

ASSISTING LIVESTOCK DEVELOPMENT

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**EXPERIENCE OF DEVELOPMENT COOPERATION
WITH REFERENCE TO LIVESTOCK IN THE PERIOD 1978-1984**

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INTRODUCTION

Some of the earliest development projects with which the Netherlands was concerned were in the livestock sector, largely because of that sector's importance in the development of Dutch agriculture; it was also the subject of some of the first field reports of the Operations Review Unit of the Foreign Ministry. As the number of reports grew so too did the idea of preparing an overall summary and review.

The miserly treatment often meted out to the livestock sector by governments and private investors alike often contrasts sharply with its contribution to the national and regional economies of many developing countries: a clearer understanding of the nature and scope of livestock activities may help ensure that more sensible priorities are set, both in the developing world and among donors.

This survey is based on a sample from the 94 livestock projects to which the Netherlands has contributed. The Operations Review Unit examined 23 activities over the period 1978-84, eleven of them in 1983 or 1984 (some of these were re-evaluations), so that much of the information used is of recent date. The activities evaluated, which were concerned mainly or entirely with the livestock sector, accounted between them for commitments totalling 140 million guilders. The activities are (or were) located in nine countries, all of them programme or ex-target countries.* The findings and conclusions cannot be applied unmodified by middle-income and newly industrializing countries.

Each field evaluation lasted two-to-three weeks. The reports produced are effectively snapshots, and in a number of cases changes occurred after (and sometimes because of) the Unit's visit. In order to bring the picture up to date Part III reviews the most recent position in current livestock projects.

The evaluation reports differ widely in both form and content, reflecting the diversity of the activities inspected, and this made systematic comparison difficult. Despite the relatively large number of projects evaluated (a quarter of the total) this summary must be regarded as somewhat provisional: its main function is as an illustrative, exploratory study, serving to provide foundations for policy guidelines and the gradual creation of an action programme for livestock development.

A review of this country's experiences of aid activities in the livestock sector cannot hope to cover all aspects of the subject.

*) Burkina Faso, Egypt, Kenya, Yemen Arab Republic, Peru, Sri Lanka, Tanzania, Tunisia, Zambia.

INTRODUCTION

Initially the emphasis was very much on increasing the production of milk, rarely that of meat. Cattle farming is nevertheless not a synonym for dairy farming, and indeed the gross value of all meat production in the developing countries is almost equal to that of the developed countries' milk output.

The keeping of buffaloes and of small livestock is touched on only incidentally; it is a subject which would require a separate study. Pigs, goats, poultry and so on are of great importance particularly to the poorest groups among the rural peoples of developing countries, who derive food, other products and income from them. Two thirds of the meat produced in developing countries comes from such animals, whose numbers are growing at almost twice the rate of the world beef and dairy herd.

Similar considerations apply to the world's 130-150 million buffaloes, most of them in Asia. In India the average buffalo produces four times as much milk as the average cow, and for millions of small farmers buffaloes are of vital importance because of their ability to digest low-grade fodder and crop residues. The economic exploitation of game, on which attention has focused of late, is also not discussed here.

The meat and milk processing sector, which accounted for aid commitments totalling some 100 million guilders (27 activities) over the period 1978-84, also falls outside the scope of this summary. Nor do we cover food aid in the form of dairy products, even though total Dutch aid in this form is almost equal to this country's livestock sector commitments in programme countries.

Part I of this report sets the background with a review of the importance of the beef and dairy sector in developing countries, looking at the principal livestock management systems, the amount and value of livestock production and the economic and social position of livestock keepers. We then briefly describe the world market in beef and dairy products and review the development of Dutch aid policies in this field. This part ends with a discussion of the views of developing countries and international organizations.

Part II outlines the Unit's findings. Four phases are distinguished in development cooperation activities, and the findings are set out by phase and by country. The chapter on project organization discusses problems of a general nature.

Part III reviews the present state of affairs. Projects representing all four phases are to be found in current practice and the outlines of a fifth phase are beginning to emerge.

Part IV comprises two appendices. The eight tables of appendix 1 illustrate the livestock sector's importance to the developing world. An overview of aid commitments in the livestock sector is given in appendix 2 (tables 9-15).

Cattle, markets and policies

Cattle are of great importance to the peoples of the Third World: without cattle large parts of Africa would be unsuitable for human habitation and a majority of the rural population of developing countries depend at least in part on cattle for their survival. There are many different husbandry systems and the functions of cattle for those who keep them can vary widely, depending on the local situation. Cattle not only produce meat and milk: they may also be important as suppliers of organic fertilizer and animal traction. In certain parts of Africa the socio-cultural role of cattle is as important as their economic role.

Rising urban incomes in developing countries have led to a very sharp increase in demand for meat and milk products; in turn this has pushed up imports particularly of dairy products.

The world market for beef and dairy products is anything but open and accessible. The main industrial countries operate highly interventionist market regimes which often detach internal prices from world prices. Countries can protect themselves from the low prices caused by surpluses – if they can afford to do so. Farmers in developing countries generally lack the organization and political power needed to defend themselves against cheap imports, and low prices to urban consumers are often the deciding factor when developing-country governments set their priorities.

While this country has lacked specific guidelines for development cooperation in the livestock sector, the central objectives of Dutch development policy provide an adequate framework for activities in this area. Indeed, the sub-goals of policy would appear to accord it a certain priority, in that the Netherlands has special expertise in the livestock sector and Dutch industry and commerce play a major part in it.

Economic circumstances in many developing countries encourage the creation of large-scale capital and cereal-intensive livestock enterprises. Governments often believe that high milk output can best be achieved by the use of high grade cattle, and the large-scale approach may also be attractive where otherwise management capacity would be too thinly spread.

Among the major international donors a degree of unanimity has grown on the approach to livestock development: the importance of indigenous husbandry, animal traction and market systems is generally stressed.

Findings

The development of this country's involvement in livestock activities may be seen as a learning process comprising four phases. While the phases overlap and developments differ from one country to another this view nevertheless gives a broad picture of trends over the years.

The first phase, the large-scale supply of Dutch dairy cattle, came to an end in the 1970s when it was found that the animals were generally unable to adjust to local conditions: climate, feed and management systems all posed problems. The cattle were unsuited to small farmers' needs; they could not be used as draught animals and often suffered from disease, stress, leg problems and infertility.

Problems associated with the distribution of imported cattle to small farmers led to their having to be kept on large, sometimes state-owned, farms, and in the second phase the Netherlands became involved in establishing and equipping large-scale modern dairy enterprises. The management of these complex ventures, however, proved to be a stumbling block, and while the technical organization of the large farms was reasonably satisfactory the mechanization of fodder production and milking gave rise to problems. Imported equipment was often ill suited to local requirements and conditions.

It was gradually realized that the import-dependent activities of the first two phases were inappropriate. In developing countries animal husbandry is generally on a very small scale, and in the third phase aid was increasingly targeted on the small farmer – an approach which was sometimes difficult to reconcile with existing large-scale livestock projects.

As attention switched to the small farmer the view taken of cattle also changed, and in the fourth phase greater emphasis was put on the diversity of their functions for local people: not just as milk producers but also as sources of animal power and manure. The importance of animals other than cattle was also recognized. A more integrated approach was developed in which livestock activities were seen in the context of mixed farming systems. In many countries it is the women who feed and care for livestock and process and sell animal products. Aid activities began to take this fact increasingly into account.

Our analysis of the problems of a general nature which arise in the formulation, establishment and implementation of livestock projects points to a number of conclusions affecting the Directorate General for International Cooperation (DGIS), the advisory agencies and Dutch field experts and their counterparts. The 1982 DGIS Instruction Handbook, with its guidelines for project identification, formulation, appraisal, implementation, supervision and evaluation, provides a vital foundation for a consistent approach; the lack of such guidelines before 1982 gave rise to inconsistencies and confused priorities, with particular problems being caused by the absence of clear job descriptions for field experts and project advisors. It was also found that project preparation included technical but often not economic analyses, while activities involving e.g. animals other than cattle or indigenous husbandry practices were given no attention whatsoever.

SUMMARY

Advice was largely technical, specialist and fragmented: a multidisciplinary approach, covering e.g. women's role in animal husbandry, was lacking, and while the stress on intensive dairy farming was understandable given the Dutch background, it was too one-sided. There were nevertheless exceptions, with some advisors seeking to cover a broader field. A similar picture obtains in the case of the field experts: for all the criticism of an excessive 'dairy-mindedness' and ignorance of e.g. marketing issues there were honourable exceptions. A specific problem that has been identified is the inadequate involvement of local counterparts: this has a major impact on projects' prospects of success and merits separate discussion.

The current situation

To do justice to current development cooperation practice in the livestock sector we examine the current position to see what traces of the earlier phases still remain. The period of large-scale livestock supplies and aid to large-scale modern dairy enterprises is now closed, but the focus on small farming and the integrated approach to livestock activities of the third and fourth phases are still a feature of the scene. It is realized that there is no easy solution for the many and varied problems of the livestock sector, and in today's more structural approach the emphasis is on the need to ensure that activities have a lasting impact and can continue operating after transfer to local management.

The outlines are now beginning to emerge of a possible fifth phase, in which individual livestock activities are placed in the context of market regimes and pricing policies and of the natural environment. The existence of market and ecological constraints means that a coordinated approach is essential.



Policy guidelines for the livestock sector

A comprehensive analysis should be made of the local livestock sector (including animals other than cattle) before any livestock activities are developed or supported. Such an analysis could serve as a basis for country- and region-specific development cooperation guidelines and thereby considerably improve the consistency and direction of livestock projects. Such guidelines need to be drawn up in close collaboration with a broadly based expert working group in the Netherlands and the programme countries. The sectoral analysis should cover the socio-cultural significance of livestock and the role of women in cattle husbandry.

Local markets

Given the dependence of livestock activities on markets (for livestock, concentrates, dairy products etc.) effective cooperation in this sector clearly demands thorough market knowledge. The frequently adverse impact of international and national market policies on livestock projects should receive due attention in the development of activities. Monitoring market prices and local supply and demand (for inputs as well as products) is as important as the technical side of project implementation. Notwithstanding these considerations, for large sections of the population cattle husbandry has a local subsistence function for which there is no alternative.

Project design

Livestock projects involving the Netherlands should have as wide an impact as possible, and this requirement must be borne in mind throughout the processes of identification, formulation and appraisal. If projects are directed from the start towards the poorer groups within the rural population they are more likely to make a real contribution to improving their living conditions.

Choice of technology

Local practices and know-how should be the starting point for livestock projects. Appropriate technology which is affordable and can be used and maintained by local people is generally preferable to the imported variety: the latter can sometimes bring about rapid increases in output but is often expensive, vulnerable and demanding in terms of maintenance and repairs. The increased risks associated with the introduction of improved livestock techniques should not be offset by giving preference in project implementation to support for the better-off livestock keepers (who can bear greater risks). In accordance with Dutch policy criteria livestock activities should be designed in such a way as to be accessible, and beneficial, to the 'average' livestock keeper.

RECOMMENDATIONS

Mixed farming

Preference should be given in livestock development to mixed management systems, since these are often more in keeping with local practice and capacities. The average small farmer rarely has the potential for specialized intensive livestock farming, and moreover mixed approaches can offer greater opportunities for involving women as well as men, help to increase total output (as by-products can be used on the same farm) and allow all the various functions of cattle to be exploited (traction, dung, conversion of crop residues, etc.).

The role of women

Project design and implementation must take account of women's often vital role in animal husbandry. Before any activity is initiated an analysis must be made of the part played by women in feeding and caring for animals and in processing and selling their products. Participation by women in their own right can often best be promoted through credit schemes also covering animals other than cattle. Loan conditions should reflect this orientation towards women (and towards livestock other than cattle), as should the selection of livestock experts and advisors.



RECOMMENDATIONS

Farmer organizations

Farmer organizations provide an excellent means of overcoming the geographical, social, cultural and political isolation of livestock keepers. They should have specific functions and should preferably be concerned with buying and selling livestock and livestock-related products. A farmer organization may be able to compel local dairy factories to take its member's milk.

The farmers' cooperative will generally be the most suitable form of organization. Information for farmers (women as well as men) and training in cooperative methods and management are essential to success. Effective cooperation, particularly in the area of buying and selling, requires literacy, and support for farmers' organizations should therefore be coupled with support for literacy programmes.

A condition for the granting of support must be that the developing-country's government permits local cooperatives to develop with at least a minimum of autonomy.

Extension and training

Livestock extension and training should be geared in the first instance to the needs of small farmers. In most cases a general plan for the use of the project is an essential foundation. The content of an extension programme must be attractive and replicable to the average farmer.

A careful selection of local support points (preferably involving well-motivated small farmers) is a good basis for the establishment of an extension programme. Where the message is research-based, care is needed to ensure its relevance to local needs: purely technical information is rarely relevant to development and is often remote from the reality of local livestock practices. Extension programmes should take account of environmental issues and should provide for equal participation by women.

Counterpart training is vital and should never be restricted to matters relating only to cattle but should also cover other local livestock and crop production and marketing.

Research and extension centres should be geared directly to serving local farmers. There is some tendency to see them as ends in themselves: this should not be allowed. Such centres are generally not appropriate for training women.

Roughage and veterinary care

The problem of undernourished livestock must be resolved primarily by the

RECOMMENDATIONS

greater and more efficient use of roughage derived from by-products of arable farming. This should be a major theme for advisory services. The choice of crops should take account of the possible use of waste and by-products as feed: sometimes the more productive varieties have less or less useful by-products.

Veterinary care remains an important factor in improving livestock productivity and can also be used to help encourage the organization of farmers.

Improved roughage supplies are a precondition for effective veterinary care and the genetic improvement of livestock.

Projects teams and advisors

Project teams and supervisory committees should be multidisciplinary. Sociologists or anthropologists and experts on market and pricing policy should complement livestock experts. It is vital that there are women livestock experts and advisors. Distinguishing carefully between preparation, implementation and supervision can help prevent misunderstandings and disagreements about competence.

Field reporting needs to be improved. Financial and economic information and market intelligence should be standard features of reports and the preparation of final reports should be standard procedure, even where projects have failed: final reports provide important learning material.

Counterparts

More systematic study is needed of the availability and use of local counterparts and their participation in projects needs to be increased. This is essential for the transfer of expertise and the continuity of activities.

The natural environment

Livestock development should not be at the expense of the natural environment. This may mean refraining from undertaking projects, however good their short-term production prospects, where no solution has been found for the overriding problem of low and declining fertility (e.g. in the Sahel). The management and use of land and water resources needs to be planned. Further research and additional experience in these areas are essential.

The cost of the heavy use of fertilizers (artificial fertilizer, natural phosphates and green manure) must be set against the often far heavier costs of irreversible soil degradation, desertification and permanent food aid. Land reclamation projects should take account of the interests of small livestock farmers.

PROSPECTS

The livestock activities investigated have not so far produced very positive results, but as cattle have become less fashionable as producers of milk for developing countries another function of livestock has become increasingly evident to those involved in agricultural projects, namely animals' essential role in the development of arable farming. Integrated agricultural systems depend on their livestock element. The great importance of cattle, and of livestock in general, to the national and local economies of developing countries implies a need for a livestock component in virtually all development cooperation activities in rural areas.

Generally speaking, experts agree that in order for livestock development to be manageable and effective it must be undertaken as gradually as possible, and preferably in stages. This enables practical experience and knowledge of the specific local conditions to be built up gradually. In fact, however, the livestock activities proceeded in a manner which was the reverse of this: instead of starting from simple small-scale projects geared to local people and their livestock and building up to larger-scale and technically more advanced activities, we have moved in the opposite direction.

Dutch development aid began with the export of capital goods. Operational models and expertise were transplanted from the Netherlands. Livestock projects were large-scale, capital-intensive, complex and specialized. This approach proved useful only in very special circumstances and benefited only small numbers of privileged farmers. It was by no means always applauded by all livestock experts and advisors, but often they were faced with a fait accompli of goods or livestock already delivered.

The experience of twenty years revealed that the route had been ill chosen. Achieving lasting results meant taking a longer road, via the local population. The attention of experts and advisors shifted from exotic livestock to the indigenous livestock farmer.

Where livestock projects are one component of integrated rural development – an approach taking shape e.g. in Sri Lanka – large sections of the rural population can be reached. The links between livestock and crop production, the natural environment and markets have proved to be of fundamental importance. This is the major lesson from the laborious and 'back to front' learning process of livestock development.

