>1 680</b>	<b>2 420</b>	<b>3 280</b>	<b>4 200</b>

No of schemes	3	4	5	8	12	16	21	26	31
New Coll C	2	1	1	3	4	4	5	5	5



# ANNEX 7

COMMUNAL AREA BUILD-UP-COWS (NON CATTLE OWNERS)

MODEL 1: STARTING UP WITH NO COWS AND HAS TO BUY ONE CROSSBREED

	1988/89	1989/90	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
Chikwaka	60	80	100	210	280	300	350	400	300
Nharira	20	40	80	140	240	280	320	400	400
Honde	20	40	80	140	240	280	320	400	400
Zvimba	20	20	60	120	220	260	320	400	400
Guruve			20	60	120	220	260	320	400
N6				20	60	120	220	260	320
N7				20	60	120	220	260	320
N8				20	60	120	220	260	320
N9					20	60	120	220	260
N10					20	60	120	220	260
N11					20	60	120	220	260
N12					20	60	120	220	260
N13					20	20	60	120	220
N14					20	20	60	120	220
N15					20	20	60	120	220
N16					20	20	60	120	220
N17						20	20	60	120
N18						20	20	60	120
N19						20	20	60	120
N20						20	20	60	120
N21						20	20	60	120
N22							20	20	60
N23							20	20	60
N24							20	20	60
N25							20	20	60
N26							20	20	60
N27								20	20
N28								20	20
N29								20	20
N30								20	20
N31								20	20
	100	180	340	730	1 360	2 020	3 050	4 626	5 780



# ANNEX 8

**MODEL 11: COMMUNAL AREAS BUILD UP: COWS (CATTLE OWNING FARMERS)**

	1988/89	1989/90	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
Chikwaka	120	160	200	360	480	500	490	520	500
Nharira	40	80	160	220	440	480	500	560	500
Honde	40	80	160	220	440	480	500	560	500
Zvimba	40	40	120	240	420	460	520	580	540
Guruve			40	120	240	420	460	520	580
N6			40	40	120	240	420	460	520
N7			40	40	120	240	420	460	520
N8			40	40	120	240	420	460	520
N9				40	40	120	240	420	460
N10				40	40	120	240	420	460
N11				40	40	120	240	420	460
N12				40	40	120	240	420	460
N13				40	40	120	240	420	460
N14				40	40	120	240	420	460
N15				40	40	120	240	420	460
N16				40	40	120	240	420	460
N17				40	40	120	240	420	460
N18				40	40	120	240	420	460
N19				40	40	120	240	420	460
N20				40	40	120	240	420	460
N21				40	40	120	240	420	460
N22				40	40	120	240	420	460
N23				40	40	120	240	420	460
N24				40	40	120	240	420	460
N25				40	40	120	240	420	460
N26				40	40	120	240	420	460
N27				40	40	120	240	420	460
N28				40	40	120	240	420	460
N29				40	40	120	240	420	460
N30				40	40	120	240	420	460
N31				40	40	120	240	420	460
<b>TOTAL</b>	<b>200</b>	<b>360</b>	<b>680</b>	<b>1 280</b>	<b>2 540</b>	<b>3 700</b>	<b>5 370</b>	<b>7 640</b>	<b>9 700</b>