The integrated approach also has its dangers, however, in that the tangle of relevant factors may become the trees which obscure the wood of our projects and priorities. The realization that animal husbandry forms part of a complex local socio-economic system should not tempt us to try to tackle everything at once on the grounds that everything depends on everything else. Few projects could be implemented in this way. Integration is no synonym for vague and unverifiable

PROSPECTS

objectives, no excuse for failing to set priorities. On the contrary: separate and specific activities, each susceptible to evaluation, remain the components of integrated rural development.

No livestock project is an island. Today's demand that development activities be lasting, replicable and transferable means that appraisals must take account of all the factors affecting livestock production, must weigh the influences of local, national and even international markets. The knowledge and experience built up by trial and error can bear fruit in the form of a new approach, which in this summary we have entitled the fifth phase.

CATTLE, MARKETS AND POLICIES

CATTLE IN DEVELOPING COUNTRIES

Cattle are ruminants and as such can transform many nutrients which human beings cannot digest into such valuable products as milk, meat, pulling power and dung. Some two thirds of all the cattle in the world are found in developing countries. Because ruminants can often survive in areas where arable farming is difficult or impossible they are of great importance to the people of developing countries, where one half to three quarters of the rural population depend at least in part on cattle for their livelihood. Indeed, it is estimated that 12% of the world's population are entirely dependent on cattle products. Large parts of Africa would be unsuitable for human habitation were it not for cattle farming, and it is in these areas that around half of all the cattle in Africa are to be found. It is in Africa too that the problem of overgrazing, due to the presence of too many cattle, and the consequent disturbance of the balance of nature is most serious.

There is generally a complementary relationship between livestock and arable farming, with cattle providing pulling power and dung and being fed on the products (and by-products) of arable farming. Such an integrated approach generally leads to higher overall outputs.

A competitive relationship is also possible, however, notably where cattle are fed largely or exclusively on locally produced feedstuffs (roughage or concentrate) and the area under cultivation is very limited.

There are many forms of livestock farming. The main factors determining its nature are:

1. ecological zones: arid, semi-arid, sub-humid, humid areas, tropical highlands;
2. livestock species: cattle, buffaloes, camels, goats, sheep, non-ruminants (which may or may not be kept in combination);
3. desired products: food (milk, meat, blood), materials (leather, wool, horn), dung (as fertilizer, fuel or building material), power (cultivation, pumping, threshing, transport), offspring (to increase herd or for trade);
4. predominant functions:
 - economic: consumption, income, security, spreading of risk;
 - social and cultural: dowry, social status;
5. management: grazing or stall feeding, communal or individual grazing, extensive or intensive methods (labour, capital, land), traditional or modern technology, environmental and water management;
6. markets: proximity and size of markets, relative prices of inputs and outputs for arable and livestock farming, subsistence;
7. government policy: subsidies, market regimes, services and production infrastructure.

Animal husbandry systems

Six systems are distinguished here:

1. Nomadism (in which people move from place to place with their livestock, their movements being determined by the availability of food and water and the presence/absence of disease) and transhumance (the seasonal migration of livestock from a fixed base to suitable grazing grounds) are commonest in arid zones, where keeping livestock is the only activity. The herds are mainly made up of cattle, camels, goats, sheep and sometimes donkeys. The preference for mixed herds reflects the different grazing requirements of the various species of animal and a desire to spread risk.

The main products of this system are milk, meat, hides, dung, fuel, blood, urine and power for both transport and pumping water. Nomads use cattle as a medium of exchange in dealings with local cereal farmers. There are many variations, but the main features of nomadism and transhumance are extensive grazing, communal pasturage and maximization of herd size (giving rise to the danger of overgrazing). Under this system the living standards of the people concerned are at or just above subsistence level.

2. Sedentary mixed farming of a type in which animal husbandry is subordinate to the cultivation of crops is mainly found in the humid tropics. Cattle, often kept in combination with buffaloes, sheep and goats, are important mainly for their pulling power, with milk, dung and meat being important by-products.

Animal traction increases the productivity of labour. Moreover, because it also tends to increase the amount of human labour used, it can also help reduce the hidden unemployment which is common particularly in rural Asia. In mixed systems in the humid tropics the owners of livestock, notably draught animals, are generally not among the poorest members of the population, and the hiring out of draught animals leads to a transfer of income to the better-off.



3. Mixed farming of a type in which crop cultivation is subordinate to the keeping of livestock (notably for milk production) is to be found in the tropical highlands. Intensive cultivation, high livestock densities, high soil fertility, an absence of animal diseases (sleeping sickness), the easy availability of water and moderate temperatures facilitate feed and milk production. Other characteristics of this system are generally communal pasturage and the use of arable by-products as animal feed.

4. Specialized intensive dairy farming is relatively rare in the tropics and was introduced either in the colonial period or in the context of development aid. It has involved importation of high yielding dairy cattle from Europe or other temperate zones, sometimes cross-breeding them with local stock. Only around 1% of all cattle in developing countries are kept under this system.

5. The large-scale extensive husbandry systems (ranching) of North and South America generally developed under European (Spanish) influence. They were also introduced in various African countries in the colonial period and have since been promoted in the framework of development aid.

The ranches of South America are the property of large land-owners who employ hired labour. This regularly leads to social tensions. The best land is not used for arable farming. Rapid expansion of the ranching system in South America can lead to rapid degradation of the land.

6. Livestock keeping in India may be regarded as a distinct system. The country has vast numbers of cattle and buffalo (182 million and 63 million respectively) which are kept mainly for their milk (with buffalo supplying 60% of milk output), pulling power and dung (as fertilizer and fuel). The prohibition on slaughtering cattle means that beef has little value (except to the moslem population). Once they are weaned bull calves which are not intended for use as draught animals are neglected to the point that many die prematurely. Cows are generally kept on communal grazing land. Some landless peasants are able to keep cattle in this way, often surviving on roadsides and marginal land.

The socio-economic position of livestock keepers

The socio-economic position of cattle owners depends very much on the system involved.

The political influence of cattle owners (with the exception of ranch owners) is generally slight, mainly on account of their largely isolated way of life and lack of schooling and organization. In most developing countries state investment in the livestock sector does not reflect the importance of its contribution to the gross national product, and this tends to confirm and even reinforce the disadvantaged position of livestock owners.

Many livestock-related activities are carried out by women. In many parts of the world they look after the animals and often play a more important role than men in milking and in processing and selling milk. Women's involvement in animal husbandry not only produces food but also provides them with an opportunity to acquire property, income and prestige, though it is generally the whole family that benefits. In some cases, however, women do not play any part in looking after cattle (and may indeed not be allowed to do so): what often happens then is that they have particularly arduous tasks in cultivating the land.

In general women's role declines with increases in the scale and intensity of livestock farming. It is striking that in mixed systems where livestock mainly serves to provide pulling power the draught animals are again often the province of men.

Functions of cattle

The economic significance of cattle and their products cannot be defined with precision, though table 1 in appendix 1 gives a number of indications.

Even though two thirds of all the world's cattle are found in developing countries they account for only 17% of world milk production and less than a third of beef production. Average milk yield per cow in industrial countries, already six times greater, is also increasing considerably faster than in developing countries. Numbers of cattle, in contrast, are rising in the developing countries (by around 1% per year) while falling elsewhere (by an average of 0.5% per year) (see table 2, appendix 1).

It is difficult to determine statistically the quantity and value of animal power and dung but there is no doubt about their importance in raising agricultural outputs. Table 5 shows among other things that in Africa, unlike in Asia, very little use is made of draught animals despite the relatively large number of cattle.



Cattle also function as saving, exchange and investment instruments, with the advantage that they are not subject to inflation in the manner of conventional currency. There are, however, large fluctuations in their price.

There is frequently a failure to recognize the social and cultural role of livestock particularly cattle: often it is as great as their economic role. Among the Nuer and Dinka peoples of the Sudan, for example, cattle have great significance in almost all areas of life (e.g. name-giving, language, initiation to adulthood, marriage as well as in song, dance and poetic expression).

The main function of livestock, though, is of course as a source of food. Most beef and dairy products consist mainly of animal proteins. In fact human beings do not need these: what matters is the consumption of essential amino-acids (the building-bricks of protein) in the correct proportions. Foodstuffs of animal origin generally contain the necessary amino-acids in the right proportions and can also supply certain structural lipids (fats), minerals and vitamins in more easily assimilable form than foodstuffs of vegetable origin. A full and balanced diet is most easily achieved by a combination of foods of both animal and vegetable origin.

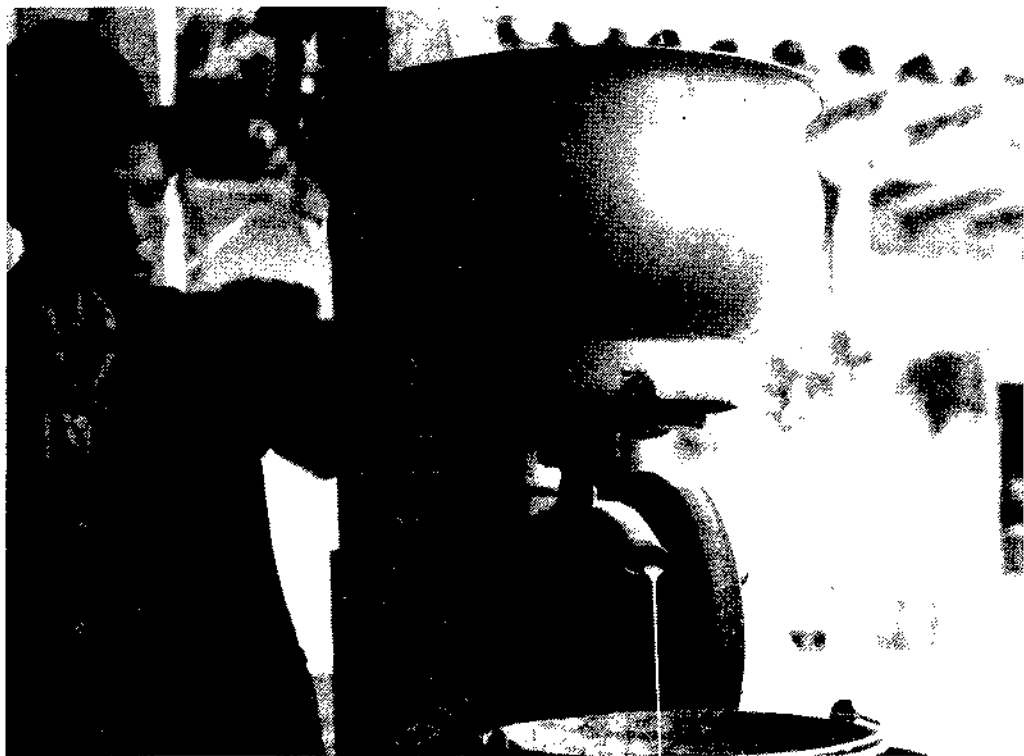
Consumption of highly nutritious foods such as milk correlates closely with income. Three factors are important in this connection: first, large differences in income are associated with large differences in diet and in access to food; second pregnant women and nursing mothers, whose needs for very nourishing food are greatest, may find that their access to it is relatively limited owing to their weak socio-economic position; third, the rapidly growing demand for milk and meat products in developing countries is concentrated in urban areas.

The use of animal proteins may be associated with certain problems, among them undernourishment, lactose intolerance and the use of cow's milk in place of breastfeeding. Undernourishment may take various forms, depending on the nature of the nutrients absent from the diet. As table 1 indicates, in Africa and the Far East large sections of the population suffer from energy deficiency, while the availability of protein is also inadequate. The effect of protein-rich foods on people also suffering from energy deficiency is however very limited, since they are used by the body for energy instead of building up body tissues.

The consumption of milk can lead to problems where – as in parts of South-East Asia, South America and Africa – people are lactose-intolerant and thus cannot digest the lactose in milk.

The use of cow's milk in place of breastfeeding can create more problems than it solves: in many cases milk powder is reconstituted in unhygienic conditions babies fed on cow's milk are less resistant to disease, and the cost of milk powder places a heavy burden on the household budget.

MARKETS



International trade

The total value of meat and dairy products traded internationally amounted in 1980 to 40 billion dollars, equivalent to 17.5% of world trade in agricultural products. This trade was mainly among developed countries or between developed and developing countries. The European Community is the largest exporter of dairy products (57% of world trade), selling over three quarters of its exports in Africa, Latin America and Asia. The Netherlands alone accounts for 18% of world exports and is thus a major participant in the international market in dairy products (see tables 7 and 8).

Beef and dairy products are not among the developing countries' major exports, accounting for only 6% of their agricultural exports and less than 10% in value of world exports of beef and dairy products.

Trade in cattle and beef takes place mainly among the western countries, the principal exporters being the EC, the United States, Australia and New Zealand. Meat exports from developing countries are relatively important (19% of world exports); they come mainly from the countries of Central and South America.

Transfers of capital goods required in connection with beef and milk production are more difficult to quantify. Few statistics are available on international trade in e.g. dairy installations, slaughterhouse and refrigeration equipment, agricultural machinery, veterinary drugs, tractors, other forms of transport and artificial fertilizers. The same applies to the transfers of know-how needed in connection with the introduction of modern technologies in this sector.

Supply and demand

The importance of meat and milk production in developing countries seems likely to increase over the next few years. Striking changes are taking place on both the supply and the demand side.

a. Demand

Rising incomes in developing countries are associated with a roughly proportional increase in the demand for foodstuffs of animal origin: in economists' jargon, the income elasticity of demand for these products is approximately unity. The rise in demand over the last 25 years has led to a marked increase in developing countries' imports of meat and milk – as the following summary, taken from FAO Trade Year Books, shows.

Developing countries' net imports of meat and milk (in thousands of tons)

Region	Meat		Milk	
	1961-63	1979-81	1961-63	1979-81
Asia	21	795	2,367	7,790
Africa	10	207	624	4,423
Latin America	-585	-566	1,904	5,261
Southern Europe	-22	172	414	554
Total	576	608	5,309	18,030

In its publication 'Agriculture towards 2000' the FAO forecasts that over the period 1980-2000 domestic market demand in the 90 developing countries surveyed will increase by 279% for milk and 309% for meat. While the FAO forecast takes no account of the moderating effect of likely price increases it is nevertheless generally believed that there will be a sharp increase in demand over the coming decades. This increase is likely to be greatest in countries whose GNP exceeds 500 dollars per head.

Increasing demand will be concentrated in urban areas and will not generally involve higher consumption by the poorer sections of the population or by vulnerable groups such as pregnant women, nursing mothers and young children. The

demand for meat and milk products is determined by those sections of the population which have the greatest purchasing power.

b. Supply

The productivity of extensive husbandry systems notably in Africa and Asia is stagnating or declining as a result on the one hand of the increasing numbers of cattle and on the other of the decreasing areas of pasture (as arable farming is extended at the expense of livestock). Overgrazing in vulnerable areas is producing irreversible ecological damage in various parts of the world.

The importance of cattle as a power source has increased in developing countries, and particularly in Africa it is likely that the contribution of draught animals to arable farming will increase further. In Asia there has been some replacement of draught animals by tractors, but their numbers are now again rising.

In a number of tropical zones, often in the neighbourhood of urban areas, livestock farming is being expanded with a view to supplying fresh milk. This expansion generally involves the establishment of very large-scale specialized dairy enterprises.

Milk production in developing countries is predominantly concentrated in traditional small-scale farms, whose share in total output is, however, declining. Over the period 1976-80 total milk output in the developing countries grew by an average of 2.8% per year, roughly keeping pace with the increase in population.

In the case of beef production the picture is a very different one. Following rises averaging 3.9% per year over the period 1966-70 the figure declined lastingly, and in 1980 the rate of increase was still only 1.3%. This disappointing situation in respect of beef is offset by the increasing supply of poultry meat: here the rise in output was 6.2% per year in 1970 and 9.7% in 1980. Total meat production in developing countries has risen by an average of 4.1%, sufficient to keep pace with population growth but not to satisfy demand.

Market regimes and pricing policies

The world market for beef and dairy products is anything but open and accessible. The main industrial countries operate highly interventionist market regimes which detach internal prices from world prices. The industrial exporting countries in particular operate policies aimed at protecting domestic producers and consumers from the adverse effects of international markets. The five instruments that are used (often in combination) are import quotas, import taxes and duties, import and export monopolies, export subsidies and veterinary and hygienic controls. The first two of these serve to maintain domestic prices, while often sizeable export subsidies are used to ensure that high-cost domestic products can

be sold on world markets (EC export subsidies on meat, for example, are around 40-50%).

Exporting countries also take various measures to bridge the gap between international and (higher) domestic prices. These include the subsidized sale of animal feed, the imposition of production quotas, food aid programmes and intervention. The latter serves to prevent prices falling through overproduction: the intervention agencies buy surpluses at fixed prices and store them for sale (where possible) at a later date.

The market regimes and trade policies of exporting countries lead to oversupply on world markets and put strong downward pressure on world prices which are already too low. The high prices paid to domestic producers lead to large increases in output and cause surpluses. Producer prices in the EC and US are now 30-60% above export yields, i.e. world market prices for meat and milk. World Bank calculations indicate that liberalizing world markets would cause international prices to rise by 50-60%. Resistance to further liberalization results among other things from the good organization and considerable political influence of agricultural producers in western industrial countries.

This state of affairs has serious consequences for developing countries. Low and unstable world prices are a major obstacle to the development of local production: as well as discouraging output and putting downward pressure on prices to domestic producers they impede Third World exports, with the result that there are few (and increasingly fewer) developing countries that export beef and dairy products (see also table 6).

Developing countries could of course take countervailing trade measures to protect domestic suppliers from low international prices, but cheap imports keep down food prices for their – politically important – urban populations. In the long run, however, cheap imports impede the development of local productive capacity and may even wreck local structures of production. It is the poorer section of the rural population that suffers most from low farm prices.

These adverse effects are offset in some degree by four factors. First, most of the meat and milk produced in developing countries is consumed by the livestock farmers themselves or sold on local markets (the function of cattle as sources of power and dung falls outside the scope of this discussion). Second, the limited storage life of meat and milk and the general lack of cooling, processing and transport facilities limits the market for these products. Third, a small number of developing countries tax imports of cheap milk, set a higher price for locally produced fresh milk and use revenues from food aid in the form of dairy products for investment in their own livestock industry; imported and local milk are sometimes mixed and sold cheaply to the consumer. Finally, given that domestic demand for beef and dairy products has been shown (e.g. by the World Bank) not

CATTLE, MARKETS AND POLICIES

to rise until per capita GNP exceeds 400-500 dollars, for many of the poorer countries there is little point in giving high priority to developing this sector until they enter the 'middle income' range.

The World Bank is one of a number of institutions that have urged the reform of policies which overstimulate production in some countries and depress it in others. The Netherlands too has repeatedly drawn attention to the external effects of the agricultural policies currently pursued by western countries.

POLICIES



Dutch policies

In the 1950s the Netherlands' development policies focused almost exclusively on this country's contribution to multilateral aid. No specific policies were formulated on livestock farming. Activities included the supply of skimmed milk powder, the deployment of experts and the provision of training.

Subsequent years saw an increase in the volume of bilateral aid. Dutch development policy was inspired by international organizations, as witness the reference to the FAO's Freedom from Hunger Campaign in a booklet issued by the Foreign Ministry in 1965. In this period there was an increase in the scale and number of activities concerned with meat and milk production; the livestock training farms in Tunisia and Ecuador date from this period.

In the early 1970s the Foreign Ministry produced two policy statements on international development issues, one in 1970 on the Second World Food Congress and the other in 1972 on Unctad III. Meat and milk production was mentioned only incidentally, in that the case was argued for breeding programmes aimed at increasing milk yields and for GATT measures to regulate international markets in beef and dairy products.

From 1973 onwards this country's policy was increasingly geared to long-term action against poverty, but no long-term policy was formulated on livestock farming. The use of skimmed milk powder as part of food aid was intensified, partly as a way of reducing Dutch surpluses.

After 1977 a two-pronged approach was adopted, involving on the one hand direct action against poverty and on the other hand action to enhance the autonomy of developing countries and to improve economic macro-structures. Four policy documents were devoted to this topic.

An important objective of this country's development policy was to minimize the backlog of unused aid, and activities relating to meat and milk production along western (capital-intensive) lines proved attractive ways of making considerable investments with little delay. One benefit of large-scale exports of technology and livestock was the rapid rate at which aid could be disbursed. In this connection – the links between financial and technical assistance – certain tensions arose between the two departments at that time concerned with the implementation of the aid programme.

As early as 1976 a Foreign-Ministry-funded symposium of livestock experts at Wageningen warned of the risks and drawbacks involved in supplying livestock to developing countries. The conditions for supplying livestock were summarized as follows:

- (a) Genetic improvement programmes should proceed in tandem with improvements in production conditions; in particular improved feed supplies should precede genetic improvement.
- (b) High-yielding dairy cattle are generally not suited to the humid tropical areas since they are unable to dissipate body heat rapidly enough and this prevents them from producing milk in large quantities.
- (c) Supplying developing countries with high yielding livestock is often not opportune, since considerable improvements in milk production can also be achieved without such imports. It becomes sensible only if the appropriate local structures exist to make use of the cattle.

While no specific policy on the livestock sector had yet been developed, the policy document 'Development Cooperation in the Perspective of the World Economy' (1979-80) accepted the recommendation of the National Advisory Council for Development Cooperation that indicative multi-year planning should be introduced for food aid. The 1980 document on EC policy and development cooperation went on to urge an active role for the EC in regulating world markets in beef and dairy products.

The policy document 'Women and Development Cooperation', also issued in 1980, had considerable relevance to livestock projects in view of women's important role in animal husbandry. The document urged greater involvement of

women in project preparation and implementation and emphasized the need to strengthen the economic independence of women and their organizations. Possible effects on women should be taken into account in project preparation, and where they proved to be adverse, implementation should not proceed. Where there was any conflict of interests between the parties involved the interests of the developing country should come first. Effective agricultural policies were considered very important, and the document drew attention to the need for institutional and structural support as well as more purely agricultural activities. The emphasis should be on achieving lasting improvements.

From 1982 onwards the growing differentiation between developing countries was stressed, with the result that a uniform approach to development was no longer possible. It was at this time that the livestock sector received most specific attention in policy formulation and execution.

A policy review document issued in 1984 devoted limited attention to meat and milk production, drawing attention to the need for measures to prevent overgrazing and stating that agricultural output depended more on patterns of land ownership, effective minimum prices, infrastructure, the processing of products and the training of those who work the land than on the physical production potential of the land. This was further developed in the 1986 Sector Programme for Rural Development, which made the following points in relation to livestock policy: first, attention to local cattle and, second, in small-scale mixed farming the stress should be on improving the local production of roughage, using animal waste products and pulling power, the keeping of small livestock, selective mechanization, animal health and genetic improvement.

At this time (1985) a brief report dealing with aspects of intensive animal husbandry in the context of development projects was issued in response to questions in the Lower House. The report noted that 'the treatment and housing of animals in projects in which the Netherlands is involved should meet strict standards'.

In sum, while this country's bilateral involvement in animal husbandry projects has developed without any specific operational policy guidelines the central objectives of development policy provide an adequate framework for the development of activities in the livestock sector; indeed, the sub-goals of policy would appear to accord it a certain priority, in that the Netherlands has special expertise in this sector and Dutch industry and commerce play a major role in it at the international level.

Programme countries' policies

In the programme countries (a specified group of countries receiving assistance from the Netherlands) the development of livestock activities is still rarely based on policies which provide for the rational use and management of land and water

and take account of the interests of the many, generally poor, people – women as well as men – who keep cattle. This helps to explain why modern specialized livestock farming is expanding more strongly than the traditional sector in many developing countries: the interests of the traditional livestock farmers are too often subordinated, in governmental decision-making, to those of the better-off sections of the urban population whose purchasing power determines demand for animal proteins. Rarely if ever is consideration given to the relative merits of vegetable protein (often cheaper and simpler to produce locally) and animal protein (not a strictly essential component of the human diet).

Many governments have a bias towards large-scale production – a logical consequence of the frequent absence from national statistics of animal husbandry at the subsistence level. Often, too, there is a bias towards arable farming. Agriculture ministries may see livestock farming as less prestigious and of subordinate importance: almost everywhere there are fewer career opportunities in the livestock department than in the department of crop production. ‘Curative’ thinking dominates many livestock departments, which are often headed by veterinary experts and whose staff know little about the use of animals for traction and dung.

The economic circumstances of many developing countries – an overvalued currency, lax import controls, low interest rates, formally high minimum wages, low feed-grain prices – favour the development of large-scale, labour-extensive, capital and grain-intensive husbandry systems which lead to serious import dependence. Such systems are normally located close to urban areas, while traditional husbandry systems are to be found in more remote districts.

Another important factor is the underlying belief that high milk production can best be achieved by the use of imported high-yielding dairy cattle: importing high-yielding livestock is often politically attractive from the viewpoint of national governments, since the immediate and very visible innovation it involves bestows prestige, at least in the short term. In addition some countries – such as Tanzania and Egypt – were faced with severe shortages of local managers and expertise and expected a rapid growth in the demand for milk. Despite the risks involved, in such circumstances preference was given to a large-scale approach so that existing management capacity would not be too thinly spread over a large number of farms. The export interests of industrial countries strengthened this tendency.

The Netherlands’ international image as a leading producer of milk and dairy cattle contributed to a situation in which most project applications coming from developing country governments related to specialized dairy farming. In some cases there were already livestock projects in the countries concerned, supported by the World Bank or FAO, for which the Netherlands was asked to supplement or replace support (Tanzania, Sri Lanka and Egypt).

The result has been – and still is – a predominance of measures directed towards intensive meat and milk production. Great stress is placed on market regulation, e.g. by giving public or semi-public marketing boards control over trade in meat and milk products, a tendency strengthened by the attitude of donors.

However varied the circumstances faced by the governments of the programme countries (all the inspected livestock activities were in the programme or ex-target countries), there are nevertheless common elements in their policies towards the beef and dairy sector. The five most commonly mentioned objectives, in order of frequency, are:

- (1) (rapid) expansion of local production (six countries);
- (2) reductions in imports/savings on foreign exchange (five countries);
- (3) achievement of self-sufficiency (four countries);
- (4) increased supply of protein (two countries);
- (5) satisfaction of (urban) demand (two countries).

In Zambia and Sri Lanka, where the beef and dairy industry has been designated a target sector for Dutch development activities, a shift has been encouraged in national priorities. In one of these countries there is now more stress on traditional agriculture (including animal husbandry) and greater account is taken of the interests of small livestock owners. The country has nevertheless stuck to a 'cheap milk for all' policy – at a heavy cost in terms of foreign exchange – even though the poorest sections of its population suffer from an energy rather than a protein deficiency.

In Sri Lanka, where the goal of policy is self-sufficiency in dairy products, the livestock sector is seen as a major problem area in agricultural development. A World Bank proposal from 1983 for the restructuring of local milk production and processing could well have a long-term impact on national policy in this sector. Small-scale production and market organization were core elements in the proposal.

In one country, milk processing is controlled by two multinational corporations which largely use imports. The existing manufacturers' monopoly also means that there is no obligation to buy locally produced milk, with the result that farmers have sometimes been forced to throw away thousands of litres of milk. Selling prices have been determined less by local production costs than by (subsidized) import prices.

Few developing countries look seriously at the introduction or improvement of the use of draught animals. A favourable exception in this regard are the francophone countries of Africa, where – as also in e.g. Kenya and Tanzania – attempts are being made to develop the use of oxen for traction and to promote the local manufacture of the necessary equipment.

The de facto policies of Third World governments are aimed at limiting as far as possible their growing dependence on other countries. However, the developing countries have become considerably less self-sufficient in beef and dairy products over the last fifteen years: net beef exports have halved and milk imports have more than doubled, while total imports of feed grains have risen as much as five-fold since 1970. Foreign currency savings through local milk production are more than offset by the foreign currency costs of livestock sector imports, so that on balance a critical foreign exchange position is worsened rather than improved. This has added to the already great vulnerability of this sector. All programme and former target countries are now major net importers of dairy products.

In this situation it is no sinecure for developing countries to execute an effective agricultural policy and many prefer to buy cheap dairy products on the world market while putting off any attempt to build up their own production structure.

The starting point for livestock development ought to be that it should be promoted first where the comparative advantage is greatest. However, the measures taken by exporting countries destroy the comparative advantage which certain developing countries and regions clearly have in this sector.

The impression should not be gleaned from this chapter that the development of the livestock sector is dependent solely on government decisions in all developing countries: it is also affected by natural, social and cultural influences and by macroeconomic and market factors which are often outside the control of national governments.

Experience and strategies elsewhere

While the experience of development agencies in activities relating to cattle farming stretches over a relatively long period, the systematic study and review of their results and effects has begun only recently. The limited and excessively technical terms of reference of the evaluations which have been carried out help to explain why no real strategy or specific policy has been developed for this sector until recently.

Evaluative studies of beef and dairy projects have nevertheless appeared from time to time over the last few years, partly as a consequence of donors' sharply increased stress on the evaluation of their own activities. The picture which emerges can be summarized as follows.

Food and Agriculture Organization (FAO)

The improvement or adaptation of existing traditional local animal husbandry systems should be in keeping with local economic, social and ecological conditions.

The European Development Fund (EDF)

Sector policies should be developed for each country, taking account of the natural environment, the links between arable farming and livestock activities, the use of animal traction, market systems and simple technology. The core aim should be long-term improvements in the position of livestock farmers.

World Bank

Priority should be given to the development of the indigenous livestock sector, particularly in the context of mixed farming. Governments should operate pricing policies which stimulate production. Attention needs to be focused on technical limitations such as feed quality. Animal health and efficient management should be emphasized.

Asian Development Bank

Animal husbandry is an integral element in agricultural development. Major activities concern feed supplies, animal health care and genetic improvement. For small farmers animal traction, marketing and processing are important.

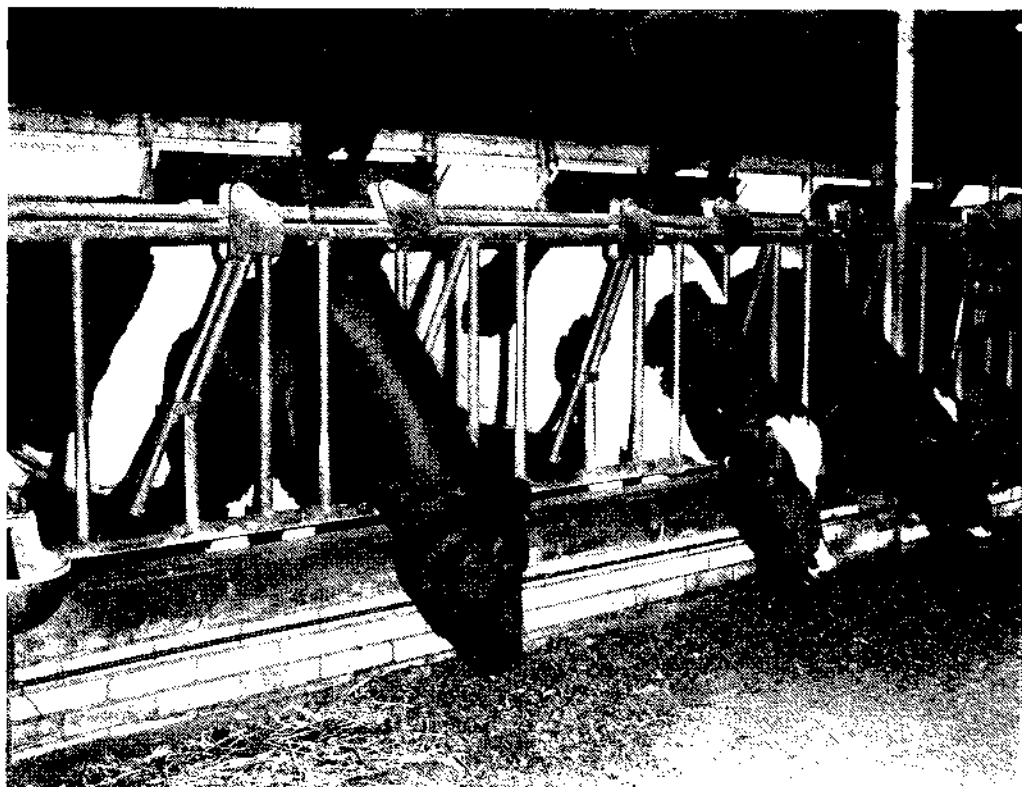
Comité Inter-états pour la Lutte contre la Sècheresse du Sahel (CILSS) and Club du Sahel

Great stress is needed on the complementarity between traditional animal husbandry and arable farming. The government should regulate land and water use. Effective pricing policies are needed. Meat imports need to be regulated. Training and research should be promoted.