# ANNEX 9

## COMMUNAL AREA BUILD-UP MILK PRODUCTION (LITRES)

### MODEL 1: START UP WITH NO COWS AND HAS TO BUY ONE CROSSBREED (NON CATTLE OWNERS)

	1988/89	1989/90	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
Chikwaka	66 000	88 100	110 000	264 000	352 000	385 000	572 500	690 000	725 000
Nharira	22 000	44 000	88 000	165 000	286 000	352 000	453 000	690 000	725 000
Honde	22 000	44 000	88 000	165 000	286 000	352 000	453 000	690 000	725 000
Zvimba		22 000	66 000	132 000	253 000	319 000	418 000	585 000	655 000
Guruve			22 000	66 000	132 000	253 000	319 000	418 000	585 000
N6			22 000	66 000	66 000	132 000	253 000	319 000	418 000
N7			22 000	66 000	66 000	132 000	253 000	319 000	418 000
N8			22 000	66 000	66 000	132 000	253 000	319 000	418 000
N9				22 000	22 000	66 000	132 000	253 000	319 000
N10				22 000	22 000	66 000	132 000	253 000	319 000
N11				22 000	22 000	66 000	132 000	253 000	319 000
N12				22 000	22 000	66 000	132 000	253 000	319 000
N13					22 000	22 000	66 000	132 000	253 000
N14					22 000	22 000	66 000	132 000	253 000
N15					22 000	22 000	66 000	132 000	253 000
N16					22 000	22 000	66 000	132 000	253 000
N17						22 000	66 000	132 000	253 000
N18						22 000	66 000	132 000	253 000
N19						22 000	66 000	132 000	253 000
N20						22 000	66 000	132 000	253 000
N21						22 000	66 000	132 000	253 000
N22							22 000	66 000	132 000
N23							22 000	66 000	132 000
N24							22 000	66 000	132 000
N25							22 000	66 000	132 000
N26							22 000	66 000	132 000
N27							22 000	66 000	132 000
N28							22 000	66 000	132 000
N29							22 000	66 000	132 000
N30							22 000	66 000	132 000
N31							22 000	66 000	132 000
	110 000	198 000	374 000	858 000	1 727 000	2 409 000	3 898 000	6 010 000	10 127 000



## COMMUNAL AREA BUILD-UP: MILK PRODUCTION (LITRES) CATTLE OWNERS

## MODEL 2: START UP WITH 2 INDIGENOUS

	1988/89	1989/90	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
Chikwaka	87 600	116 800	146 000	301 500	402 000	429 000	526 150	604 200	613 500
Nharira	29 200	58 400	116 800	241 200	402 000	429 000	526 150	604 200	613 500
Honde	29 200	58 400	116 800	241 200	402 000	429 000	526 150	604 200	613 500
Zvimba		29 200	87 600	175 200	402 000	429 000	526 150	604 200	613 500
Guruve			29 200	87 600	175 200	402 000	429 000	526 150	604 200
N6			29 200	87 600	175 200	402 000	429 000	526 150	604 200
N7			29 200	87 600	175 200	402 000	429 000	526 150	604 200
N8			29 200	87 600	175 200	402 000	429 000	526 150	604 200
N9			29 200	87 600	175 200	402 000	429 000	526 150	604 200
N10			29 200	87 600	175 200	402 000	429 000	526 150	604 200
N11			29 200	87 600	175 200	402 000	429 000	526 150	604 200
N12			29 200	87 600	175 200	402 000	429 000	526 150	604 200
N13			29 200	87 600	175 200	402 000	429 000	526 150	604 200
N14			29 200	87 600	175 200	402 000	429 000	526 150	604 200
N15			29 200	87 600	175 200	402 000	429 000	526 150	604 200
N16			29 200	87 600	175 200	402 000	429 000	526 150	604 200
N17			29 200	87 600	175 200	402 000	429 000	526 150	604 200
N18			29 200	87 600	175 200	402 000	429 000	526 150	604 200
N19			29 200	87 600	175 200	402 000	429 000	526 150	604 200
N20			29 200	87 600	175 200	402 000	429 000	526 150	604 200
N21			29 200	87 600	175 200	402 000	429 000	526 150	604 200
N22			29 200	87 600	175 200	402 000	429 000	526 150	604 200
N23			29 200	87 600	175 200	402 000	429 000	526 150	604 200
N24			29 200	87 600	175 200	402 000	429 000	526 150	604 200
N25			29 200	87 600	175 200	402 000	429 000	526 150	604 200
N26			29 200	87 600	175 200	402 000	429 000	526 150	604 200
N27			29 200	87 600	175 200	402 000	429 000	526 150	604 200
N28			29 200	87 600	175 200	402 000	429 000	526 150	604 200
N29			29 200	87 600	175 200	402 000	429 000	526 150	604 200
N30			29 200	87 600	175 200	402 000	429 000	526 150	604 200
N31			29 200	87 600	175 200	402 000	429 000	526 150	604 200
	146 000	262 800	496 400	1 134 300	2 162 800	3 110 800	4 595 400	7 122 750	9 420 650