The FAO's approach is predominantly technical, while the EDF also stresses the need for training and information for local farmers and the World Bank's less technical and more macroeconomic approach emphasizes the links between meat and milk production and processing, pricing and trade policies. The management aspects of beef and dairy development are dealt with more or less implicitly. The Asian Development Bank has the most commercial approach among the donors, mentioning privatization and smallness of scale as ways of minimizing management problems. For the first time all donors have adopted differentiated approaches to beef and dairy activities depending on the ecological zone where they are located.

While there are still somewhat differing views among donors on approaches to beef and dairy development a degree of unanimity has grown up on certain points: recent policy documents from the World Bank, FAO, EDF and CILSS all stress the importance of traditional indigenous animal husbandry, animal traction and market systems.

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INTRODUCTION

Four phases may be distinguished in this country's involvement in beef and dairy projects in developing countries. While the phases overlap and developments differ from one country to another, the following nevertheless gives a general picture of the trend in development activities over the years.

Phase 1 (1970s): Supply of livestock

Supply of calves and of pregnant heifers

The large-scale supply of livestock to developing countries was a feature particularly of the 1970s. Over the period 1971-82 a total of 14,500 head of cattle financed from development funds were supplied. These exports (which were attractive to the Dutch livestock industry and which were sometimes followed by further deliveries on a commercial basis) may be seen as a first phase of development cooperation in the livestock sector.

Phase 2 (1975-80): Large-scale modern dairy farming

Scale and management; mechanization; breeding and selection; artificial insemination; veterinary care

In every livestock supply project inspected it was found that local organization and methods were unsuitable for the imported cattle, and a second phase was therefore necessary which involved building up sometimes very large-scale dairy farms. Such a western-style approach rapidly proved to be incompatible with the existing level of operations in traditional husbandry, and partly for this reason (and partly for reasons of political preference) most developing countries opted for a structure based on state enterprises. The heavy demands this made on management expertise made it necessary to employ a relatively large number of Dutch farm managers, who also had the job of training local managers.

The requests for research activities, training activities and pilot farms should be seen against this background: all had some connection with pre-1978 activities mainly involving high yielding dairy cattle of foreign origin.

Phase 3 (1978-82): Small-scale farming

Small-scale dairying; research; extension and training; roughage supplies

Only in the third phase (from 1978 onwards) did attention begin to shift to the small farmer. This did not happen until the drawbacks of the large-scale dairy farms became obvious and it was realized that such farms were of little or no use in improving the position of small farmers. Activities were then developed to enable the large small-farm sector to benefit from the exotic cattle. Efforts were also made to improve roughage supplies.

Phase 4 (1980-): Integrated approach

Recognition of women's role in animal husbandry; credit provision; use of animal traction and dung; extension and training in mixed farming

The current phase is marked by increased emphasis on local cattle and traditional local agricultural systems. The exclusive concentration on specialized intensive dairy farming is giving way to interest in the multiple functions of cattle in the various ecological zones.

Chapter 5 deals with general problems in projects organization in the four phases. Various difficulties which repeatedly came to the attention of the Foreign Ministry, the advisory agencies, Dutch field experts and local counterparts are reviewed.

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Summary of evaluation material, by defining characteristic

Characteristic	Number of activities*
<i>Initiative/identification:</i>	
By the Netherlands	3
By developing country	1
By World Bank or others	4
By the Netherlands plus developing country	11
Unknown	4
<i>Feasibility study:</i>	
Carried out	7
Not carried out	10
Unknown	6
<i>Recommendation from project supervisors:</i>	
Favourable	7
Unfavourable	3
Unknown/none	13
<i>Project goals:</i>	
Involvement of local population	3
Alleviation of poverty	6
Promotion of economic independence	19
Single activity	17
Integrated activity	5
Animal traction	2
Animal accommodation	4
Male target group	18
Men and women	5
Object-oriented (animal, technology)	20
<i>Project design:</i>	
In-house	19
Contracted-out	4
Support for production enterprises	9
Institution-building	16
Small farms (0.1-5 ha, 1-5 head of cattle)	8
Medium farms (5-50 ha, 5-30 head of cattle)	10
Large farms (50+ ha, 50+ head of cattle)	15
Capital-intensive, modern	18
Capital-extensive, traditional	4
Private/family farms	15

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State farms	16
Community farms	3
<i>Livestock type:</i>	
Dairy cattle	20
Beef cattle	6
Draught animals	4
Multifunctional cattle	3
Buffaloes	-
Pure-bred exotics	12
Local breeds	9
Crossbreds	12
<i>Principal activity:</i>	
Extension and training	10
Roughage production	11
Health and hygiene	12
Animal care	7
Genetic improvement	16
Administration and management	9
Mechanization	5
Credit	4
Marketing and organization	1
Environmental protection	1

* Total 23 projects. The same project may be defined by more than one characteristic.

SUPPLY OF LIVESTOCK (1970-1980)



In the 1970s the Netherlands' involvement in beef and dairy development was restricted almost entirely to the supply of livestock. The main consideration was that Dutch cattle were of high quality and that that alone would bring about improvements in this sector in the developing countries. The evaluation findings relate to livestock deliveries to Kenya, Tunisia, Sri Lanka, Egypt and Peru. Between 1971 and 1982 these countries were supplied with a total of 14,500 head of cattle, worth 24.9 million guilders.

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In 1970 it was agreed with one of the assisted countries that 5,750 Dutch dairy calves would be supplied over the period 1971-75 from a financial assistance loan of ten million guilders. Problems encountered after the animals' arrival led to a halving of the annual deliveries, which were later terminated altogether. Of the planned total of 5,750 in the end only 2,599 were delivered. A total of 2,400 calves were eventually distributed, 196 to research institutions, 208 to educational institutions and the remainder to small and medium-size farms.

From 1974 onwards two schemes were operated in a second country involving the supply of 7,800 head of cattle, spread over several years. One scheme involved supplying 4,800 calves to a state breeding centre, 1,800 in 1975 and 1,500 each in 1976 and 1977; the other involved supplying 3,000 heifers to seven large mixed state farms. The Netherlands gave the government a loan of 20 million guilders as general support for the livestock sector; of this amount just over 11 million was used to pay for the 7,800 cattle supplied.

The first scheme, which was treated as a purely commercial deal, was carried out in conformity with the procedures for financial assistance; the Dutch government provided the finance from its development budget but had no say in the conditions of the contract between the exporter and the buyer. Nothing is known about the transport of the calves. The calves were introduced into the state breeding centre, but the centre fell into difficulties as a result of rising animal-feed prices, hurried procedures surrounding its establishment and inadequate management. The international cooperation did not bring about any improvement in the situation. At the time of the inspection (1979) the centre housed some 5,000 animals, in rather poor conditions. Animals were dying and several dozens had to be slaughtered. The delivery (4,800 calves) was regarded as a failure. The price of milk – unlike that of animal feed – remained low, and as a result local farmers were not attracted by the idea of buying expensive foreign cattle.

As part of the second scheme the Netherlands required safeguards from the counterpart for proper supervision and care, and a grant of 2.6 million guilders was provided from this purpose. A phased programme for the supply of 3,000 heifers began with the delivery of 620 animals in 1975, followed by further deliveries in 1977 and 1978. No information was available on the animals' transport. Their reception was supervised by a Dutch veterinarian in the service of the exporter and they were distributed to carefully selected state farms. Continued supervision was carried out both by a project team and by a supervisory working group in the Netherlands. At the time of the inspection 80% of all the milk produced by state farms came from the seven involved in this scheme. This is thus an example of a successful project.

Since 1978 the Netherlands has been cooperating with a third country on a programme aimed at improving dairy farming. A financial assistance grant of over three million guilders was used to obtain two deliveries of young cattle, a total

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of 902 animals. Both deliveries were preceded by preparatory missions: the first, in 1977, studied aspects of transport, reception and distribution and was procedural in nature; the second, in 1978, was also intended to examine transport, reception and distribution but did not carry out its work adequately. The receiving country was to be responsible for follow-up work.

The first batch of 460 yearlings were transported by air in March 1978. The death of 15 animals was regarded as a normal consequence of transport stress. The animals were delivered to two farms. The Dutch expert supervising the project advised against the early distribution of imported cattle; in his view it was better to wait for the next generation of more adapted animals before distributing them. The Dutch cattle were found to be suffering from claw problems, infertility and stress.

The second batch comprised 442 head of cattle, together with goats and pigs (39 animals). The animals were transported by air; here again a number of animals (11) died. The cattle were taken to the same farms as the first batch, and from then on supervision was the responsibility of two Dutch experts, who were also to oversee the distribution to farmers of the second generation of animals. Six years after the delivery had taken place virtually no animals had yet been distributed.

From 1976 onwards the Netherlands cooperated with a fourth country on the development of the dairy farming sector in a newly reclaimed polder, where a model livestock farm was set up. Between 1977 and 1985 a financial assistance loan of 3.25 million guilders was used to fund two deliveries of livestock.

The first batch of 73 animals was delivered in 1978. No information is available on their transport. Their reception at the model farm was under Dutch supervision. The cattle adapted well to local conditions, and milk output was in line with the level of some 3,200 kg of milk per cow per year indicated by the feasibility study. This was around twice as much as the average output from local cattle.

In 1981-82 a batch of 900 pregnant heifers were supplied to a private livestock farm (also funded by a financial assistance loan), while a further 289 pregnant heifers and four bulls were supplied to the model farm (funded by a technical assistance grant). No information was available on transport, reception and distribution, beyond a comment that the process was relatively problem-free. A further (locally funded) delivery in 1984 led to abortion in one third of the pregnant heifers. The aim of the exercise was that the second generation of imported cattle should be distributed to small farmers living in the polder area. At the time of the inspection (1984) 330 pregnant heifers had been distributed to 165 small farmers.

The livestock deliveries to a fifth country were funded from a financial assistance loan of 5.7 million guilders. A preparatory mission devoted insufficient attention

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to the position of small farmers, who were the project's target group. In 1978 a total of 2,000 animals were supplied, 800 in the spring and the remaining 1,200 in the autumn. Preparation and supervision were the responsibility of a Dutch expert.

While detailed information on the first shipment was lacking, it was noted that the animals were of good quality, that transport had been satisfactory and that reception and distribution had proceeded smoothly. Of the 800 animals only two were lost.

The second delivery comprised animals of a lower quality; they were transported in a ship of insufficient capacity and were not properly looked after during the journey. Twelve animals died and a further twelve had to be slaughtered during or after the journey. Finally delivery was supervised by the Dutch expert mentioned above.

Of the 2,000 animals only some 10% were distributed to the original target group, the others being sold on concessional terms to better-off farmers. An obstacle to sales to the poorest farmers was that the animals had to be sold in lots of ten.

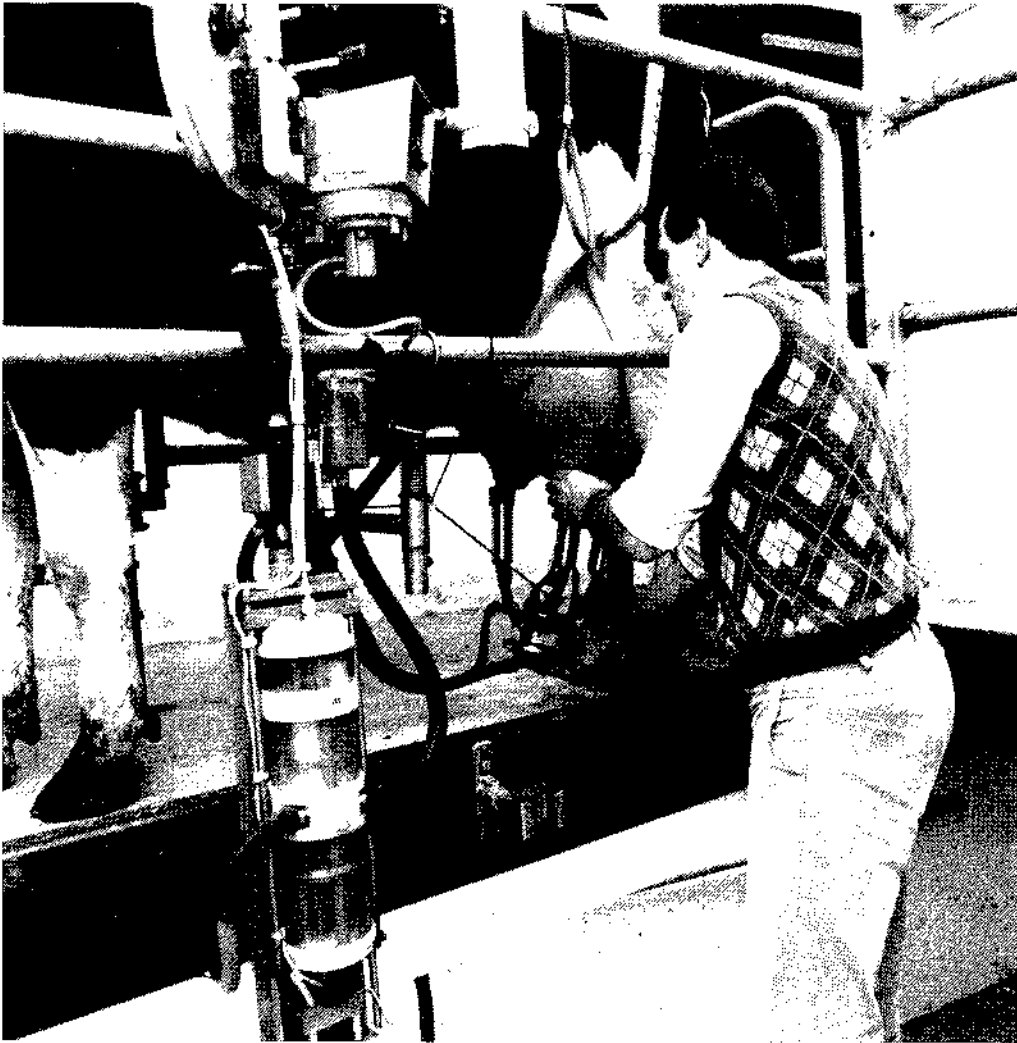
Conclusion

In most cases the large-scale import of Dutch dairy cattle involved adjustment problems for the animals: climate, feed and care and management methods all proved unsuitable. In addition the animals were not suited to the conditions of small farming in developing countries: they could not be used as draught animals and often suffered from disease, stress, claw problems and infertility.

The destination of the livestock supplied was not clear: the deliveries to two countries were intended to supply small farmers with high-grade animals; in one country the calves were to be sold to private farmers, but no agreements had been made on the category of farmers to benefit; and in another country there was a long tug of war on the issue of whether the animals were solely destined for large farmers or also for small ones.

Current policy permits only the supply of limited numbers of bulls for breeding purposes, and in general genetic improvement is now seen in conjunction with improvements in local production of good quality fodder. The distribution of imported livestock to small farmers is no longer accepted as an option. Development funds are no longer used to finance large scale livestock deliveries.

LARGE-SCALE MODERN DAIRY FARMING (1972-80)



The problems involved in distributing imported livestock to small farmers meant that the cattle had to be kept on large (sometimes state-owned farms and new large-scale dairy farms were often set up for this purpose. The Netherlands continued to supply animals in this second phase but now also assisted directly with the establishment and equipment of western-style dairy farms, with advanced milking and cooling machinery. The imported Dutch cattle also required adequate housing and veterinary care. Artificial insemination was another component of this approach.

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Training, extension and research activities were geared mainly to the technology associated with intensive modern dairy farming. Construction and equipment costs were met from financial assistance funds; technical assistance was given to support management.

Veterinary support was inspected in three countries where this was a principal activity; animal health care was an activity of some degree of importance in twelve of the projects evaluated.

Inspections were carried out on fifteen large dairy farms with a total of some 12,000 head of cattle supplied by the Netherlands. The aspects checked were scale and management, mechanization, breeding and selection, artificial insemination and veterinary care.

Two Dutch animal husbandry experts provided technical assistance to two cattle breeding and improvement centres in one of these countries. The Netherlands also supplied cowshed fittings, milking machines and other agricultural equipment totalling over 5.7 million guilders (technical assistance) over the period 1979-83.

The main purpose of the technical assistance was to strengthen farm management capacity. In this country there was still little experience of operations on this scale and level, as was evidenced by the initially inadequate housing, injudicious treatment of the animals and shortcomings in feed supplies. Milk yields were low and production costs so high that between 1979 and 1983 the two centres' cumulative losses totalled at least 1.7 million guilders. The level of mechanization was raised significantly by an investment programme, while milking facilities were greatly improved on the advice and under the supervision of a Dutch advisory agency.

The centres nevertheless faced serious management problems and even more serious marketing problems. Profitability was poor and milk yields chronically low (7-9 litres per day), around half of what had been planned. The centres suffered from a lack of management experience in such complex technology and organization. Production costs were high because of the heavy use of concentrates (fodder supplies were unreliable and of poor quality); equipment costs spiralled and there were problems with the cooling plant.

Milking was mechanized with the introduction of milking machines and milk tanks, but the supply of spare parts for this equipment was subject to delays at the time of evaluation. Machinery was imported to increase forage production in the area. The equipment for improving grazing land worked well: only a few machines were ill-adapted to local conditions.

The main aim of the breeding and selection activities was to produce a well-adapted cross of high quality. At the centres involved in the project this was done

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in two ways: in one case indigenous cattle were initially crossed with animals imported from the Netherlands, and in the other the Dutch cattle were crossed with Australian milking zebus. The results were not yet known at the time of the evaluation. On another farm the attempt was made to maintain a herd of 486 pure-bred Friesians, partly with a view to possible cross-breeding programmes elsewhere.

Prohibition on the slaughter of cows gave rise to problems in connection with selective breeding, in that more calves had to be kept than was necessary or warranted. Only some 40 animals were sold to farmers for breeding purposes between 1981 and 1983, a marginal number. The evaluation did not reveal any data on artificial insemination or veterinary care.

In another country where this study was carried out the Netherlands has been contributing to the Dairy Development Programme (jointly funded by the World Bank) since 1975. Between 1975 and 1981 technical assistance was provided amounting to 37.5 million guilders. The programme aimed among other things to expand milk production by the establishment and development of seventeen large-scale dairy farms; it also included small milk-production units, dairy cattle breeding and milk processing and distribution, but priority was given to the development of the large farms each with 500-700 milking cows. These were controlled by four state-dominated management agencies. The country had no management experience with farms on this scale, and for this reason the World Bank insisted on the inclusion of foreign experts in the management structure. The Netherlands provided ten experts and three volunteers in all and gradually became more involved in planning and developing the businesses.

Four large dairy farms were inspected. They were found to be too large and too far from their markets, and these problems were aggravated by shortages of qualified staff. Extremes of climate – in some cases drought, in others excessive rainfall – caused problems in the supply of animal feed.

Yields were very low (3-9 litres). Machinery repairs were a great problem, not least because the cost of obtaining spare parts had not been included in the budget at the project preparation stage. Mechanized feed systems, normal in large dairy installations, are expensive and vulnerable, and this too contributed to excessive production costs. Roughage supplies were very uncertain.

Operating results were thus very poor, with the exception of one farm where overall profitability was improved by a successful cheese-making venture. In all cases there was extensive mechanization.

After five years' operation half of the machinery was out of use through lack of maintenance. The loss-making farms were not in a position to replace machines. A Dutch-funded maintenance workshop, though well organized, was too expensive

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and therefore remained practically unused. Currently there is a marked trend towards lower levels of mechanization and a smaller scale of operations, with small workshops and local solutions to problems.

Considerable technical and financial assistance has been given to three large-scale breeding units with as many as 5,000 animals each. After the failure of experiments involving high-grade imported stock it was decided to distribute cross-bred animals which were better suited to local conditions. The centrally controlled farms were chronic loss-makers and lacked any breeding policy or integrated plan of work. However, while the supply of cross-bred animals remained far below the planned total of 1,200 per year there was considerable interest in the crosses. The breeding units had an observable impact on the small farmer. It was decided to import semen from Dutch bulls. This activity received a favourable judgement.

Veterinary care on the dairy farms and breeding units was an integral element in the management system, but there were problems in the supply of drugs and vaccines. These were distributed from a central veterinary pharmacy for which Dutch aid was provided. Problems arose in connection with the composition of the range of drugs and vaccines and the distances from the pharmacy to the farms and breeding units. Inadequate coordination among the advisory agencies employed by the Dutch Foreign Ministry played an important part in these problems.

The aid given to a third country in connection with the development of large-scale dairy farming was linked with the second delivery of 3,000 heifers which began in 1975 (see chapter 1).

Equipment was supplied to seven state farms, funded by a financial assistance loan of four million guilders in 1975. In all grants totalling 4.75 million guilders were committed between 1975 and 1983 for guidance and supervision. The goal of the dairy activities of the state farms was to improve national self-sufficiency by increasing the supply of fresh milk. Dairy cattle were only a small part of their business, however, since their main concern was in fact the cultivation of cereals, olives, grapes, subtropical fruit and citrus fruit. Cow dung was used to fertilize the citrus trees. The scale of the farms – 2,200 animals on seven farms in 1977-78 – did not give rise to problems, thanks to the quality of the management. The farms were developed, and the livestock was supplied, on a phased basis, and at the preparatory stage the emphasis was on the training of the workforce and improvements in hygiene, animal health supervision, infrastructure and feed supplies.

The operation of these farms was judged very favourable. Unlike the loss-making breeding unit the commercial dairy units were profitable (a remarkable result) with average yields of around 12 litres per day. Here too forage supplies proved the main limitation: this led to the use of large quantities of imported concentrates (with a 60% state subsidy), with adverse effects of the country's foreign exchange

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position. The system attracted the interest of neighbouring countries.

The seven farms were fully mechanized as regards milking, milk storage, forage production and transport. The lack of maintenance technicians and spare parts caused problems. The evaluation provided no data on breeding and selection work or artificial insemination on the seven farms. Veterinary care was an integral part of the management system. The inspectors noted that the Dutch veterinary surgeons on the project had to work without local counterparts.

From 1976 onwards the Netherlands provided another country with technical assistance totalling over 16 million guilders for the construction, equipment and technical support of a model livestock farm. Some of the cattle whose supply was discussed in the previous chapter were kept on the model farm. Both large and small-scale dairy farming could be developed on the basis of this model.

This was found to be a well-planned large-scale production farm designed as a pilot farm. Average yields were around 13 litres per day. No data were available on finance, but it is very unlikely that the model farm was profitable – a second Dutch-supported (commercial) farm made heavy losses. Too many cattle on the limited land area of the pilot farm meant that there was rarely enough forage, and mechanical problems aggravated the shortcomings in this area.

The main problem in the management of the model dairy farm lay in the low production of forage, due to difficulties associated with irrigation and drainage, heavy soils and a difficult soil structure, and these problems were aggravated by the inadequate management and maintenance of machinery and equipment. This inspection produced no data on breeding and selection or veterinary care, but it was reported that the animals were healthy.

Moves to introduce artificial insemination were relatively successful. Cooperation with the national government went well, albeit there were problems relating particularly to the necessary record-keeping and the mobility of the inseminators. The number of inseminations remained very low (6,350 in three years), so that unit costs were high. Artificial insemination appeared to be a useful weapon in countering infertility in cattle, which is common in that country (30-40%).

From the beginning of 1979 to the end of 1984 the Netherlands gave support in another case to two existing large-scale modern dairy farms, the property of a parastatal company. Over the period technical assistance was provided totalling more than 1.8 million guilders (equipment and advisory services).

A Dutch mission had previously established that the farm management structure needed strengthening, while overall management needed to be carried out more centrally. Dutch technical assistance was provided to support management, and a rationalization exercise was carried out at both farms. The inspection found that

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the goals which had been set were being achieved: the livestock was being well looked after and milk production had increased in line with forecasts.

The financial position was considerably rosier on one of the farms than on the other. Production was profitable, with average yields rising from six to 15 litres per day. However, here too there were problems with the mechanization of forage supplies, albeit improvements were noted. The Operations Review Unit expressed doubts regarding the macroeconomic value of large-scale dairy farms of this type, given the large volume of imports involved.

While the other farm operated satisfactorily, forage supplies presented even more problems and yields were lower (3-10 litres). The financially rational decision was taken to stop feeding concentrates brought in from another region and to accept the consequent reduction in yields.

Both farms exceeded their planned profit levels. Mechanization was carried out in a manner adapted to local circumstances, with e.g. milking by hand. The equipment worked well and there were no maintenance problems. Careful selection helped to improve the herds and avoid the danger of inbreeding. The evaluation provided no data on breeding work or artificial insemination. Veterinary care was organized by the farms themselves and did not give rise to problems.

The laboratory producing brucellosis vaccine functioned satisfactorily and was able to move up to operating on an industrial scale. Distribution presented problems, however, because of the shortage of veterinary surgeons. Although brucellosis was not a major animal disease the vaccine project nevertheless had some value to small farmers.

The number of inseminations carried out each year as part of the artificial insemination (AI) project was very low (3,000-5,000), owing to the distance from the AI centre to the farms and to shortcomings in the operation of storage equipment. The large farms with foreign cattle preferred to go on carrying out their own AI using imported semen and made little use of the AI centre's seven substations. The inspection underlined the specific importance which AI can have in certain cases in intensive dairy farming while bringing out the danger that the use of imported semen may decrease the disease-resistance of the progeny.

In the local situation it was felt that AI would work best through semen distribution centres and would give greatest benefit to commercial large-scale farms and the larger farmers. In small-scale animal husbandry carefully controlled natural breeding was probably an essential transitional phase from uncontrolled breeding to AI. The very small scale and thin spread of animal husbandry and the weak communication and service infrastructure were major obstacles to the introduction of AI in the near future, and preference was given to a step-by-step approach to livestock improvement.

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In another country two activities were evaluated which were concerned with livestock research: a pilot farm with a research laboratory and seven substations studying the production possibilities of Friesian cattle, and three veterinary clinics.

The three veterinary clinics worked well until Dutch aid was withdrawn: they had examined 2,300 animals and 5,200 blood samples had been analysed in the project laboratories. However, the project, which was directed mainly at the larger livestock farmers, suffered from a lack of resources, excessive bureaucracy, insufficiently trained local staff and too low a 'turnover'.

Criticism was directed at the fact that the project was not concerned with the area's real problems as regards livestock, doing little e.g. to control ticks or the tse-tse fly. Other points of criticism were the lack of field research and the failure to develop preventive veterinary medicine. Dutch aid to this project seemed to have been terminated too soon.

In one case it was found that the semen freezing equipment supplied had not been unpacked a considerable time after its arrival. Small farmers still did not trust AI, and imported semen was ten times as expensive as local semen. No attempt was made to measure milk yields in order to monitor the effects of livestock improvement. The number of inseminations remained too low (3,000 per year). Only the large-scale breeders preferred to use the higher-quality but more expensive imported semen.

Conclusion

In an attempt to alleviate the problems faced by imported Dutch dairy cattle in adjusting to tropical conditions Dutch aid was used to finance large modern dairy farms in the countries concerned. Lack of management capacity proved a stumbling block, however, especially where there was no local experience of such complex farms. Problems also arose in connection with the mechanization associated with the large-scale approach. Imported equipment imposed a heavy foreign-exchange burden through the need to import spare parts and often did not work satisfactorily through the lack of proper maintenance.

The worsening economic situation meant that mechanization was an increasingly critical factor in project implementation. The imported machinery was unsuited to local working conditions and requirements.

In one situation heavy soils demanded very heavy and expensive equipment, rendering chronic the problems already associated with forage supplies. The supply of installations which were too advanced, difficulties in obtaining spare parts, excessive capacity etc. were recurring features in evaluation reports.

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The imported cattle required adequate veterinary care and modern artificial-insemination techniques were often part of the approach used. Extension and training activities in this phase were mainly geared to the technology associated with modern intensive dairy farming. The same was broadly true of livestock research.

Selective breeding is a classical method of improving livestock: crossing local animals with high-yielding western stock can double milk yields under favourable circumstances (notably good supplies of roughage and concentrates), and even under 'average' conditions such a cross can produce more milk than a local cow. The attempt to achieve genetic improvements was not based on a clearly formulated breeding policy, however, and the results of breeding and selection activities were consequently unsatisfactory.

In a number of countries the introduction of modern livestock technology was followed by the establishment of artificial insemination services. The main conditions which an AI service must meet if it is to be successful are as follows:

- local farmers must be interested in AI;
- farmers must be skilled at knowing when cows are in oestrus;
- farmers must be able to get in touch with the AI centre within a few hours;
- the inseminators must be highly mobile;
- the correct equipment must be available for the collection, storage and transport of semen;
- the capability and motivation of inseminators must be high;
- proper records must be kept of the qualities of bulls and cows;
- bulls must be free of infectious diseases.

If these conditions are met AI can provide a valuable means of achieving medium-term improvements in the local herd. Experience with AI in the context of Dutch development activities has not been generally favourable, however; AI works best on large-scale commercial farms where the various conditions can be met, and in small-scale husbandry controlled natural breeding is a more suitable means of livestock improvement.

The drive for genetic improvement must not be allowed to obscure the importance of good feeding, selection and care of local animals, since these can be often achieve quicker, cheaper and better results. And particularly for the poorest developing countries this is a great advantage.

SMALL-SCALE FARMING (1978-1982)



It gradually came to be realized that the supply of livestock and large-scale modern dairy farming were not generally applicable means of improving milk supplies in developing countries: the conditions under which such activities thrived were specific to particular regions and related to the development of the general social and economic structure.

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In developing countries animal husbandry normally takes place on a very small scale, and most milk, meat and other cattle products come from small-scale farms. Genetically high-grade cattle are unsuited to such conditions, since they are too expensive and require technically complex care, and for this reason Dutch development activities increasingly came to be geared to improving local livestock.

Among the general objectives of development cooperation policy growing emphasis was placed on the direct alleviation of rural poverty, and this also led to a shift of focus towards the small farmer in activities relating to beef and milk production. Research, veterinary care, extension and advice continued to be inspired mainly by the western model of intensive dairy farming (the source of Dutch expertise), but increasingly the attempt was made to redirect activities towards the small farmer.

Four of the activities evaluated were directly concerned with improving dairy practices among small farmers, with 1-10 cows. The projects considered below were located in Sri Lanka, Tanzania, Egypt en Peru.

The support given to small livestock farmers in one case arose out of earlier activities, namely the supply of livestock and aid to large-scale units for the breeding and improvement of dairy cattle.

From 1981 onwards small farmers were increasingly involved in dairy development, an important part being played in this connection by the establishment of an on-the-job training facility for local livestock farmers. A producer organization of small farmers provided an important channel for extension and training. At the regional training institute practical courses were provided at various levels, and there was provision for follow-up work among former participants.

The organization of local farmers was seen as the chief condition for the successful channelling of their initiatives. This focus on small-scale farming was found to be more appropriate to the local situation, despite problems relating to supervision, advice, credit, transport and marketing.

Notwithstanding the concentration on the development of large-scale dairy farms in one of the countries studied, the Netherlands also played a part in developing animal husbandry at village level and among individual small farmers by means of credit and technical advice through the Rural Development Bank. Technical assistance totalling over 1.5 million guilders was committed for this purpose. The Bank had branches in all twenty of the country's regions through which support could be given to small-scale projects. Between 1979 and 1981 the Netherlands funded two sub-projects.

The support given to small-scale production in another case arose directly from the supply of livestock and large model dairy farm. At the time of the evaluation

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the smallholders programme had 165 participants, to whom 330 cows had been distributed from the earlier livestock deliveries. Milk yields were more than double those of local cattle. The land titles of the smallholders were clearly established, and there were 250 on the waiting list. The support provided included the distribution of pregnant heifers, the building of cowsheds, the supply of concentrates and technical and veterinary advice. These services were heavily subsidized, a fact which could cause problems on transfer of the project, particularly in view of the political opposition existing in that country to the effective organization of small farmers on a cooperative basis. Local rules, which were disadvantageous to the smallholders and their organizations, caused the small farmer to remain dependent on the model farm for supplies of concentrates.