# ANNEX 11

## COMMUNAL AREA BUILD-UP MILK RETENTIONS (LITRES)

### MODEL II : CATTLE OWNERS

	1988/89	1989/90	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
Chikwaka	36 720	48 960	61 200	110 160	146 880	153 000	179 700	198 800	202 600
Nharira	12 240	24 480	48 960	79 560	134 640	146 880	175 160	191 200	198 800
Honde	12 240	24 480	48 960	79 560	134 640	146 880	175 160	191 200	198 800
Zvimba		12 240	36 720	73 440	128 520	140 760	159 120	187 400	195 000
Guruve			12 240	36 720	73 440	128 520	140 760	159 120	187 400
N6				12 240	36 720	73 440	128 520	140 760	159 120
N7				12 240	36 720	73 440	128 520	140 760	159 120
N8				12 240	36 720	73 440	128 520	140 760	159 120
N9					12 240	36 720	73 440	128 520	140 760
N10					12 240	36 720	73 440	128 520	140 760
N11					12 240	36 720	73 440	128 820	140 760
N12					12 240	36 720	73 440	128 820	140 760
N13						12 240	36 720	73 440	128 520
N14						12 240	36 720	73 440	128 520
N15						12 240	36 720	73 440	128 520
N16						12 240	36 720	73 440	128 520
N17							12 240	36 720	73 440
N18							12 240	36 720	73 440
N19							12 240	36 720	73 440
N20							12 240	36 720	73 440
N21							12 240	36 720	73 440
N22								12 240	36 720
N23								12 240	36 720
N24								12 240	36 720
N25								12 240	36 720
N26								12 240	36 720
N27									12 240
N28									12 240
N29									12 240
N30									12 240
N31									12 240
	61 200	110 160	208 080	416 160	777 240	1 132 200	1 588 780	2 402 640	3 149 080



## ANALYSIS OF RETURNS AT COMMUNAL FARMER LEVEL

## MODEL 1: NON-CATTLE OWNER

YEAR	NUMBER OF COWS	TOTAL PRODUCTION (LITRES)	MARKETED PRODUCTION (LITRES)	PRODUCTION COST (\$)	DISCOUNTED 10%	GROSS INCOME (\$)	DISCOUNTED 10%	NET BENEFIT FLOW
0				2 500	2 500			- 2 500
1	1CR	1 100	794	350.00	318.06	389.06	353.66	35.51
2	1CR	1 100	794	350.00	289.10	389.06	321.36	32.26
3	1CR	1 100	794	350.00	262.85	389.06	292.18	29.33
4	2CR	2 200	1 588	523.40	357.48	778.12	531.46	173.08
5	2CR	2 200	1 588	523.40	325.03	778.12	483.21	158.18
6	2CR	2 200	1 588	523.40	295.20	778.12	438.86	143.60
7	1PB 1CR	3 950	3 090	583.40	299.28	1 514.10	776.73	477.45
8	1PB 1CR	3 950	3 090	583.40	272.45	1 514.10	707.08	434.63
9	1PB 1CR	3 950	3 090	583.40	247.36	1 514.10	641.98	349.62
<b>TOTAL</b>					<b>5 166.90</b>		<b>4 546.52</b>	<b>- 620.38</b>