Elsewhere a number of innovations were introduced (draught horses, carts, electric fencing, milking sheds) which appeared to penetrate as far as the small livestock farmers. The six small pilot farms worked reasonably and profitably. The project equipment was sensibly chosen and sensibly used. Overall the activities on these pilot farms were encouraging, contributing positively to the development of small-scale animal husbandry.

As well as mechanization, experiments were conducted involving simple tools and equipment for small-scale farms. This appeared a worthwhile activity, but the Netherlands was inflexible as regards providing funding in respect of work not performed by machine; this led to the use of equipment which was too advanced and to high operating costs.

Conclusion

The shift of focus from large to small-scale production had beneficial results. Support for small-scale husbandry was often provided alongside that given to existing large-scale farms, and the latter continued to place the greater burden on the resources and expertise deployed. It was partly for this reason that the aid to small farmers got underway only to a limited extent.

The focus on small-scale animal husbandry hardly yet constituted a concerted policy at this stage. Developing-country governments at times did not give convinced support. The practical experience gained did, however, provide greater understanding of the importance of small-scale livestock farming.

THE INTEGRATED APPROACH (1980)



As attention switched to the small farmer the view taken of livestock also changed: it was increasingly recognized that cattle have many functions in addition to supplying milk, and as a result a more integrated approach was adopted to the development of livestock farming. This chapter looks at rural development projects in Sri Lanka, the Yemen Arab Republic, Zambia, Tanzania, Egypt, Burkina Faso and Peru.

The shift of focus onto local cattle and husbandry techniques which had begun in the third phase, brought a number of new factors into the picture in the fourth: credit facilities, the role of women, animal traction and other species of livestock.

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Credit programmes, often linked to the introduction of animal traction, became important. The various other functions of cattle were recognized alongside the often overstressed one of milk producer. The role of women in animal husbandry ceased to be disregarded. Finally, the development of beef and milk production could no longer be seen in isolation from agricultural development in general: mixed farming became popular among animal husbandry experts and a more integrated view of beef and dairy development gradually took shape.

In one country the government promoted integrated planning and decentralization in an attempt to reduce regional conflicts. The Integrated Rural Development Programme (IRDP) also covered animal husbandry. In the first phase the stress was on preparatory research, coupled with the implementation of certain specific activities. After 1982 detailed project goals were developed for each target group.

In the area of animal husbandry a complete study was first made of milk supplies and consumption which served as the basis for later activities. The two greatest problems were the shortage of forage (through lack of pasture) and defective organization of milk marketing.

The project provided for improvements in livestock housing and for livestock improvement through artificial insemination and the replacement of the older local bulls. The grants led to the construction or improvement of 58 individual and 13 communal stables. The IRDP, in collaboration with the Netherlands Dairy Development Programme, has so far subsidized the supply of 12 Friesian bulls for the genetic improvement of local cattle.

In the area of the collection, cooling and transport of milk the IRDP has concentrated on the establishment and operation of Milk Collection Centres and on support for the associated Dairy Producers Associations. These activities are aimed both at the people of the villages and at the workers on the tea plantations, but are located entirely on the plantations.

The credit programme under which loans were provided through the local Rural Development Societies was an innovation. It was intended that half of the loans provided should go to the women of the region. The credit was for the purchase of dairy cattle; repayment has not so far given rise to problems.

Women, whose role at work is an important one in the country concerned, had long been neglected in the training and organization of milk producers, and in this project extension and training activities were for the first time directed at women as well as men. An encouraging aspect was the involvement of women in the producer organization.

A separate project concerned with draught animals grew out of the original Dutch-

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supported cattle project. The new project involved work on the breeding and selection of draught oxen, and advice and veterinary care was provided to farms using animal traction.

A wide-ranging identification study was initiated in 1977 with a view to creating an Integrated Rural Development Programme in another country. Actual activities were to be geared to two objectives, one of them production-orientated (infrastructure, water supplies, increasing arable and livestock production) and the other institution-orientated (local structures for the implementation of rural development).

There were direct and many-sided links between arable and livestock production. The majority of the 15,000 families involved owned one or two cows (with a yield of two litres per day) fed on sorghum stalks and alfalfa grown under irrigation. If the cereal harvest failed the plants were used as animal feed. The dung was mainly used as fuel.

While women were not a forgotten group in the implementation of the project, insufficient account was nevertheless taken of their needs in extension and training activities. Women's activities were poorly integrated into the project as a whole and their wishes were insufficiently respected by the project management. There was no clear and convincing training message for women.

The methods used and the technical implementation of the livestock projects took little account of and failed to build on the important role of women in small-scale husbandry. This helps explain why no part was played in the project by the small species of livestock, despite their importance to women – something which would have been unlikely to happen had project preparation started from the local system of mixed farming. Almost all the activities inspected were oriented towards objects rather than people, i.e. geared to specialized dairy farming techniques. There was too often little awareness of the needs and potential of local livestock-farmers.

Tests were carried out on local cattle in an experimental stable; their main aims were feed and pasture improvements. The women's section of the integrated project also concerned itself with animal husbandry, albeit with the keeping of goats and poultry rather than cattle.

The evaluation reports indicate that the Integrated Rural Development Programme did little or nothing to increase output in the livestock sector or to improve the position of small-scale livestock farmers.

In both arable and livestock activities there was a clear division of roles between men and women. Preparing the soil, sowing, crop protection and manuring were all men's tasks, as was marketing the products, while weeding, harvesting and

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threshing (except where machinery was used) and animal husbandry were women's jobs. The last involved looking after, feeding and milking cows, processing milk, collecting dung and looking after poultry and goats. The sale of animal products (eggs, butter etc.) was also a job for women, who could keep the income they earned in this way.

The main problems identified were the poor health of the livestock and the limited potential for feed production and pasture improvement due to communal grazing rights. The goal of the IRDP livestock programme was therefore to improve the health and feed situation, with particular emphasis on pasture improvement. The early project documents noted the association between women and animal husbandry but drew no consequences for project implementation.

In another case, crop cultivation was found to be more important than animal husbandry to the average farmer. On the predominantly mixed farms livestock was used mainly for traction (and as a source of dung and more livestock). Both the local institution involved and the Netherlands began to realize that a shift away from specialized dairy farming towards mixed farming (and the associated multiple functions of cattle) would be beneficial. In the agricultural settlements, food production levels remained far below what was required, partly because of the lack of pulling power. Fewer and fewer tractors were available, partly because of the almost total lack of maintenance. Dutch aid to the draught animals breeding unit (which had 240 animals) increased farmers' interest in this form of traction. However, credit was not available through the project for hiring draught oxen, though it was for hiring tractors.

Among farmers and village communities elsewhere, enthusiasm for the credit programme was considerable and its managers were unable to keep pace with the numbers of applications. While not risk-free this type of activity appeared preferable to giving support to large farms. The procedures involved in granting credit were slow, however, and supervision of the widely spread loans was incomplete. At the time of the evaluation only a few dozen individual and eight village loans had been granted over a period of several years, indicating that credit provision of small-scale animal husbandry was no sinecure. Seventy applications for credit were being processed. A major problem was the limited availability of good-quality heifers offering the prospect of higher milk yields than the local cattle; the breeding of dairy cattle was mainly geared to the needs of the large dairy farm.

In another project the credit programme for smallholders worked relatively well. The heavily subsidized programme was attractive to small farmers, and here too demand exceeded supply. 165 livestock loans had been provided – not an impressive total, given that the project had been in operation for seven years. Repayment was getting underway and there was a demonstrable improvement in small farmers' incomes.

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The impact of the programme was limited, however, since it was geared exclusively to imported livestock. There was no attempt at institutional incorporation into a local credit structure.

Women were virtually excluded from the project activities from the outset, owing to the great distance between the participants' homes and the fields where the cattle were housed.

In another case again, animal husbandry was a major element in an integrated regional development project. Animal traction proved to be vital to the expansion (albeit modest) of the area under cultivation and hence of output. Experiments involving controlled extensive transhumance with livestock for meat production are producing interesting results.

Experience here shows that the use of animal traction can double labour productivity and the area cultivated per unit of labour.

While advisory activities in another country were in principle directed towards everyone involved in farming – women as well as men – women remained only marginally involved, even though they often spoke to the advisors. Only four women took an active part in the extension meetings. The advisory activities were too 'top down' and technical in nature to appeal to women. Elsewhere in the country, encouragingly large numbers of women participated in a credit programme, with hundreds receiving small loans in connection with crop cultivation; however, a programme of livestock credit for women did not get underway.

Conclusion

Involvement with small-scale dairy activities produced a greater understanding of the links with other factors: it was found that the development of this sector could not be isolated from that of agriculture as a whole. Activities relating to credit provision, animal traction and other livestock (goats, poultry etc.) were most likely to be successful in projects set from the start in a framework of integrated rural development.

Dutch development policy began to take increasing account of the vital role of women in animal husbandry – a role which had formerly been entirely neglected – and in some projects a start was made on involving women in activities. A problem for women particularly in African countries was that they did not have access to their own draught animals and had to hire them from men. Not only were women expected to bear the largest share of responsibility for food production, their lack of resources to hire draught animals meant that their burden was becoming steadily heavier as families grew larger.

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Activities relating to draught animals formed part of several projects, allowing an exclusive concentration on dairy farming to be translated into a broader mixed approach. The introduction of animal traction or the promotion of its use – for which there appears to be great potential in Africa – requires the development both of equipment technically suited to animal traction and of an integrated agricultural system appropriate to local ecological conditions. In such a context cattle can fulfil a support function vis-a-vis crop production, though this function will not have a dynamic impact unless it forms a transition to a more intensive arable system. Increased inputs of artificial fertilizer, soil improvers and phosphates would appear to be an essential element in this process.

Particularly in the poorest developing countries this approach requires the deployment of appropriate expertise resources. Practical research, advisory services, credit facilities and veterinary care are all essential.

Credit facilities proved to be if not a simple, then certainly an effective instrument for developing small-scale animal husbandry, involving women as well as men. Demand exceeded supply more here than in the case of other 'innovations'. Considerable problems were nevertheless encountered in the granting, administration and supervision of small loans to farmers, and further development of effective low-cost approaches is still needed. Improved local livestock must be available.

Where the small-scale integrated approach began to bear fruit it then ran into marketing problems. It began to be realized that the various circumstances surrounding beef and milk production are at least as important as the production techniques themselves: the context of the project, the market and the natural environment were increasingly taken into account in the design and implementation of activities. This marked the start of the fifth phase (see part III).

PROJECT ORGANIZATION

This chapter deals with the general experience of and problems encountered in the design, organization and implementation of livestock projects. They are considered from the viewpoints of, respectively: the Directorate General for International Cooperation (DGIS) of the Ministry of Foreign Affairs and Netherlands Embassies in developing countries; advisory bodies; Dutch field experts; and local counterparts.

DGIS and Embassies

Formulation of project goals

The goals of most projects were not defined satisfactorily, being in some cases excessively detailed and in others barely indicated. Long-term objectives, project goals, plans and functions were generally inadequately distinguished. Support for large and small-scale, modern and traditional, specialized and mixed farms was sometimes combined without the project plan indicating any priorities.

Long-term objectives in particular were insufficiently explicit, albeit the warning was sometimes given in general terms that the development of beef and milk production should be seen as a marathon rather than a sprint. Core objectives included 'rapid and substantial' increases in output, a 'rapid and direct' response to increased need for dairy products and an 'immediate quantitative reinforcement of the national herd'. The integrated rural development projects were an exception to this rule, using a programme approach with generally more clearly defined long-term objectives.

Projects designers frequently had difficulty in defining target groups, as witness the use of such phrases as 'a certain target-group dimension', 'target-group orientation in a broad sense', 'greater awareness of small-scale animal husbandry', the 'social aspects', 'help for small farmers and augmentation of their income' and 'improving the position of the poorest'.

The lack of a common denominator among the animal husbandry projects is hardly surprising, given that DGIS had neither a clearly defined policy for this sector nor a properly developed system for project identification and preparation.

The definition of objectives was much improved following the introduction of the Instruction Handbook in 1982, however; for the first time this provided a blueprint for the definition of long- and short-term goals, project identification, appraisal, implementation and supervision.

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Preparation and design

In eleven of the 23 projects considered identification had been carried out jointly by DGIS and the developing country concerned; in two it had been carried out by the Netherlands alone and in one case the project proposal had been put forward by the developing country. The World Bank carried out three identifications. Six projects files included no identification report.

Details of feasibility studies were found for a quarter of the projects, but only one appeared to have been fully completed. While the technical aspects were generally adequately covered no study included a section on macro-economic issues. Nowhere was an interdisciplinary approach adopted to the issues involved in animal husbandry; nor was there any awareness of the importance of animals other than cattle or of traditional indigenous management systems.

In the work of preparation DGIS was assisted by Project Advisory Committees (PAC); their recommendations also suffered, however, from a technical bias. The Operations Review Unit found PAC reports for only half of the projects. In two cases the recommendation was unfavourable: in one of these DGIS disregarded the PAC's recommendation not to proceed and in the other the recommendation was withdrawn following amendments to the project proposal.

Project preparation often failed to include the compilation of work plans or of precise job descriptions for the experts who were to be deployed; this made it difficult to ensure that the most suitable applicants were selected.

Supervision

Frequent recourse to specialists for advice on specific matters in the course of projects implementation tended to fragment and obscure DGIS's overall view rather than enhance it. One drawback of the over-frequent use of advisors was that the DGIS regional section concerned was reduced to little more than a pigeon-hole.

The complexity of most activities associated with beef and milk production meant that DGIS had to rely heavily on the ideas and advice of experts, while lack of staff helped ensure that it had little control over projects. Moreover the obstacles to beef and dairy development often lay not in the province of livestock experts but in the area of market and pricing policy.

Partly as a result of the pressure to spend funds, DGIS lacked the time and expertise needed to give proper consideration to applications from suppliers of agricultural export products. The inadequate definition of policy for the livestock sector meant that the regional sections had little firm basis on which to work.

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When problems arose in the course of implementation their solution was too often sought in further investments; this tended to broaden the scope of projects and add new objectives. Over-resourcing led to the use of installations and equipment which were too advanced and complicated the transfer of projects.

It was evident from the records held at the Ministry that financial control was frequently deficient; it was often difficult to trace details of expenditure on projects, and even then many of the figures were estimates.

The position of the Embassies was strikingly similar to that of the regional sections of DGIS: lacking the necessary staff and technical expertise they were often forced to rely on the advice of field experts in their assessment and supervision of projects. The lack of specialist knowledge could give rise to excessive optimism and over-hasty action. It is thus very clear that the current practice of deploying sector specialists in the programme countries was a much-needed innovation.

The Embassies' enthusiasm for the (sometimes one-sided) ideas of expatriate experts was not always matched by their efforts to involve local counterpart organizations adequately in project implementation. Embassies sometimes played their part strikingly well; there were also examples of the contrary, however, to the point that on some occasions the DGIS regional section had to intervene.

Advisory bodies

PACs were not involved only in project preparation: with one exception a specialist supervisory agency was involved in project implementation in all the activities evaluated. The lack of clear job descriptions for the project advisors proved to be a source of misunderstandings, differences of opinion and disputes over the division of responsibilities between advisors and DGIS. Problems of this kind arose in no less than five cases. In addition most of the advisors were members of several PACs at the same time and were thus potentially overburdened.

Project advisors' lack of local knowledge sometimes led to mistaken recommendations, excessive optimism and inadequate awareness of alternatives better suited to local conditions.

Expert advisory groups were seldom multidisciplinary in their composition and sometimes lacked experience of developing countries and intimate knowledge of the social and cultural dimensions of indigenous animal husbandry.

At the same time there were also examples of excellent objective back-stopping, involving effective cooperation with the Embassy and DGIS. The close personal involvement of the back-stopper was of crucial importance in building up a network of contacts. Sometimes the advisory body warned against too large-scale

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an approach, albeit not always successfully. Back-stopping was found to be less vital in the case of more experienced field experts.

Project supervisors' overoptimism regarding short-term prospects for the development of animal husbandry, a tendency to go for 'more' rather than 'better' and an excessively technocratic approach did not generally help to achieve balanced project implementation. It was also found that a number of well-founded warnings and evaluation reports were ignored (or followed up too late) by the regional sections. The project advisors for livestock projects did not include any women.