KEY - CR - Crossbreed  
PB - Purebreed

Net Present Value @ 10% discount rate = -\$620.38

Internal rate of return (IRR) = 8.4%



## ANNEX 13

## ANALYSIS OF RETURNS AT COMMUNAL FARMERS LEVEL MODEL II: CATTLE OWNER

YEAR	NUMBER OF COWS	TOTAL PRODUCTION (LITRES)	MARKETED PRODUCTION (LITRES)	PRODUCTION COST \$	DISCOUNTED 10%	GROSS INCOME \$	DISCOUNT 10%	NET BENEFIT FLOW
0				1 500	1 500			- 1 500
1	2 Ind	1 460	848	377.4	343.06	415.52	377.71	34.65
2	2 Ind	1 460	848	377.4	311.73	415.52	343.22	31.49
3	2 Ind	1 460	848	377.4	283.43	415.52	312.06	28.63
4	2 Ind	2 560	1 642	443.4	302.40	864.58	578.21	275.81
	1 Cross							
5	2 Ind	2 560	1 642	443.4	275.35	864.58	525.73	250.38
	1 Cross							
6	2 Ind	2 560	1 642	443.4	250.08	864.58	487.62	237.54
	1 Cross							
7	2 Cross	3 300	2 292	523.4	268.50	1 123.08	578.16	309.66
8	2 Cross	3 300	2 292	523.4	244.43	1 123.08	524.48	280.05
9	2 Cross	3 300	2 292	523.4	221.92	1 123.08	476.19	254.27
<b>TOTAL</b>					<b>4 000.9</b>		<b>4 203.88</b>	<b>202.48</b>

KEY - Ind = Indigenous

Cross = Crossbreed

Net Present Value @ 10% = \$202.48

Internal Rate of Return (IRR) = 15%



ANNEX 14

COMMUNAL MILK CENTRE ANALYSIS OF RETURNS

YEAR	TOTAL MILK COLLECTED	LOCAL SALES (LITRES)	EXTERNAL SALES (LITRES)	TOTAL COST (\$)	DISCOUNT 10%	GROSS CENTRE REVENUE	DISCOUNT 10%	NET BENEFIT FLOW
0				75 000	75 000			- 75 000
Investment								
1988/89	16 900	16 900		9 497	8 862	11 872	10 791	1 929
1989/90	33 000	33 920		18 994	15 689	23 744	19 612	3 923
1990/91	67 840	67 840		37 989	28 529	47 488	35 663	7 134
1991/92	161 640	161 640		90 517	61 823	113 148	77 280	15 457
1992/93	267 360	267 360		149 721	92 976	187 152	116 221	23 245
1993/94	350 990	270 000	12 120	151 848	85 642	189 000	106 596	20 954
1994/95	350 990	270 000	80 990	156 669	80 371	189 000	96 957	16 586
1995/96	413 000	270 000	143 000	161 000	75 187	189 000	88 263	13 076
1996/97	414 700	270 000	44 700	161 000	68 318	189 000	80 136	11 818
<b>TOTAL</b>				<b>937 364</b>	<b>592 397</b>		<b>631 519</b>	<b>39 122</b>

(i) Net Present Value at 10% Discount = \$39 122

(ii) IRR COMP = 17.7%



## ANNEX 15

### CONTRIBUTION BY OTHER AGENCIES (GOVERNMENT)

#### ASSUMPTIONS

1. Provincial Agricultural and Extension Officer visits projects twice a year, spending two hours on each visit, travelling 400km @ a rate of \$0.513/km/year.
  2. Regional Agritex Officer - once in 3 months - spending 2 hours mileage 300km @ \$0.513/km.
  3. Senior Supervisor - 2 hours once a month travelling 720km (0.513c)
  4. Supervisor visits once a week - covering 1920km/year at \$0.14/km (motor bike)
  5. Extension Officer visits once a month travelling 1200km/year @ \$0.513/km.
  6. Specialist (Agritex) - once in 3 months travelling 800km.
  7. Extension worker - spending two full working days a week - travelling 4 800km @ \$0.14/km.
- \* Other Agencies i.e. Dairy Services, Veterinary Department, Local Govt, Health Department, Physical Planning, Ministry of Water, spend 1/3 of the Agritex costs:



CONTRIBUTION BY AGRITEX AND OTHERS

STAFF LEVEL	AVERAGE SALARY SALARY/MONTH	MAN MONTHS PER ANNUM	ACTUAL CONTRIBUTION	TRAVELLING & SUBSISTANCE	TOTAL CONTRIBUTION
Extension worker	554	4.8	2 659.20	672.00	3 331.20
Extension Specialist	1 280	0.05	64.00	410.40	474.40
Extension Officer	1 144	0.15	171.60	615.60	787.20
Supervisor	702	0.30	210.60	268.80	479.40
Superior Supervisor	831	0.15	124.65	364.36	494.01
District Agric. Extension Officer	1 672	0.05	83.60	153.90	237.50
A/PAEO	2 083	0.0007	17.50	205.20	222.70
<b>TOTAL</b>					<b>6 026.41</b>

\* Other Agencies

2 008.80

\$8 035.21

\* See assumption for this section



PROGRAMME LEVEL ANALYSIS

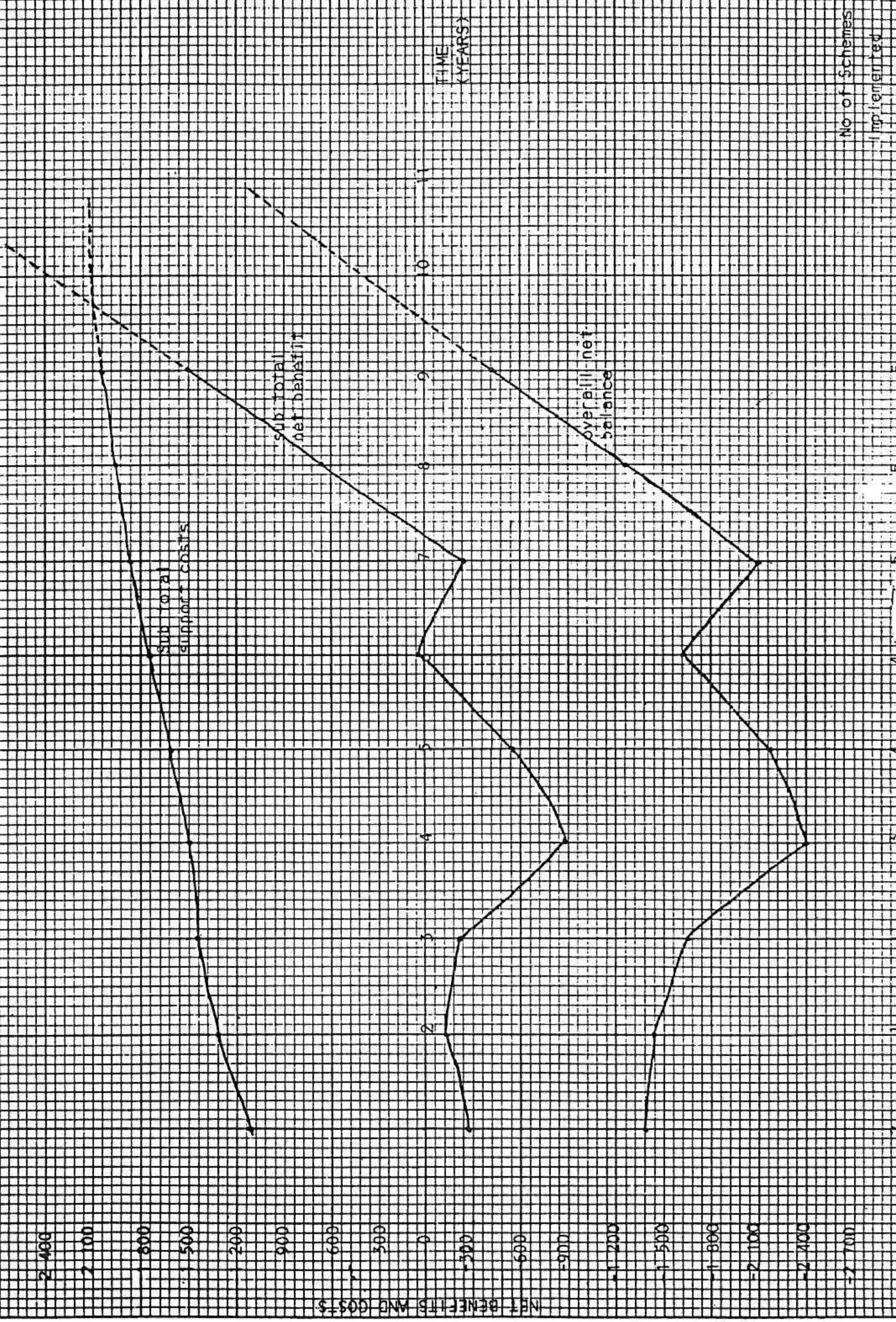
ANNEX 16

1988/89 1989/90 1990/91 1991/92 1992/93 1993/94 1994/95 1995/96 1996/97

	1988/89	1989/90	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
<u>Cumulative Numbers</u>									
Number of Communal Farmers	100	160	300	570	1100	1680	2420	3280	4200
Number of Communal MCCS	2	1	1	3	4	4	5	5	5
Number of CA Schemes	3	4	5	8	12	16	21	26	31
<u>Milk Production &amp; Retentions</u>									
C.A. Milk production (litres)	146 000	262 800	496 400	1134 300	2162 800	3110 800	4595 400	7122 750	9420 650
C.A. Milk Retentions (litres)	61 200	110 160	208 080	416 160	777 240	1132 200	1588 780	2402 640	3149 080
Marketed to C.A. MCC (Litres)	84 800	152 640	288 322	718 140	1385 560	1978 600	3006 620	4720 110	6271 570
<u>Revenue</u>									
Communal Area farmers (\$)	41 552	74 794	141 278	351 889	678 924	969 514	1473 244	2312 854	3073 069