Dutch field experts

At the early stages of development cooperation in the livestock sector Dutch experts were deployed to ensure the proper treatment of livestock supplied by this country. While in general they carried out this task in exemplary fashion the overall objective – using Dutch livestock and high-level technology to increase milk production in the recipient countries – often proved an impossible assignment. While on the one hand their experience and expertise was largely confined to intensive dairy farming, on the other there were cases where experience was first built up of approaches better suited to local conditions and where individual experts made a great contribution.

The average livestock expert was very much a (male) dairy farming specialist. Wider-ranging expertise e.g. on markets or local husbandry practices was often lacking, not least because on the failure to take such factors into account at the preparation and recruitment stage.

The experts had great influence on project implementation. In some cases they acted too independently, and this tended to produce a proliferation of activities. Undertaking more and more new activities was an understandable response to the restrictions which experts sometimes felt in their project-based relations with local government agencies; this merely shifted institutional problems, however, and did not solve them.

Sometimes too many experts of the same type were deployed; in another case an AI expert was selected but then put to work on vaccine production. Evaluation reports on six activities included special mention of the valuable technical contribution made by Dutch experts.

It was concluded, cautiously, that the manner in which experts did their job, and indeed project implementation in general, were not affected by whether contracted or in-house personnel were used. Most of the projects (except two) were carried out on an in-house basis.

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Experts' field reports are a useful instrument of project supervision. The Operations Review Unit's findings in this matter present a varied picture, however: while reports on two projects contrived to be both voluminous and incomplete, owing to the lack of reporting guidelines, there were also examples of good field reporting. Reports rarely included commercial or macroeconomic analyses and there were very few concluding project reports.

Local counterparts

Many evaluation reports mention problems relating to the availability and involvement of local counterparts. This is a general problem, however, and is not specific to livestock projects. Without the active participation of the local project supervisors and personnel the effects of development projects remains very limited. In many instances the transfer of expertise to local counterparts and project managers was inadequate, with serious implications for the eventual transfer of activities to local responsibility and for their continuation thereafter.



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The evaluation reports do not discuss the causes of the difficulty in obtaining the most suitable counterparts to work on projects. The factors undoubtedly include inadequate career prospects, what the counterparts see as poor salaries, inadequate additional benefits and a lack of other sources of income (e.g. second jobs) and other problems such as long separations from the family.

The frequent failure to gear the design of livestock projects to local conditions was another source of the problems encountered in making effective use of local counterparts. Livestock projects are vulnerable and difficult by their very nature: animals need day-to-day care, and this demands a conscientious and well-motivated local project team – even more so than in the case of arable farming activities.

The shortcomings on the part of counterpart organizations reported in connection with the reception and care of high-grade and highly demanding livestock are attributable in part to local unfamiliarity with the requirements of the imported cattle and equipment.

The importance of the contribution of local counterparts cannot be overestimated: the role of the local (and Dutch) field team, and particularly of management, is fundamental. A systematic study should therefore be made to identify measures which will help increase the involvement of the counterpart organization in project design and implementation.

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Current practice

The survey of earlier findings has brought us to 1984. We now go on to review recent data from the regional sections of DGIS to build up an up-to-date picture. The current situation is marked by the continuation in adapted form of projects from earlier phases, but at the same time the outlines of a new approach are also beginning to emerge. Animal husbandry projects now most commonly form an integral part of policies for rural development.

At present a range of approaches still exist side by side (with the exception of phase I). The summary set out below follows the classification of livestock activities by the phase in which they were instituted.

Phase 1: Supply of livestock

The large-scale supply of Dutch livestock financed from development funds which marked the first phase is no longer undertaken. Limited numbers of breeding bulls may be supplied, but in general genetic improvement is now coupled with improvements in local feed production. The distribution of imported livestock to local farmers is no longer seen as a realistic option.

Phase 2: Large-scale modern dairy farming

This approach has now been abandoned. Aid to unsuccessful large farms is being wound down and wherever possible redirected to smaller-scale and less one-sided livestock activities. The financial viability of the large farms is the decisive criterion for continued assistance. In 1985 only six activities directly geared to milk production were still in progress.

Imports of dairy equipment and other agricultural machinery are still an occasional feature of bilateral programmes. Alongside the supply of spare parts for existing equipment the main stress now is on funding for more appropriate forms of technology, in the light of past problems with complex machinery in the area of forage supplies. The shift of focus also involves e.g. support for the development of locally produced equipment and carts and for measures to increase the availability of trained draught animals. Local craft schools and the students of agricultural colleges may be involved in equipment production.

Four activities concerned with cattle-breeding are currently in progress. The breeding units on one of these projects were too ambitious and on too large a scale, giving rise to management problems, frequent losses and occasional corruption. Active steps are now being taken to rationalize two of the farms and to gear activities more to the provision of services and information to farmers with little land.

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Two breeding units produce local crosses for which there is great demand, since the animals have proved to yield considerably more milk and to be reasonably resistant to disease. The units are still dependent on imports of drugs, semen and spare parts but appear now to be providing a clear service to local farmers.

By contrast, a veterinary research project concerned with the breeding of water buffalo appears still to exemplify the old-style approach. This interesting but complex study of one aspect of animal husbandry is quite isolated from the rest of the bilateral work being undertaken.

Artificial insemination was one of a number of activities associated with large-scale farms, and Dutch aid to this activity has now been terminated on account of problems with funding, transport and the liquid nitrogen equipment.

In another project too the AI services are seen as too expensive and insufficiently geared to the needs of small farmers, while commercial farmers are given help in setting up their own AI. Elsewhere, the AI activity is perhaps even more isolated, involving as it does the supply on a turn-key basis of a liquid-nitrogen unit for the freezing of semen.

In general the realization is gaining ground that AI is mainly of value to the larger-scale commercial livestock farmers, who are in principle in a position to pay for the service. However, this can result in the virtual isolation of AI work from animal husbandry policies geared to the needs of the average farmer.

Interest in operating and stocking drug/vaccine projects is declining, although in one case a veterinary project was recently approved mainly with a view to reducing bovine mortality. In two other projects, however, the stress is being shifted from curative care to preventive care and to activities which are transferable to small farmers.

Here the emphasis is being shifted from crisis control in the event of epidemics to the detection of the disease organism. The 'top down' approach of epidemic control, centred on drugs, vaccines and pesticides, is increasingly making way for a more broadly based strategy in which the central focus is on improving livestock productivity. However, there are still examples of spectacular large-scale disease-control programmes, based on optimistic recommendations from technical experts.

Aid is still being provided for local vaccine production, albeit on a not entirely consistent basis. In one of the projects the goal is (rightly) to strengthen an existing production unit, where, following an eighteen-month start-up period, small-scale production is entirely under local management. In another case, six years after the delivery of a complete laboratory on a turn-key basis, the project is still not self-supporting and outside management is still needed. Vaccine production, like

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e.g. artificial insemination, appears to be mainly of value to the larger-scale better-off farmers.

Phase 3: Small-scale farming

Recently there has been a move to gear activities more closely to the local situation of small farmers. Following applied local research, a package of dairy farming improvements has been developed which – in combination with demonstration units and comprehensive support to farmers – is proving very successful. The extension service provides advice and support covering animal feed systems (semi-zero grazing), management (financial and technical) and credit.

In two projects the importance has been understood of responding to local farmers' own initiatives instead of introducing, unasked, all kinds of technical improvements. In a project in West Africa it is being realized that the organization of livestock farmers is essential if the problems of land and water management are to be tackled effectively.

Extension and training

Both training centres and field demonstrations have a part to play in information and training work. Activities are increasingly geared to the local situation and local livestock. The problem of the often poor motivation of local counterparts in connection with training remains unresolved.

Seven activities were carried out in 1985 relating to extension and training on meat and milk production. In some cases they involved support for a course programme closely linked to local farming practice and there was stress on mixed approaches (crop production/livestock/forestry). In one project the desire to involve small farmers in livestock activities encounters opposition from the authorities. Elsewhere it has proved possible to leave the 'enclave' of the large-scale training model and provide small farmers with information and training in their own environment, albeit active pressure from the Netherlands has been necessary to achieve this.

Feed supplies

The importance of improved roughage supplies is now generally endorsed. Three projects are currently underway which are concerned with developing the use of straw; they involve both research and field demonstrations to familiarize farmers with the techniques involved. A number of projects are aimed at improving the productivity of natural (arid) grasslands; one lesson from such activities in the Sahel is that poor soil is as great an obstacle to livestock farming as is lack of water. The importance and merits of traditional husbandry are increasingly being realized; a major feature of the activities is the importance accorded to the analysis of

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agro-pastoral systems and to the combination of productive elements of arable and livestock farming. Finally, somewhat in isolation from the remainder, there is a project which involves the grinding and mixing of raw materials; local farmers produce the raw materials and buy the mixed feed.

Phase 4: Integrated approach

Major corrective measures have been introduced recently in many livestock projects currently in implementation. The DGIS regional sections responsible have almost everywhere shifted the emphasis from a one-sided technocratic approach to livestock management to an integrated approach to rural development. In one country, where the livestock sector programme had virtually stalled, it has been decided to abandon the option of developing a fully commercial livestock industry in the chosen region in favour of more broadly based agricultural development geared to self-sufficiency rather than exports.

Among the implications of this shift of policy are an emphasis on multi-disciplinary approaches in the rural development programme and the winding down of support for large dairy farms, veterinary laboratories and artificial insemination schemes. It has also been decided to deploy fewer experts (formerly 25) nevertheless covering a wider field (and including a woman expert). Support is now being given for the use of animal traction and the local production of agricultural equipment.

Possible obstacles to livestock development are being identified through basic studies of an area's potential.

Both traditional and commercial approaches are receiving due attention in activities aimed at the project goals of increasing output, establishing effective market systems and achieving self-sufficiency in the project region.

Dutch development funds are also being used to promote the establishment of producer cooperatives.

The increased awareness of and stress on the role and skills of women appears to be more than a passing phenomenon. In three projects, cautious moves are being made to promote a greater realization among men farmers of the position and capacities of women. Attempts are being made to eliminate restrictions on the use by women of improved technology (ploughs, carts, pumps etc.). Women are being positively involved in training and extension activities; indeed, at one livestock training centre 30-40% of the participants are women. At another DGIS-aided training centre for government personnel and farmers participation by women is also strikingly high (up to 50%). Separate courses are sometimes organized for women.

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The small scale approach and the integration of livestock and arable farming have been very successful in two projects. In another project, a large farm is being adapted for use as a training facility for small farmers. The orientation towards small farmers generally implies a preference for working at village level, sometimes (but not always) through 'official' village organizations, though some projects also involve working directly with individual small farmers, women as well as men.

The provision of credit facilities for small farmers is increasingly being used as a way of promoting livestock activities (which may involve other animals as well as cattle). The loans are mainly for the purchase of livestock, but also sometimes for cowshed fittings, carts, tools etc. In most of the projects, growing attention is being focused on animal traction, a vital factor in increasing crop productivity. Draught animals and oxcarts are also helping to solve transport problems: in many countries it is still the women who have to carry food, water, fuel, dung, building materials, produce and so on.

Activities concerned with livestock other than cattle remain relatively insignificant. Twelve projects are underway, nine of them involving poultry; activities focusing on the keeping of ducks, pigs, goats and sheep are still very rare.



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Current small animal projects mainly involve the supply of equipment and the construction of incubating and rearing units. Day-old chicks are being supplied, sometimes together with incubating and slaughter installations. In two cases Dutch development funds are also being used to support a training and extension programme. In some cases a start is being made on a more broadly based, decentralized approach, including advice and support for local producers, geared solely to women.

The development pathway being followed shows similarities with what we have seen in the case of beef and milk production: after an initial series of turn-key projects there has been a shift, albeit gradual, to a more broadly based approach geared to the needs of small farmers, women as well as men. However, this demands projects which are technically simpler and also involve training, extension and some research.

For the most part the course adopted has involved deploying both advisors and project workers with broader and less specialized skills and knowledge. There is now a greater focus than formerly on local farmers and their livestock and local conditions of production, and this demands greater knowledge and understanding of what is and is not a practical proposition in terms of local production.

Conclusion

While practical experience has shown that there is no magic solution for the many problems that arise in livestock and dairy development projects, the new focus on small-scale production and integrated approaches appears promising. This trend is in keeping with the recent emphasis on the need to ensure that activities have a lasting impact and can continue operating after transfer to local management.

Consideration of medium- and long-term project goals inevitably brings into the picture structural issues and problems which lie outside the scope of the individual project. Additional expertise is then needed on, for example, economic affairs (the 'dairy chain') and the natural environment. The view taken in earlier phases that individual livestock activities could be clearly marked off is being abandoned; structural problems require a coordinated approach both at project level ('bottom up') and at the macro-level ('top down'). In this connection it is important that the necessary integration should be pursued in several ways:

- vertically, encompassing the entire chain of production, from the production of forage and concentrates to processing and marketing;
- horizontally, taking account of the social and cultural aspects of animal husbandry as well as its technical and economic side;
- at the subsectoral level, taking account of the complementary links between the keeping of cattle and other farm animals;
- at the sectoral level, including arable and agro-industrial aspects;
- at the household level, taking account of factors relating to labour, income and decision-making.

Towards a market orientation – Phase 5

The outlines are now emerging of a fifth phase in which the development of meat and milk production is being seen increasingly in relation to local, national and international markets. There is a growing realization among livestock specialists that the appraisal and design of activities must take account of the macroeconomic context in which the sector operates. In the framework of an integrated view of rural development the support given to beef and dairy activities should also have regard to their effect on the position of women and on the natural environment.

Phase 5: The macro-economic and ecological framework

In connection with livestock projects in the Sahel there is emerging a clear need for a market and pricing policy, but in this area there are no real national market boundaries. Ecological damage is also emerging as a limiting factor: this can be minimized by the application of local land-use plans, with animal husbandry being confined to certain zones. This approach requires collaboration between the government and local livestock farmers (and their organizations).

The learning process which is taking place in the livestock sector in one Asian project remains unique, but could be given support for its value as an example. A logical development has taken place marked by a continuing shift in project boundaries. Following a capital-intensive start involving occasional livestock projects considerable experience was gradually built up of local livestock production. Farmers' organizations were supported and the marketing and processing of milk promoted. The activities developed into institutional support for the government agencies involved and finally into support for the rationalization – in collaboration with the World Bank – of the dairy sector as a whole.

Investments in individual projects have proved in practice to be instruments for the creation of more favourable conditions at the policy level. The greater awareness and understanding of the complex field of market and pricing policy is in large part due to the very committed Dutch project advisor. Extensive Dutch expertise has now been built up and a network of contacts exists with counterparts and the local agencies involved. In this way it appears possible to build bridges between individual livestock projects and the macroeconomic framework which determines their success or failure.

APPENDICES

APPENDIX 1 – Economic significance of the beef and dairy sector in developing countries.

Table 1*The world cattle and buffalo population*

	Cattle (x 1000)		Buffaloes (x 1000)	Meat production (x 1000 tons)	
	1975	1983	1983	1975	1983
World	1,189,179	1,225,383	124,127	43,645	45,572
<i>Developed market economies</i>	300,613	276,300	171	23,584	23,315
North America	143,201	126,817	–	12,453	11,777
Western Europe	101,295	100,912	171	8,186	8,415
Oceania	41,562	30,564	–	2,083	2,073
Other countries	16,555	18,006	–	861	1,050
<i>Developing countries (Market economies)</i>	682,637	735,498	101,776	11,258	12,937
Africa	126,181	139,671	2,393	1,685	2,002
Latin America	258,551	269,917	578	7,290	7,994
Near East	46,962	56,798	3,835	936	1,208
Far East	250,372	268,542	96,952	1,335	1,719
Other countries receiving Dutch aid	571	570	–	12	14
<i>Centrally planned economies</i>	203,929	213,585	22,190	8,803	9,320
Asia	62,217	63,994	21,608	396	546
Europe + USSR	141,712	149,591	582	8,407	8,774
All developed countries	444,325	425,891	753	31,992	32,089
All developing countries	744,854	799,492	123,374	11,654	13,483
Netherlands	4,662	5,241	–	420	420

Source: FAO statistics (FAO Production Yearbook 1982, FAO Bulletin of Monthly Statistics, May 1984)

APPENDICES

Milk production (x 1000 t)		Yield per cow (l)	Cattle exports (x 100)	Cattle imports (x 100)	Beef exports (x 100 t)	Beef imports (x 100 t)	Exports of dairy products (x 100 t)
1975	1983	1983	1982	1982	1982	1982	1982
437,349	454,027	1,992	77,446	78,675	34,385	33,500	457,825
205,136	241,372	4,295	42,558	48,777	25,165	21,540	440,655
60,787	71,463	5,567	11,038	10,441	1,402	6,811	36,961
123,400	147,183	3,967	35,324	34,780	15,013	13,053	353,062
12,809	12,325	3,279	1,207	4	8,756	147	50,260
8,145	10,401	4,162	7	-	-	-	365
57,678	70,758	673	26,634	28,230	7,219	7,261	6,512
4,921	6,363	349	13,794	9,666	356	1,352	9
30,540	35,380	969	11,038	6,625	6,278	1,062	34,785
7,563	10,092	661	1,219	8,100	157	3,439	601
14,599	18,856	538	582	3,837	422	1,243	2,424
55	67	1,189	400	3,551	-	-	-
130,884	141,897	2,131	8,254	1,669	2,002	4,700	10,648
3,647	6,335	672	330	-	210	-	-
127,237	135,561	2,372	6,924	1,669	1,702	4,700	10,620
332,373	376,934	3,326	48,252	50,445	26,867	26,239	451,277
61,326	77,093	673	29,194	28,230	7,519	7,261	6,540
10,209	12,750	5,333	3,122	1,239	2,107	568	78,699

Table 2*Numbers of farm animals in 1975 and in 1983*

	1975 Developed countries	Developing countries	1983 Developed countries	Developing countries
Cattle	44,325	744,854	425,891	799,492
Buffaloes	860	114,477	753	123,374
Pigs	295,168	388,841	328,823	444,776
Sheep	519,143	538,239	532,934	604,436
Goats	24,488	397,275	26,564	449,571
Poultry	2,667,000	2,688,000	3,143,000	3,920,000

Source: FAO, The State of Food and Agriculture, a review of livestock production; a world perspective, Rome.

Table 3*Gross value of animal products in 1980, in billions of US dollars*

	Developed countries	Developing countries	Total
Meat	109	62 *)	171
Milk	71	21	92
Eggs	16	9	25
Hides	3	3	6
Wool	3	1	4
Traction	6	40	46
Dung	4	6	10
Total	212	142	354

Source: FAO, The State of Food and Agriculture, a review of livestock production; a world perspective, Rome.

* Approximately one third from cattle.

APPENDICES

Table 4

Meat production by species in 1981, in thousands of tons (mt)

	Developed countries	Developed countries	Total
Cattle and buffaloes	31,366	13,516	44,882
Sheep and goats	3,593	4,215	7,808
Pigs	34,331	17,522	51,853
Poultry	19,112	8,000	27,112
Total*	90,026	44,997	135,023

Source: FAO, *The State of Food and Agriculture, a review of livestock production; a world perspective*, Rome.

*) Including meat from other species.

Table 5

Availability of power in developing countries, by region

	Total available power per ha		Supplied by:		
	kW	HP	man (%)	animals (%)	machines (%)
Africa	0,07	0,10	35	7	58
Asia (except China)	0,16	0,22	26	51	23
Latin America	0,19	0,25	9	20	71
Percentage of total			24	26	50

Source: *Energy for World Agriculture*, FAO, 1979.

Table 6*Developing countries' trade in livestock products*

	Developing countries' share in volume of world trade				Developing countries' trade balance (+ net exports - net imports) in thousands of tons		
	<i>Imports</i>		<i>Exports</i>		1968/70	1978/80	
	1968/70	1978/80	1968/70	1978/80			
%	%	%	%				
All meat	15	21	28	16	+1,042	-	394
Beef and veal	15	16	41	19	+ 999	+	440
Sheep and goat meat	18	29	19	10	+ 10	-	257
Pigmeat	12	4	12	4	+ 6	-	5
Poultry meat	23	52	6	14	- 99	-	577
Eggs	20	31	15	12	- 23	-	143
Milk and milk products	34	41	1	1	-7,102	-	15,749

Source: FAO, *The State of Food and Agriculture*, 1983.

Table 7

World trade in livestock products in 1980

	Live animals and meat		Milk, eggs and dairy products		Trade balance	% of world trade	
	<i>Exports</i>	<i>Imports</i>	<i>Exports</i>	<i>Imports</i>		<i>Exports</i>	<i>Imports</i>
	<i>(millions of US dollars)</i>						
Developing countries <i>(Market economies)</i>	3,269	5,380	167	4,713	-6,657	8.6	24.4
Africa	554	695	3	1,133	-1,271	1.4	4.4
Far East	196	828	87	796	-1,341	0.7	3.9
Latin America	2,282	926	59	1,112	+ 303	5.9	4.9
Near East	235	2,754	18	1,615	-4,116	0.6	10.6
Asian centrally <i>planned economies</i>	834	41	136	101	+ 828	2.4	0.3
<i>Developed market economies</i> ¹	19,634	19,954	12,891	8,516	+4,055	81.6	68.8
<i>Eastern Europe and USSR</i>	2,547	1,988	427	647	+ 339	7.5	6.4
World	26,284	27,363	13,587	14,001	-1,493	100.0	100.0

) Includes intra-EC trade.

source: FAO, *The State of Food and Agriculture*, 1983.

Error margins not corrected.

Table 8*World imports of dairy products in 1980, in millions, of tons of milk equivalent*

	Total imports	From EC-9	From Netherlands	% shares in total EC-9	% shares in total Netherlands
World total (incl. EC internal)	46.9	33.6	8.5	72	18
EC-9 total	17.9	15.8	3.3	88	18
Netherlands	3.1	3.1	-	100	-
EC-9 internal	15.8	15.8	3.3	100	21
Netherlands	3.1	3.1	-	100	-
World total (excl. EC internal)	31.1	17.8	5.3	57	17
EC-9 imports	2.1	-	-	-	-
Netherlands	0.0	-	-	-	-
Other W. Europe	1.9	1.5	0.6	79	30
E. Europe and USSR	4.1	2.2	0.4	54	11
Africa	5.4	4.3	1.4	80	26
N. America	1.1	0.4	0.1	40	6
Central and S. America	5.8	3.6	0.9	61	15
Asia	10.3	5.7	1.9	55	19
Oceania	0.3	0.0	0.0	16	3

Source: Meester/Oskam, LEI, 1983.

APPENDIX 2 – Dutch aid commitments in the livestock sector
 Table 9 Inspected activities

No	Description	Country	Total committed (f 1000)	Research training extension	Supply of livestock and equipment	Infrastructure and production aid
1	Damietta Dairy Project/ATC	Egypt	23,645	4,400 TA	7,100 FAL	12,145 TA
2	Cricas Promega	Peru	3,500	3,500 TA		
3	Livestock deliveries	Peru	5,700		5,700 FAL	
4	Livestock deliveries	Tunisia	30,650		28,000 FAL	2,650 TA
5	Artificial insemination	Egypt	900			900 TA
5	IRDPA Radaa	Yemen Arab Rep.	4,684*	4,469 TA *		215 FAG*
7	VIL Veterinary Laboratory	Kenya }	2,550			2,550 FAG
8	CC Clinical Centres	Kenya }				
9	DCRP Naivasha	Kenya	3,750	3,750		
10	NLDB/NDDP Dairy Project	Sri Lanka	7,105		3,024 FAL	4,081 TA
11	TRDB Credit	Tanzania	1,525			1,525 TA
12	LIDA Livestock Development	Tanzania	13,926			13,926 TA
13	TSA Sisal	Tanzania	10,513	600 TA		9,913 TA
14	PTC Training	Tanzania }	13,700	13,700 TA		
15	LRC Livestock Research	Tanzania }				
16	CDA Cattle Development	Zambia	6,300	4,600 TA	1,700 FAL	
17	ZADC State Farm	Zambia	1,975			1,975 TA
18	Vaccine Production	Zambia	950			950 TA
19	NAIS Artificial Insemination	Zambia	930		455 FAL	475 TA
20	DSS Dairy Settlement	Zambia	1,370			1,370 TA
1	PDTI/Palabana Training	Zambia	3,350	3,350 TA		
2	IRDPA/Nuwara Elhya	Sri Lanka	1,205	1,205 FAG		
3	UP-3 Manga	Burkina Faso	2,464*	2,464 TA*		
	Estimated.	TOTAL	140,692 (100%)	42,038 (29.9%)	45,979 (32.7%)	52,675 (37.4%)

To funds: f 140,692,000 / TA (technical assistance): f 90,743,000 (64.5%) / FAG (financial assistance grants): f 3,970,000 (2.8%) / FAL (financial assistance loans): f 45,979,000 (32.7%)

Table 10
*Commitments in respect of livestock activities
 aid to programme countries*
 (): number of activities

subsector/Activity	Training, research, extension	Supplies (Concentrates, drugs, livestock, semen, milk products, equipment)	Infrastructure (production, processing)
Livestock general			
a. Animal health			
b. Feed	5,050,000 (1)	7,222,830 (7)	3,226,000 (1)
c. Production	4,850,000 (1)	545,960 (1)	1,086,270 (2)
Dairy cattle			
a. Animal health		1,689,960 (4)	-
b. Marketing			-
c. Artificial insemination		1,632,340 (3)	1,265,688 (3)
d. Credit	1,296,940 (1)		
e. Breeding and selection	3,520,570 (2)	4,780,530 (1)	4,390,910 (1)
f. Feed	4,504,670 (2)	352,070 (1)	3,055,260 (3)
g. Production	49,858,600 (17)	7,250,000 (2)	15,405,303 (3)
h. Processing (incl. collection) Beef cattle	175,000 (1)	8,370,350 (3)	52,601,430 (8)
a. Animal health			
b. Breeding and selection			
c. Feed	1,577,000 (2)		
d. Production	70,000 (2)	4,844,520 (2)	1,048,580 (2)
e. Processing			18,344,257 (7)
Animal traction			
a. Livestock/cropping	1,500,000 (3)	1,500,000 (1)	
Absolute total	72,262,840 (32)	38,188,560 (25)	100,423,698 (30)
Subtotal	72,262,840 (32)	38,188,560 (25)	100,423,698 (30)

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Other staff (Management, short missions)	Total	Notes
a.	10,448,830	(8)
b.	6,136,270	(3)
c.	5,706,830	(5)
	<u>27,687,890</u>	10.8%
a.	3,184,960	(7)
b.	1,400,000	(2)
c.	2,898,028	(6)
d.	2,096,940	(2)
e.	18,170,910	(6)
f.	7,962,610	(7)
g.	6,799,290	(12)
h.	1,781,030	(3)
	<u>177,954,511</u>	69.6%
b.	4,407,070	(1)
c.	1,577,000	(2)
d.	1,048,580	(2)
e.	13,490,900	(4)
	<u>43,642,327</u>	17.1%
b.	3,406,175	(3)
	<u>6,406,175</u>	2.5%
	44,815,805	(37)
	29,543,875	(30)
	<u>256,490,903</u>	(125)
	<u>156,954,116</u>	(95)

This table summarizes projects and programmes concerned solely with livestock. Livestock production also forms part of general rural development programmes, including IRDPs. Here the share of livestock activities is estimated at not more than 10%.

Nature of these activities:

Research, training, extension
Supplies
Infrastructure
Other staff

4,635,000
6,295,440
10,930,440

Table 11
Livestock activities in programme countries, Category Ia (1985: Iia), 1978-1984

Country	No. of activities	GNP/cap US\$	Commitments (livestock) (x f 1,000)	% share		Livestock commitments (excl. processing) TA (x f 1,000)
				FAL	FAG	
Bangladesh	-	140	-	-	-	-
Burkina Faso	11	210	17,624.8	2	60	38
India	3	260	9,052.5	-	44	56
Kenya	24	280	44,137.8	-	-	100
Sri Lanka	14	320	18,381.4	13	29	58
Pakistan	2	380	6,757.7	-	47	53
Tanzania	8	390	36,499.9	72	-	28
Sudan	9	440	10,096.2	-	56	44
Yemen Arab Republic	2	500	17,056.4	26	3	71
Indonesia	6	580	8,282	-	-	100
Zambia	27	640	26,508	15	15	70
Egypt	5	690	31,275.3	54	4	42
Guatemala	3	1,310	11,640.3	7	-	29
Jamaica	1	1,330	4,850	-	66	34
Guinea	2	1,390	8,600	90	10	-
Colombia	8	1,460	5,729.2	52	-	48
Total	125		256,491.5	28%	15%	57%
Livestock excl. processing	95		156,954.1	11%	12%	77%

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Table 12

*Category Ia (1985: IIa), Aid to programme countries
Allocations and commitments in respect of livestock projects, 1978-1984 (f 1,000)*

Year	Allocations	Commitments	% of allocations going to livestock projects
1978	939,000	70,577	7.52
1979	900,000	69,045	7.67
1980	932,000	22,055	2.37
1981	936,000	29,241	3.12
1982	960,000	42,334	4.41
1983	768,000	9,332	1.22
1984	810,000	13,907	1.72
Total	6,245,000	256,491	4.11

Table 13

*Aid to programme countries and ex-target countries Category Ia (1985: IIa),
1978-1984*

Country	Country allocations (f millions)	Commitments (f 1,000)	% going to livestock projects	Number of activities
Bangladesh	631	-	-	-
Egypt	195	31,275.3	16.04	5
India	1,529	9,052.3	0.64	3
Indonesia	1,017	8,282	0.81	6
Kenya	376	36,499.9	9.71	8
Yemen Arab Republic	224	17,056.4	7.61	2
Pakistan	394	6,757.7	1.72	2
Sudan	305	10,096.2	3.31	9
Sri Lanka	306	18,381.4	6.01	14
Tanzania	678	44,137.6	6.51	24
Burkina Faso	274	17,624.75	6.43	11
Colombia	101	5,729.1	5.67	8
Cuba	15	-	-	-
Jamaica	53	4,850	9.15	1
Peru	26	11,640.2	44.77	3
Tunisia	13	8,600	66.15	2
Zambia	108	26,507.9	24.54	27
Total	6,245	256,491	4.11	125

Table 14

Commitments to livestock activities, all categories (I-VI), 1978-1984 (f 1,000)

Year	I		III		IV ²⁾		V ²⁾		VI ²⁾		Total	
	a	c	a	c	a	c and d	a	c	a	c		
1978	70,577	-	10,509.4	2,220.2	10,988	267.4	2,861.0	6,399.5	1,472.9	4,153.5	401.4	109,850.3
1979	69,045	-	7,376.5	8,276.7	12,464.9	477.8	1,804.4	9,856.4	1,337.8	1,170.9	426	112,236.4
1980	22,055	7,975	8,553.0	632.9	17,871.2	3,228	998.2	6,645.8	1,805.3	2,329.7	419.6	73,265.8
1981	29,241	18.1	3,978.1	10,000	-	11,215.5	4,828.5	1,033.3	8,239.9	1,901.3	442.92	75,585.82
1982	42,334	506	458.4	-	3,117.1	10,981.9	416.1	1,408.1	6,371.1	1,920.6	509.66	69,972.16
1983	9,332	-	808.0	321.5	5,303.6	406.5	1,716.2	5,584.2	1,829.4	1,979.6	515.72	27,796.72
1984	13,907	-	-	159.8	5,332.2	11,603.7	1,889.7	3,657.3	1,898.3	3,584	511.72	42,543.72
total	256,491	8,499.1	12,989.5	29,446	14,728.2	74,157.3	21,228	11,710.9	46,754.2	12,165.6	3,227.02	511,250.92

Notes

1. Category VII (promotion of developing countries' industry and exports) was not investigated; category VIII (aid to the Netherlands Antilles) includes negligible aid to the livestock sector.

2. The amounts shown under categories IV, V and VI are actual expenditures rather than commitments.

3. Category V includes all expenditures under the programmes for the Organization of Netherlands Volunteers and the Young Volunteers' Corps.

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Table 15

*Share of livestock activities in budgets
Allocations to all categories (I-VI),
1978-1984 (f 1,000)*

Year	Budgets/ allocations (cats. I-VI)	Commitments/ expenditures livestock activities (cats. I-VI)	% share of livestock activities
1978	1,614,990.6	109,850.30	6.80
1979	1,861,187.2	112,236.40	6.03
1980	2,018,229.9	73,265.80	3.63
1981	2,066,420.3	75,585.82	3.66
1982	2,102,316.0	69,972.16	3.33
1983	1,998,997.6	27,796.72	1.39
1984	1,957,188.6	42,543.72	2.17
Total	13,619,330.2	511,250.92	3.75