Value of Milk retentions (\$)	4 896	8 813	16 646	33 293	62 179	90 576	127 102	192 211	251 926
Communal Area Collection Centre (\$)	59 360	106 848	201 825	502 698	969 892	1315 769	1620 568	2147 650	3073 069
<u>Investment</u>									
Communal Farmer Level (\$)	150 000	120 000	240 000	435 000	825 000	450 000	810 000	390 000	180 000
Collection Centres (C.A.) (\$)	150 000	75 000	75 000	225 000	300 000	300 000	375 000	375 000	375 000
<u>Variable costs</u>									
Communal Farmers (\$)	37 700	67 860	128 180	244 110	456 740	655 800	961 920	1328 840	1721 480
Collection centres (C.A.) (\$)	28 491	66 479	142 458	357 025	672 639	923 713	1318 544	1897 159	2549 952
<u>Sub Total Net Benefit (\$)</u>	- 260 383	- 138 884	- 225 889	- 875 451	- 543 384	46 346	- 244 550	661 716	1571 632
<u>Support Costs</u>									
Agritex extension costs (\$)	18 078	24 104	30 130	48 208	72 312	96 416	126 546	156 676	186 806
Other govt. departments (\$)	6 024	8 032	10 040	16 064	24 096	32 128	42 168	52 508	62 248
DDP Costs (\$)	1107 000	1297 000	1395 000	1495 000	1570 000	1645 000	1695 000	1745 000	1795 000
<u>Sub total support costs (\$)</u>	1131 102	1329 136	1435 170	1559 272	1666 408	1773 544	1863 714	1953 884	2044 054
<u>Overall Net Balance</u>	-1391 485	-1468 020	-1661 059	-2434 723	-2209 792	-1727 198	-2108 264	-1292 168	- 472 422



PROGRAMME LEVEL ANALYSIS



No of Schemes Implemented



**APPENDIX 7:  
SELECT BIBLIOGRAPHY**

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APPENDIX B  
SELECT BIBLIOGRAPHY

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